



# MULTINATIONAL ENTERPRISE AND ECONOMIC ANALYSIS

THIRD EDITION



Richard E. Caves

CAMBRIDGE

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MULTINATIONAL ENTERPRISE AND ECONOMIC ANALYSIS  
THIRD EDITION

Multinational enterprise is an important subject for students and researchers, both practitioners of business administration and scholars of economics. This highly accessible book surveys the fruits of research from both quarters. It shows how economic analysis can explain multinationals' activity patterns and how economics can shed conceptual light on problems of business policies and managerial decisions arising in practice. It addresses the welfare problems arising from multinationals' activities and the logic of governments' preferences and choices in their dealings with multinationals. The book is readily useful to both researchers and students. This third edition incorporates knowledge about multinationals accumulated over the past decade of research.

Richard E. Caves is the Nathaniel Ropes Professor of Political Economy, Emeritus, at Harvard University. He is the author of many articles on multinational enterprise and other topics in the fields of international economics and industrial organization. He is the co-author of a leading textbook on international economics, *World Trade and Payments*. His most recent books deal with the arts and entertainment industries, *Creative Industries: Contracts between Art and Commerce* and *Switching Channels: Organization and Change in TV Broadcasting*.

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## Multinational Enterprise and Economic Analysis

*Third Edition*

Richard E. Caves, *Harvard University*

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Professor Caves has completely updated the book to cover contributions appearing through 2005. Many parts have been rewritten to reflect new ideas and lines of research appearing since the second edition. It remains the only survey volume to draw equally on analytical contributions of both economics and business administration bearing on the multinational firm.

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Third Edition

**RICHARD E. CAVES**

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## Preface

The multinational enterprise (MNE) has attracted much writing, scholarly and otherwise. Treatises bedecked with boxes and arrows instruct business managers on how to run MNEs. Passionate polemics chronicle their alleged misdeeds and call for the regulatory hand of government. Between these poles are found reams of description and comparison. Economic analysis has certainly not neglected the MNE. However, when the first edition of this book was written, the analytical treatments seemed seriously fragmented, as each branch of economic analysis carved its initials into the MNE without worrying much about what other branches made of it. This book's first edition (1982) therefore sought to integrate the research literature in two ways. It characterized the MNE as one form of internalization of transactions, thus placing it in the transaction-cost approach to economic organization, and integrated this core concept with the findings about MNEs reported by each standard functional branch of economic analysis. The second form of integration drew together theory and evidence, the former largely the domain of economics, the latter found adrift in the seas of business administration, political science, and the like. This integrative effort apparently proved useful to readers, which is why this organizational structure has survived two revisions essentially unchanged.

The book was written to reach a rather heterogeneous audience. It aims mainly to serve scholars in economics and business administration. Although it lacks the apparatus of a textbook, it was designed to also provide collateral reading for students in courses that touch on multinational enterprise. That goal accounts for a few patches of undergraduate-level textbook exposition of key concepts and models. The exposition level in general is aimed at users with substantial economics background, but not necessarily much prior acquaintance with every branch of economics that sheds some light on MNEs.

When this book first appeared (1982), its titular subject could be regarded as new. In the 1960s and 1970s, a critical mass emerged consisting of cogent empirical description and insightful applications of economic theory. It seemed feasible (to me, anyhow) to provide a wall-to-wall summary treatment in a book of reasonable length. The critical mass provided an opening for scholars with many interests and research strategies. The ensuing rapid growth of scholarly interest in foreign direct investment warranted occasional revision of this book. A second edition in 1996 followed.

Revising the book presented some difficult choices, however. The stock of knowledge (think of the upthrusting mountain of scholarly pages published on the MNE) was growing apace. Should this summary of that stock grow proportionally? Clearly, its coherence and pedagogical value would decay rapidly – a dismaying outcome for both me and the publisher. Should the book jettison the old and embrace the new (*Multinational Enterprise since Last February*)? Because we are dealing with an accumulating body of knowledge (rather than, say, sartorial fashion), that approach's flaw is immediately apparent. Providing a framework within which innovations can be organized and understood is essential to this survey's usefulness.

That leaves the approach actually taken. The book's account of the basic knowledge stock remains its core, although that core has undergone some compression. The shadow price for reportage of new contributions has been raised somewhat. Where several research papers make overlapping contributions, only one may be summarized. One consequence: a higher shadow price for recent contributions than for early ones. The early contributions and insights (this book's original core) retain their place in the presentation, just as the book itself retains the framework that emerged in the subject's first flowering. For example, the book retains references to early case-study material but barely heeds recent cases (the journal article has become the unit of account). Recent theoretical contributions have probably suffered the most; we attempt to cover important recent contributions to theory but omit the more specialized confections. Also missing from the book is quantitative and descriptive information concerning the MNE population.

Time waits for no survey author. I aimed to cover current contributions up to the beginning of 2006. Apologies are extended to 2005 (and earlier!) authors who were unintentionally omitted. In pursuit of timeliness, I did pay more attention than in previous editions to the current stock of working papers, especially those from the National Bureau of Economic Research and the Centre for Economic Policy Research series. The gain in timeliness from including their nascent contribution surely offsets any substantive gain from waiting out the purifying fires of journals' referee process.

In this revision, each chapter and section has undergone significant change. However, over the past decade, new contributions have been concentrated strongly in three areas. First, advances in international trade theory have brought it closer to the distinctive features of MNEs. Second, business administration researchers have swarmed over the question of modal choice: When does the firm entering a new market forgo a wholly owned subsidiary for exporting, a joint venture, or a contractual arrangement? Third, productivity spillovers have received much attention. Does the MNE affiliate spill significant productivity gains onto its neighbors and market competitors? When does it absorb spillage from them?

For encouraging timely revision of this book, I am grateful to Scott Parris of Cambridge University Press and for efficient production assistance to Ann Flack.



## The Multinational Enterprise as an Economic Organization

The multinational enterprise (MNE) is defined here as an enterprise that controls and manages production establishments – plants – located in at least two countries. It is simply one subspecies of a multiplant firm. We use the term “enterprise” rather than “company” to direct attention to the top level of coordination in the hierarchy of business decisions; a company, itself multinational, might be the controlled subsidiary of another firm. The minimum “plant” abroad needed to make an enterprise multinational is judgmental. The transition from a foreign sales subsidiary or a technology licensee to a producing subsidiary is not always a discrete jump, for good economic reasons. What constitutes “control” over a foreign establishment is another judgmental issue. An MNE sometimes chooses to hold only a minor fraction of the equity of a foreign affiliate. Countries differ in the minimum percentage of equity ownership that they count as a “direct investment” abroad, as distinguished from a “portfolio investment,” in their international-payments statistics.

Exact definitions are unimportant for this study because economic analysis emphasizes that at definitional margins decision-makers face close trade-offs rather than bimodal choices. However, the definition does identify the MNE as essentially a multiplant firm. We are back to Coase’s (1937) classic question of why the boundary between the administered allocation of resources within the firm and the market allocation of resources between firms falls where it does. In a market economy, entrepreneurs are free to try their hands at displacing market transactions by increasing the scope of allocations made administratively within their firms. The Darwinian tradition holds that the most profitable pattern of enterprise organization should ultimately prevail. To explain the existence and prevalence of MNEs, we require models that predict where the multiplant firm enjoys advantages from displacing the arm’s-length market and where it does not. In fact, the

prevalence of multiplant (multinational) enterprises varies greatly from sector to sector and from country to country, providing opportunities to test models of the MNE.

The models of the multiplant firm potentially relevant to explaining the presence of MNEs are quite numerous and rather diverse in their concerns. It proves convenient to divide them into three groups: (1) One type of multiplant firm produces broadly the same line of goods in each geographic market where it operates. Such firms are common in domestic industries with fragmented local markets such as metal containers, bakeries, and brewing. Similarly, the many MNEs that establish plants in different countries to make the same or similar goods can be called horizontally integrated. (2) Another type of multiplant enterprise produces outputs in some of its plants that serve as inputs to its other activities. Actual physical transfer of intermediate products from one of the firm's plants to another is not required by the definition; it needs only to produce at adjacent stages of a vertically related set of production processes. (3) The third type of multiplant firm is the diversified company whose plants' outputs are neither vertically nor horizontally related to one another. As an international firm it is designated a diversified MNE.

### 1.1. Horizontal Multiplant Enterprises and the MNE

We start by equating the horizontal MNE to a multiplant firm with plants in several countries. Its existence requires, first, that *locational forces* justify dispersing the world's production so that plants are found in different national markets. Given this dispersion of production, there must be some *governance* or *transaction-cost advantage* to placing the plants (some plants, at least) under common administrative control. This abstract, static approach provides the most general and satisfying avenue to explaining the multinational company. The location question – why plants are spread around the world as they are – is addressed in Chapter 2. We assume at first that plant *A* was located in southeast England because that was the lowest-cost way to serve the market it in fact serves. We also assume that this locational choice was not essentially influenced by whether the plant was built by an MNE, bought by an MNE, or not owned by an MNE. The static approach also puts aside the vital question of why a company grows into MNE status – something more readily explained after the static model is in hand.

The transaction-cost approach asserts, quite simply, that horizontal MNEs will exist only if the plants they control and operate attain lower costs or higher revenue productivity than the same plants under separate



managements. Why should this net-revenue advantage arise? Some of the reasons have to do with minimizing costs of production and associated logistical activities of the firm. The more analytically interesting reasons – and, we shall see, the more important ones empirically – concern the complementary nonproduction activities of the firm.<sup>1</sup>

### Proprietary Assets

The most fruitful concept for explaining the nonproduction bases for the MNE is that of assets having these properties: The firm owns or can appropriate the assets or their services; they can differ in productivity from comparable assets possessed by competing firms; the assets or their productivity effects are mobile between national markets; they may be depreciable (or subject to augmentation), but their life spans are not short relative to the horizon of the firm's investment decision.<sup>2</sup> Successful firms in most industries possess one or more types of such assets. An asset might represent knowledge about how to produce a cheaper or better product at given input prices or how to produce a given product at a lower cost than competing firms. The firm could possess special skills in styling or promoting its product that make it such that the buyer differentiates it from those of competitors. Such an asset has revenue productivity for the firm because it signifies the willingness of some buyers to pay more for that firm's product than for a rival firm's comparable variety. Assets of this type are closely akin to product differentiation – the distinctive features of various sellers' outputs cause each competing firm to face its own downward-sloping demand curve. The proprietary asset might take the form of a specific property – a registered trademark or brand – or it might rest in marketing and selling skills shared among the firm's employees. Finally, the distinctiveness of the firm's marketing-oriented assets might rest with the firm's ability to devise frequent innovations; its proprietary asset then might be a patented novelty, or simply some new combination of attributes that its rivals cannot quickly or effectively imitate. This asset might vary greatly in tangibility and specificity. It could take the specific form of a patented

<sup>1</sup> This approach developed through the works of a number of authors, including Hymer (1960, 1968), Eastman and Stykolt (1967), Kindleberger (1969), Johnson (1970), Caves (1971), McManus (1972), Buckley and Casson (1976), Dunning (1977*a*, 1981*b*), Magee (1977*a*), and Hennart (1982).

<sup>2</sup> No single term used in the literature captures all these conditions. "Proprietary assets" seems to come closest, but "intangible assets," "firm-specific assets," and "monopolistic advantages" generally have the same meaning.

process or design, or it might simply rest on know-how shared among employees of the firm. It is important that the proprietary asset, however it creates value, might rest on a set of skills or repertory of routines possessed by the firm's team of human (and other) inputs (Nelson and Winter, 1982, Chapter 5).

The proprietary assets described by these examples evidently share the necessary conditions to support foreign investment. They are things that the firm can use but not necessarily sell or contract upon. Either the firm can hold legal title (patents, trademarks) or the assets are shared among the firm's employees and cannot be easily copied or appropriated (by other firms or by the employees themselves). They possess either the limitless capacities of public goods (the strict intangibles) or the flexible capacities of the firm's repertory of routines. Especially important for the MNE, while the productive use of such an asset is not tightly tied to a single physical site or even nation, arm's-length transfers of them between firms are prone to market failures. These failures deter a successful one-plant firm from selling or renting its proprietary assets to other single-plant firms and thereby foster the existence of multiplant (and multinational) firms. Proprietary assets are subject to a daunting list of infirmities for being detached and transferred by sale or lease:

1. They are, at least to some degree, *public goods*. Once a piece of knowledge has been developed and applied at a certain location, it can be put to work elsewhere at little extra cost and without reducing the capacity available at the original site. From society's point of view, the marginal conditions for efficient allocation of resources then require that the price of the intangible asset be equal to its marginal cost, zero, or approximately zero. However, no one gets rich selling bright ideas for zero. Therefore, intangible assets tend to be underprovided or to be priced inefficiently (at a net price exceeding their marginal cost) or both.
2. Transactions in intangibles suffer from *impactedness* combined with *opportunism*. This problem is best explained by examples: I have a piece of knowledge that I know will be valuable to you. I try to convince you of this value by describing its general nature and character. But I do not reveal the details because then the cat would be out of the bag, and you could use the knowledge without paying for it unless I have a well-established property right. Therefore, you decline to pay me as much as the knowledge would in fact be worth to you because you suspect that I am opportunistic and inflate my claims.

3. A proprietary asset might be diffuse and therefore incapable of an enforceable lease or sale contract. The owning firm might readily contract with a customer to achieve a specific result using some competence that it possesses but be unable to contract to install that competence within another firm. Even with well-defined intangibles, various sources of uncertainty can render contractual transfers infeasible or distort the terms of viable deals.

This application of modern transaction-cost analysis underlies a framework widely used in research on the MNE. It layers a third necessary condition for horizontal MNEs atop the two already asserted – the efficiency of dispersed *location* of production and the efficiency of common *ownership* of the dispersed facilities. The third condition, *internalization*, holds that the decentralized application of the proprietary asset is more efficiently managed within the owning firm than by renting it at arm's length to another firm. This framework, developed mainly in Dunning's (e.g., 1981*b*) writings, is commonly called the OLI (ownership location internalization) paradigm. It is controversial only as to its sufficiency to explain all MNEs' operations; it clearly lacks that sufficiency, as it does not apply to the cases of vertical and diversified MNEs (Rugman, 1985; Teece, 1986).

### Some Extensions

The proprietary-assets approach embraces certain extensions and variants. Although the standard exposition contemplates a goods-producing firm, it evidently applies as well to MNEs in the services sector.<sup>3</sup> The site of production of a service is sometimes indefinite, and accordingly, it is not subject to the clear dichotomy between exporting and foreign production that is applicable to a good. Although a hotel chain serves customers at the site of the service's consumption, a consulting firm does not (Boddewyn, Halbrich, and Perry, 1986; Enderwick and Associates, 1989; UNCTC, 1989). The proprietary assets of service multinationals seldom result from research investments, but they commonly rest on information and capabilities that effectively yield economies of scale and scope and support goodwill assets. Also, some service MNEs (but not only they) possess an important special type of proprietary asset that is transaction specific. In transaction-cost economics,

<sup>3</sup> The value of foreign investments in services probably accounts for 40 percent of the capital invested in foreign subsidiaries according to the United Nations Centre on Transnational Corporations (hereafter UNCTC, 1989), but the research literature is locked into a goods-production mind-set.

a transaction-specific asset exists in some resources, facilities, or knowledge. It may exist simply in each party's cumulated trust that the owner will not cheat in their mutual dealings. The switching costs that they incur if they change transaction partners support a persistent supplier-customer relation that can deter either party from taking temporary advantage of the other. As empirical evidence subsequently demonstrates, the proprietary assets that drive foreign investment in some business services seem to be strongly transaction specific, with service MNEs emerging to preserve and benefit from the parent's ties to customers who themselves have become MNEs.

Another extension pertains to the longevity of proprietary assets. The standard approach is one of comparative statics: A domestic firm is assigned some fixed proprietary asset, and its profitable exploitation through foreign direct investment is deduced. Proprietary assets can be enlarged or improved through investment, however, and such investment decisions should themselves depend on the firm's opportunities to undertake foreign investments. Foreign investments might be undertaken to develop or to improve proprietary assets. Such assets are also subject to depreciation and obsolescence, and their deterioration might lead to foreign divestment as a reversal of the foreign-investment process (Boddewyn, 1983). The creation and destruction of such assets and the variance of returns in the investments that firms make in them should be reflected in the longevity and turnover of foreign investments themselves (Caves, 1995).

Studies of domestic multiplant operation (Scherer et al., 1975) indicate a number of economies directly relating to the firm's production activities, and these can apply to the MNE if they do not stop at the national boundary. There can be transaction-cost economies in the procurement of raw materials that go beyond the input needs of the single plant. Economies can arise in the transportation network for outbound shipments of finished goods that extend beyond the single plant's output. Localized demand or cost fluctuations can warrant coordinated use of plants' capacities, so that several plants' outputs can be flexibly shipped from the temporarily favored site (de Meza and van der Ploeg, 1987; Kogut and Kulatilaka, 1994). If the industry's output consists of a line of diverse goods, each plant might efficiently specialize in some items rather than each producing the whole array. It is an empirical question how fully these economies are available to a multiplant firm operating across national boundaries because they depend on the cost of moving goods (inputs or outputs) among plants or the effectiveness of managerial coordination of distant activities.

Another asset of the ongoing firm is its capacity to generate investible funds beyond what it can profitably use for expanding its current activities.

One view of the ongoing firm's financial decisions holds that it attaches different opportunity costs to funds from various sources. Externally secured funds – debt and new equity – are costly because of transaction costs and moral-hazard problems and the reduced independence they entail for the managers, as well as the direct cost of paying additional interest or dividends. Internally generated funds – profits not paid out to current shareholders – have a lower opportunity cost, and managers will put them to work in a new activity with an expected profit rate (internal rate of return) lower than what would be needed to warrant external borrowing. Thus, excess capacity in internally generated funds can also motivate foreign investment.<sup>4</sup> Indeed, this point generalizes further to the advantage an established company might have in entering a foreign market simply because excess profits can be earned there, and the firm stands near the front of the queue of potential entrants in terms of its ability to overcome whatever entry barriers sustain the excess profits. The implications of this point for the MNE as a market competitor are discussed in Chapter 4, and empirical evidence appears in Section 9.3's discussion of MNEs originating in less-developed countries.

Finally, the firm's choice of foreign investment for maximizing the returns to its proprietary assets in foreign markets is made against an array of alternative arrangements involving arm's-length deals with other firms. When the proprietary asset is a patent, trademark, or well-defined technology, licensing or franchising it to other firms might be the owner's preferred strategy (technology licensing is reviewed in Chapter 7). When a value-creating activity requires proprietary assets that two (or more) firms must contribute, and outright merger of the firms is not efficient, various alliances, cooperative arrangements, and joint ventures can be employed (Dunning, 1984; Oman, 1984; Buckley, 1985; Hennart, 1989). For example, a firm might prefer some contractual arrangement to serve a small foreign market where establishing its own subsidiary requires an otherwise avoidable fixed cost (Anderson and Gatignon, 1986). Other cooperative arrangements and management-services contracts can become instruments of choice when host governments cannot credibly commit to eschew expropriation (or its equivalent in taxation) once the MNE has sunk its foreign investment (see Section 4.4). Evidence on these forms of inter-firm agreement will be noted subsequently because they compete with foreign investment as a way to maximize returns on proprietary assets.

<sup>4</sup> The financial model of the firm that underlies these propositions has less than universal acceptance among economists but agrees with evidence summarized in Section 6.1.

### **Empirical Evidence: Prevalence of Horizontal Foreign Investment**

Hypotheses about horizontal MNEs have received many statistical tests. The usual strategy of research involves relating the prevalence of MNEs in an industry to structural traits of that industry: If attribute  $x$  promotes the formation of MNEs, and successful firms in industry  $A$  have a lot of  $x$ , then MNEs should be prevalent in industry  $A$ . These tests have been performed on two dependent variables: foreign operations of firms in a source country's industries normalized by their total activity level in those industries (hereafter "outbound" foreign investment) and foreign subsidiaries' share of activity in a host country's markets normalized by total transactions in those markets (hereafter "inbound" foreign investment). The exogenous variables are chosen to represent features of industries' structures that should either promote or deter foreign direct investment. These econometric studies are prone to at least two types of misspecification that have led to certain modified research strategies. First, foreign investment substitutes for other methods (exporting, licensing foreign producers) of maximizing rents on proprietary assets in foreign markets. A given industry's share of foreign investment might be high either because foreign investment works well or because the alternatives work badly. The most attractive way to address this problem is to measure the extent of use of the alternative methods and test the determinants of all of them together (Buckley and Casson, 1998). Second, the extent to which country 1's firms invest abroad depends not only on the absolute properties or qualities of their own proprietary assets but also on the qualities of assets held by firms competing with them in foreign markets. The data requirements for dealing head on with this problem are onerous, but some progress has been made in studies of bilateral foreign-investment patterns.

The number of studies embodying these designs has grown large enough to sustain its own monograph-length survey (UNCTC, 1992a). Here the main conclusions will be summarized, with reference only to selected articles. There is considerable agreement on the major results among studies of both outbound and inbound investment, among studies of a given type for each country, and among studies based on different countries. Therefore, we offer here some generalizations about the principal conclusions without referring extensively to the conclusions reached in individual studies or about particular countries. Then we take up extensions and qualifications. Findings about the trade-off between foreign investment and exporting are treated in Chapter 2 and about the trade-off between foreign investment and other forms of association between business units in Chapter 7.

First, a roster of the main statistical studies of outbound foreign investment includes, for the United States, Horst (1972*a*), Wolf (1977), Pugel (1978, Chapter 4, 1981*a*), Goedde (1978, Chapter 2), and Lall (1980); for Sweden, Swedenborg (1979); and for Japan, Kogut and Chang (1991) and Drake and Caves (1992). The principal studies of inbound foreign investment include, for the United States, Lall and Siddharthan (1982), Caves and Mehra (1986), and Wesson (1993); for Canada, Caves (1974*b*), Baumann (1975), Saunders (1982), and Owen (1982); for Great Britain, Dunning (1973*b*), Caves (1974*b*), Hughes and Oughton (1992) and Giulletti, McCorrison, and Osborne (food sector) (2004); for Germany, Yamawaki (1985); for Australia, Parry (1978) and Ratnayake (1993); and for India, N. Kumar (1990). Their results confirm, first and foremost, the role of proprietary assets inferred from the outlays that firms make to create and maintain these assets. Research and development intensity (R&D sales ratio) is a thoroughly robust predictor. Advertising intensity has proved nearly as robust, even though most studies have lacked an appropriately comprehensive measure of firms' sales-promotion outlays.<sup>5</sup> Researchers also consistently find a significant positive influence for an industry's intensive use of skilled managerial labor; this variable seems to confirm the "repertory of routines" basis for foreign investment, independent of the strictly intangible proprietary assets (Pugel, 1981*a*). (More comprehensive measures of labor skills also exert statistically significant positive effects in some studies, but it is unclear what hypothesis they test.) A third result that also supports a role for the firm's general coordinating capacity is the positive influence of multiplant operation within large countries such as the United States. This hypothesis was advanced and given some statistical support by Eastman and Stykolt (1967, Chapter 4); both Caves (1974*b*) and Saunders (1982) confirmed that multiplant operations in the United States are a significant positive predictor of foreign investment in adjacent Canada, although Caves found that the hypothesis is not confirmed for remote, insular Great Britain.<sup>6</sup> A final result confirms both the role of intangible assets and the transaction costs that arise for protecting property rights in them: An industry's extent of

<sup>5</sup> More and Caves (1994) showed that intra-firm royalty receipts by MNE parents (after controlling for transfer-pricing distortions) behave like cash flows resulting from foreign investments that transplant the MNE's intangible assets. Survey evidence gathered by Bertin and Wyatt (1988, pp. 25–29) showed that MNEs regard technology advantages as their most potent competitive advantage, followed by marketing and managerial assets.

<sup>6</sup> Juhl (1985) confirmed it for Germany. Useful demonstrations of the nature of proprietary assets other than intangibles lie in studies of MNEs based in "unlikely" source countries such as Canada (Rugman, 1987).

foreign investment increases with the proportion that lawyers make up of its total employment (Denekamp, 1995).

Other tests have dealt with sources of entry barriers that might concentrate production in particular locations. Some evidence indicates that extensive scale economies in production deter the dispersion of plant operations and thus retard foreign investment. Also, some investigators have tested the hypothesis that activities requiring (absolutely) large capital investments might favor the multinational activity of existing large enterprises. None of these hypotheses has been supported robustly, although support for the scale-economies hypothesis is noted in Chapter 2. The hypotheses are not finely tuned, and many studies suffer from the inclusion of such variables as an industry's average firm size or the concentration of its producers, which are themselves endogenous, collinear with other exogenous variables, and lead to results that are sensitive to specification choices and generally untrustworthy.

Included in many of these cross-section models are variables seeking to capture the positive influence of tariff protection of the host-country market or (alternatively) the ease or cost advantage with which a host-country market can be served through exports rather than foreign investment. These are discussed in Chapter 2. The important point is that they have rather little explanatory power compared to variables based on proprietary assets, which embody necessary conditions for foreign direct investment.

Several specialized issues do need to be noted here:

1. *Development of proprietary assets.* The cross-section tests summarized so far neglect the development and turnover of stocks of proprietary assets. This process is most easily seen in studies of individual firms, but it does exert some influence at the national level. Drake and Caves (1992) showed how the development of proprietary assets in Japan's manufacturing industries in the 1970s and 1980s led to subsequent increases of Japan's share of foreign investments in U.S. industries. Cantwell (1989, Chapters 2, 6) explored the long-run relationship between nations' stocks of proprietary assets, reflected in patents, and their revealed comparative advantage in gathering rents on world markets. The association is closer for exports and overseas production taken together than it is for exports alone.
2. *Rivalrous relationships between source- and host-country assets.* The relativity of competing companies' proprietary assets can be tested only at a broad national level (see Chapter 2) or through analyzing industry-level flows of investment between pairs of countries. Kogut and Chang



(1991) explored the roles of both Japanese and U.S. R&D expenditures in influencing the rate of Japanese foreign investment. It turns out to be positively related to both flows; there is no positive relationship to the Japan-U.S. differential, as one would expect if the two expenditure flows create adversary proprietary assets. Apparently spillovers and positive externalities are the dominant factor for R&D, but Pugel, Kragas, and Y. Kimura (1996) found that Japanese foreign investment is repelled by the marketing outlays of U.S. competitors. Kim and Lyn (1987) observed a negative relationship between foreign investment in U.S. industries and the market value of U.S. firms with which they compete – specifically, the component of those market values not explained by the U.S. industries' own R&D and advertising levels and their concentration ratios.

3. *Foreign investment to augment proprietary assets.* Related to the result of Kogut and Chang is the hypothesis that (some) foreign investment takes place to draw on host-country assets in order to augment the proprietary assets of the entering MNE. Case-study evidence documents extensively this motive for foreign investment, for example, Japanese foreign investments in research-intensive industries of the United States and Germany (Alsegg, 1971, pp. 218–30; Tsurumi, 1976, pp. 116–17; Yoshida, 1987, pp. 47–48). The United States remains the natural market in which to test the hypothesis. Wesson (1993) argued that a U.S. industry's share of world exports is the best available proxy for intangibles found in the U.S. market that could serve this purpose. He found that foreign investment in the United States increases with several variables that indicate the stock of relevant U.S. assets (such as classes of skilled labor), either directly or interacted with the export-share measure of the U.S. advantage. Researchers have used several approaches to probe the importance of “base-augmenting” (vs. base-exploiting) investments, often stacking it against the traditional hypothesis that foreign investment proceeds from more research-intensive sources to less research-intensive destinations. Neven and Siotis (1996) found that high host-market R&D intensities lure intra-European foreign investment, but Anand and Kogut (1997) found no predominance of either exploiting or augmenting for entrants into a broad range of U.S. manufacturing industries. Ruckman (2005) concluded that pharmaceutical firms making acquisitions in the United States typically bought targets more R&D-intensive than themselves – but this tendency was less prevalent in international than in domestic mergers. Kuemmerle (1999) focused

closely on MNEs' R&D laboratories located abroad, finding that their activities tend to be bifurcated – either mainly base exploiting or base augmenting but seldom divided evenly between them. In the pharmaceutical and electronics companies covered in his study, 38 percent were base augmenters. Augmenting is more prevalent in high-R&D countries and countries with heavy investments in human capital. Cantwell and Mudambi (2005) studied foreign subsidiaries in the U.K. engineering industries, linking their possession of product mandates from their parents to their R&D levels and choices of location.

4. *International mobility of proprietary assets.* Some research addresses the international mobility of proprietary assets by explaining why competing firms in an industry differ in their propensities to invest abroad. Horst (1974a, Chapters 4 and 5) explored the effects of various corporate assets on the foreign-investment behavior of firms in the U.S. food-processing sector. The proprietary assets held by these firms divide roughly into two classes. Some succeeded on the basis of heavy national advertising, others with extensive and intricate distribution systems for bringing their products to the final consumer in good condition. The latter group has taken part less extensively in foreign investment because these complex distribution systems are a drain on managerial resources and are not readily replicated in foreign markets. The advertisers, on the other hand, are heavy foreign investors. The firms with intensive distribution systems also display less extensive multiplant development within the United States, suggesting that the diseconomies of scale in extending their empires constrain them geographically within the United States as well as internationally.<sup>7</sup> Statistical studies (Horst, 1972b; Grubaugh, 1987a) have confirmed the role of different endowments of competing firms as predictors of their MNE status. Belderbos and Sleuwaegen (1996) in particular showed that predictions based on Japanese firms' endowments extend even to the destinations of their foreign investments.
5. *Evidence from market valuations of firms.* Another method recently employed to test the proprietary-assets approach is by means of information on the stock market's valuations of MNEs. Morck and Yeung (1991) analyzed ratios of market to book value (Tobin's q) for U.S. MNEs to show that the market's valuation of these firms increases

<sup>7</sup> Similarly, Meredith (1984) demonstrated the pull of foreign direct investment to Canada associated with spillovers of U.S. sales-promotion outlays across the Canadian border.

with their investments (R&D, advertising) in proprietary assets and with the extent of their multinational operations. This influence of foreign operations, however, depends on and operates through these outlays on proprietary assets. (Otherwise, multinationality might be valued by shareholders for diversification or tax advantages that it provides instead of for rents on proprietary assets; see Sections 1.3 and 6.2). Morck and Yeung (1992) studied the stock market's valuations of announcements that a U.S. firm had acquired control of a firm located abroad. Although U.S. shareholders' reactions to domestic mergers tend to be insignificantly positive or even negative for the acquiring firm, Morck and Yeung found a significant positive response to the average foreign acquisition. Further, the response increases with the firm's rate of spending on proprietary assets – R&D (especially for small acquiring firms) and advertising (especially for large ones). Gupta et al. (1991) similarly observed positive responses to joint ventures announced in the People's Republic of China.

6. *Proprietary assets in the macroeconomy.* Recent research has linked the abundance (or paucity) of a country's stock proprietary assets to traits of its macroeconomy. Yeaple (2003b) found that the education level of a country's labor force (and consumers) interacts positively with the prevalence of nonproduction workers in its industries, in explaining the extent of its foreign investment. Proprietary assets represent accumulated and encoded knowledge, so the country well suited to develop and export proprietary assets is the one with skills to devise such assets and the propensity to use them heavily alongside tangible inputs. With this link in hand, it becomes feasible to incorporate the geographic and locational forces along with proprietary assets to explain countries' varying levels of involvement in foreign direct investment (Chapter 2). Furthermore, countries can be regarded symmetrically as sources and hosts of foreign investment.

### **Multinationals in Service Industries**

Horizontal MNEs in banking and other services have received increased attention from researchers. The proprietary-assets hypothesis again makes a good showing, especially when extended to the transaction-specific assets of an ongoing quasi-contractual relationship between the service enterprise and its customer. A bank, advertising agency, or accounting firm acquires a good deal of specific knowledge about its client's business, and the parties'

sustained relationship based on trust lowers the cost of contracting and the risks of opportunistic behavior. The service firm enjoying such a quasi-contractual relation with a parent MNE holds a transaction-cost advantage for supplying the same service to the MNE's foreign subsidiaries. If the service must be supplied locally, the service firm goes multinational to follow its customer.

Much casual evidence reveals this transaction-specific asset behind service industries' foreign investments (e.g., Safarian, 1966, p. 210; Behrman, 1969, pp. 3–4), especially in the banking sector (Grubel, 1977, and references cited therein; Pastré, 1981; Yannopoulos, 1983; Enderwick and Associates, 1989, pp. 61–78). Grubel affirmed the transaction-cost model but also cited two other factors. Some banks acquire particular product-differentiating skills analogous to those found in some goods-producing industries; they can explain banks' foreign investments in less-developed countries (Baum, 1974) and in countries with large populations of migrants from the source country. Also, national banking markets commonly appear somewhat non-competitive because of cartelization or regulation or both, and foreign banks are well-equipped potential entrants. The traits of foreign banks' operations in the United States affirm these propositions (Lees, 1976). Some propositions about internalization in banking have been tested statistically. Miller and Parkhe (2002) provided a test of some liabilities of foreign banks due to their foreignness. Nigh, Cho, and Krishnan (1986) found increases in U.S. bank assets abroad to vary significantly by country with increases in the overall book value of the U.S. foreign-investment position, with the openness of the host country's policies controlled. Sagari (1992) confirmed the same proposition for levels of banking and nonbanking foreign investment. Heinkel and Levi (1992) symmetrically showed the prevalence of foreign countries' banks in the United States to increase with the country's exports and with the value of financial claims that the U.S. holds on the source country's capital market. Li and Guisinger (1992) found that the growth of foreign investment by a source country's service (all services sectors) MNEs increases significantly with the source's total initial stocks of foreign investment; the closeness of the relationship declined from the 1970s to the 1980s.

The prominence of transaction-specific assets as a factor driving foreign investment is apparently matched in service industries such as advertising agencies, accounting, and consulting firms (Terpstra and Yu, 1988; Enderwick and Associates, 1989, pp. 79–106). Studies of other multinational service industries, however, bring out different factors. International hotel chains resemble franchise operations in creating centrally a proprietary asset (standardized product image, reservation system) that must be combined

with other inputs at the site of consumption. No sharp economic boundary exists between domestic and international hotel franchises, and Dunning and McQueen (1982) showed that international hotel chains' penetration of various national markets is inversely related to the development of franchise systems in the domestic industry. International construction firms rely on repertoires of routines and reputation assets resembling those that commonly support MNEs in manufacturing (Enderwick and Associates, 1989, pp. 132–51).

## 1.2. Vertically Integrated MNEs

The vertically integrated MNE is readily regarded as a vertically integrated firm whose production units lie in different nations. Theoretical models that explain vertical integration should therefore be directly applicable. Again, we assume that production units are dispersed in different countries because of conventional location pressures – the bauxite mine where the bauxite is found, bauxite converted to alumina at the mine because the process is strongly weight losing, and the smelter that converts alumina into aluminum near a source of low-cost electric power. The question is, Why do they come under common administrative control? The proprietary-assets model is not necessary because neither upstream nor downstream production units need bring any distinctive qualification to the parties' vertical consolidation. Some proprietary advantage of course *could* explain which producer operating at one stage undertakes an international forward or backward vertical integration.

### Models of Vertical Integration

Until the rise of transaction-cost economics the economic theory of vertical integration contained a large but unsatisfying inventory of special-case models. Some dealt with the physical integration of production processes: If you make structural shapes out of the metal ingot before it cools, you need not incur the cost of reheating it. Such gains from physical integration explain why sequential processes are grouped in a single plant, but they neither preclude two firms sharing that plant nor explain the common ownership of far-flung plants. Other traditional models regard vertical integration as preferable to a stalemate between a monopolistic seller and a monopsonistic buyer, or to an arm's-length relation between a monopolistic seller and competitive buyers whose activities are distorted because of paying the monopolist's marked-up price for their input. Some models

explain vertical integration as a way around monopolistic distortions, while others explain it as a way to profit by fostering such distortions.

The theory of vertical integration has been much enriched by the same transaction-cost approach that serves to explain horizontal MNEs. Vertical integration occurs, the argument goes, because the parties prefer it to the ex ante contracting costs and ex post monitoring and haggling costs that would mar the alternative state of arm's-length transactions. The vertically integrated firm internalizes a market for an intermediate product, just as the horizontal MNE internalizes markets for proprietary assets.<sup>8</sup> Suppose that pure competition prevails in each intermediate-product market, with large numbers of buyers and sellers, the product homogeneous (or its varied qualities costlessly evaluated by the parties), information about prices and availability in easy access to all parties in the market. Neither seller nor buyer would then have reason to transact repeatedly with any particular party on the other side of the market. When these assumptions do not hold, however, both buyers and sellers acquire motives to make long-term alliances. The two can benefit mutually from investments that each makes suited to special attributes of the other party. Each then incurs a substantial fixed cost upon shifting from one transaction partner to another. Each seller's product could be somewhat different, and the buyer faces significant costs of testing or adapting to new varieties, or merely learning the requirements and organizational routines of new partners. The buyer and seller gain an incentive to enter into some kind of long-term arrangement.

If transaction-specific assets deter anonymous spot-market transactions, they leave open the choice between long-term contracts and vertical integration. Contracts, however, encounter the costs of negotiation and of monitoring and haggling previously mentioned. These ex ante and ex post costs trade off against one another – a comprehensive contract can reduce subsequent haggling – but the overall cost remains.<sup>9</sup> The problem is compounded because, even in a market with many participants, unattached alternative transaction partners tend to be few *at any particular time* when a party might wish to recontract. Fewness compounds the problems of governance in arm's-length vertical relationships.

<sup>8</sup> O. E. Williamson (1985) deserves credit for developing and popularizing this approach. For a survey of models of vertical integration, see Perry (1989).

<sup>9</sup> Economists make the point that the uncertainties impelling vertical integration could be averted by resorting to comprehensive forward-contract markets, if they existed (Buckley and Casson, 1976). Because they do not exist for the same reasons that vertical integration emerges, the point lacks operational significance.

One special case of the transaction-cost theory of vertical integration holds promise for explaining MNEs involved in processing natural resources. Vertical integration can occur because of failings in markets for information, as analyzed earlier in the context of proprietary assets. A processing firm must plan its capacity on some assumption about the future price and availability of its key raw material. The producers of that raw material have the cheapest access (perhaps exclusive) to that information, but they have an incentive to overstate availability to the prospective customer: The more capacity customers build, the higher they are likely to bid in the future for any given quantity of the raw material. Therefore, vertical integration could occur to evade problems of impacted information (Arrow, 1975).

To summarize, intermediate-product markets can be organized in a spectrum of ways stretching from anonymous spot-market transactions through a variety of long-term contractual arrangements at arm's length to vertical integration. Switching costs and durable, specialized assets discourage spot transactions and favor one of the other modes. If, in addition, the costs of negotiating and monitoring arm's-length contracts are high, the choice falls on vertical integration (or some less extensive pooling of equity). These empirical predictions address both where vertical MNEs will appear and how they will trade off against contractual relationships.

### **Empirical Evidence**

Much less research has addressed vertically related MNEs than the horizontal ones just reviewed. Much of what does exist addresses not only the causes of vertical linkages but their prevalence. Indeed, it indicates that vertical linkages are widespread and have been increasing. U.S.-domiciled subsidiaries of foreign MNEs obtain about two-thirds of their imported inputs from their corporate affiliates. For individual affiliates, these flows tend to be steady over time rather than being displaced by local production as a subsidiary matures (Zeile, 1998). Indeed, Keane and Feinberg (2005a) discovered a large increase in the proportion of total shipments by Canadian subsidiaries to their U.S. parents between 1984 and 1995. Numerous studies have found foreign subsidiaries to outsource more than their host country's domestic firms (e.g., Girma and Görg, 2004). MNEs in industries making heavy use of (nonubiquitous) natural resources tend to place large proportions of their assets abroad (Pugel, 1978; Owen, 1982). Japanese MNEs invest heavily abroad in countries that are large suppliers of imports to Japan – whose imports run heavily to raw materials and fabricated inputs (Farrell,

Gaston, and Sturm, 2004). Various studies associate intra-MNE trade flows with affiliates located in small or low-wage host countries and not too distant from the parent (Hanson et al., 2005; Milner, Reed, and Talerngsri, 2004). These statistical findings do not, however, directly address the similarity or difference between intra-corporate and arm's-length trade flows. A rare exception is Celly, Spekman, and Kamauff (1999), who investigated determinants of relationship-specific investments made by foreign suppliers to U.S. firms. These actually increase with technological uncertainty and with the importance to the buyer of the supplier's responsiveness. The competitiveness of the market in which the supplier operates is not statistically significant. This study suggests that arm's-length contracts in such vertical relationships succeed in evading the theoretical hazards facing them. A near-total gap in this literature is evidence on how arm's-length relationships are sustained; Dyer and Chu (2000) established the important role of trust between auto industry suppliers and assemblers. The correlates of trust seem consistent with the theory of repeated games.

For evidence more relevant to the transaction-cost determinants of vertical organization, we must rely on older research and case studies. McKern (1976) studied a group of extractive industries in which the vertical interface between extractive and processing stages holds central importance. Monopoly/monopsony market structures he found could not explain foreign investment in Australia's extractive industries. Also, he could not assign much importance to the foreign MNEs' motive of ensuring themselves access to supplies because, in many cases, they did not transfer Australian raw materials directly to their own refining facilities but instead sold them on the open market. Accordingly, he argued that an important motive for vertical integration is the use by MNEs of the knowledge they have acquired about the international market for the raw materials in question. This basis for vertical integration in MNEs adds up to a proprietary-assets explanation, analytically similar to the one that proves so fruitful for explaining horizontal MNEs. Case studies reaching this conclusion include Read (1983) and Chalmin (1986).

Much information exists on individual extractive industries in which MNEs operate on a worldwide basis, and this case-study evidence merits a glance in lieu of more broadly based findings. For example, Stuckey (1983) found the international aluminum industry to contain not only MNEs integrated from the mining of bauxite through the fabrication of aluminum products but also a network of long-term contracts and joint ventures. Market participants are particularly unwilling to settle for spot transactions in



bauxite (the raw ore) and alumina (output of the first processing stage). The problem is not so much the small number of market participants worldwide as the extremely high switching costs. Alumina refining facilities need to be located physically close to bauxite mines (to minimize transportation costs), and they are constructed to deal with the properties of specific ores. Likewise, for technical and transportation-cost reasons, aluminum smelters are somewhat tied to particular sources of alumina. Arm's-length markets, therefore, tend to be poisoned by the problems of small numbers and switching costs. And the very large specific and durable investments in facilities also invoke the problems of long-term contracts that were identified earlier. Finally, Stuckey gave some weight to Arrow's model of vertical integration as a route to securing information: Nobody knows more about future bauxite supplies and exploration than an existing bauxite producer.

A good deal of evidence also appears on vertical integration in the oil industry. The ambitious investigations have addressed the U.S. segment of the industry, but there appears to be no strong difference between the forces traditionally affecting vertical integration in national and international oil companies.<sup>10</sup> These studies give considerable emphasis to the costs of supply disruption faced by any nonintegrated firm in petroleum extraction or refining. Refineries normally operate at capacity and require a constant flow of crude-oil inputs. Storing large inventories of input is quite costly, and so backward integration that reduces uncertainty about crude supplies can save the refiner a large investment in storage capacity. It also reduces risks in times of "shortages" and "rationing," when constraints somewhere in the integrated system (crude-oil supplies are only the most familiar constraint) can leave the unintegrated firm out in the cold. The hazard of disrupted flows translates into a financial risk, as vertically integrated firms have been found to be able to borrow long-term funds more cheaply than those with exposure to risk (Greening, 1976, Chapter 1).

Country-based studies of the foreign-investment process have also regarded vertical MNEs as the outcome of failed arm's-length market transactions. Japanese companies became involved with extractive foreign investments only after the experience of having arm's-length suppliers renege on long-term contracts, and they also experimented with low-interest loans to independent foreign suppliers as a way to establish commitment (Tsurumi, 1976, Chapter 2).

<sup>10</sup> By "traditionally" we mean before the OPEC cartel became fully effective in the early 1970s. See Penrose (1968, pp. 46–50, 253–59), Greening (1976), and Teece (1976, Chapter 3).

### **Vertical Integration: Other Manifestations**

Some international vertical relationships illustrate not only the problems of contracting but also the payout when it works well. Writers on offshore procurement and the associated international trade commonly refer to the role of foreign investment in transplanting the necessary know-how and managerial coordination (Helleiner, 1973; Sharpston, 1975). Jarrett (1979, Chapters 7 and 8; also see Helleiner, 1979; and Lee, 1986). Jarrett explored statistically both the structural determinants of this type of trade and the role of MNEs in carrying it out. His data pertain to imports under a provision of the U.S. tariff whereby components exported from the United States for additional fabrication abroad can be reimported with duty paid only on the value added abroad. His statistical analysis explains how these activities vary both among U.S. industries and among countries taking part in this trade. His results confirm the expected properties of the industries that make use of vertically disintegrated production: Their outputs have high value per unit of weight, embody reasonably mature technology (so are out of the experimental stage), are produced in the United States under conditions giving rise to high labor costs, and are easily subject to decentralized production.<sup>11</sup> Among overseas countries, U.S. offshore procurement favors those not too far distant (transportation costs) and with low wages and favorable working conditions. With these factors controlled, the component flows increase with the extent of U.S. foreign investment, both among industries and among foreign countries.<sup>12</sup>

A considerable amount of vertical integration is also involved in the “horizontal” foreign investments described in Section 1.1, and the behavior of horizontal MNEs cannot be fully understood without recognizing the complementary vertical aspects of their domestic and foreign operations. Many foreign subsidiaries do not just produce their parents’ goods for the local market; they process semifinished units of that good, or package or assemble them according to local specifications. Pharmaceuticals, for example, are prepared in the locally desired formulations using basic ingredients

<sup>11</sup> Jarrett measured this last by the extent of multiplant operation of companies in the United States and by the extent to which U.S. producers depend on inputs purchased from other establishments in the same industry.

<sup>12</sup> If the presence of foreign investment is associated with offshore procurement, it should also be true that the factors influencing the proportion of U.S. imports that come from overseas corporate affiliates should include these same determinants of offshore procurement. This proposition is confirmed in Jarrett’s analysis (1979, Chapter 2) of related-party imports to the United States.

imported from the parent. The subsidiary organizes a distribution system in the host-country market, distributing partly its own production, but with its line of goods filled out with imports from its parent or other affiliates.<sup>13</sup> Or the subsidiary integrates forward to provide local distribution. These activities are bound up with the development and maintenance of the enterprise's goodwill asset, as described earlier, through a commitment of resources to the local market. The firm can thereby assure local customers, who are likely to incur fixed investments of their own in shifting their purchases to the MNE, that the company's presence is not transitory. This consideration helps explain foreign investment in some producer-goods industries for which the proprietary-assets hypothesis otherwise seems rather dubious (Tsurumi, 1976, Chapter 4).<sup>14</sup> All of these activities represent types of forward integration by the MNE, whether into final-stage processing of its goods or into ancillary services.

The evidence of this confluence of vertical and horizontal foreign investments mainly takes the form of case studies. It is emphasized in the study of foreign investments by West German enterprises by Fröbel, Heinrichs, and Kreye (1980, Chapter 12). It is implied by the extent of intra-corporate trade among MNE affiliates – flows that would be incompatible with purely horizontal forms of intra-corporate relationships. Imports of finished goods by Dutch subsidiaries from their U.S. parents (Stubenitsky, 1970, p. 102) are high (as percentages of the affiliates' total sales) in just those sectors where imports might complement local production for filling out a sales line – chemicals (24.9 percent), electrical equipment (35.4 percent), and transportation equipment (65.5 percent). The prevalence of intra-corporate trade in engineering industries also suggests the importance of components shipments (U.S. Tariff Commission, 1973, pp. 284, 314–20). The case studies of intra-firm trade in Casson and Associates (1986) showed the importance of this forward integration for innovative and complex manufactured goods.

Statistical evidence on U.S. exports and imports passing between corporate affiliates sheds light on this mixture of vertical and horizontal foreign investment. Lall (1978*b*) analyzed the factors determining the extent of U.S. MNEs' exports to their affiliates (normalized either by their total exports or by their affiliates' total production). He could not discriminate between two

<sup>13</sup> Nicholas (1983) emphasized vertical foreign investment in distribution, following upon failed arm's-length contracts, as a critical step in the development of many British MNEs.

<sup>14</sup> Also, Jarrett (1979, Chapter 3) found that the extent of foreign investment by U.S. industries increases with the percentage of their product lines deemed to require frequent or extensive sales or technical services to customers. This influence is significant with other influences such as advertising and research intensity taken into account.

hypotheses that together have significant force: (1) that trade is internalized where highly innovative and specialized goods are involved and (2) that trade is internalized where the ultimate sales to final buyers must be attended by extensive customer engineering and after-sales services. Jarrett (1979, Chapter 2; also see Helleiner and Lavergne, 1979) confirmed these hypotheses with respect to the importance in U.S. imports of inter-affiliate trade, which in his data includes exports by foreign MNEs to their manufacturing and marketing subsidiaries in the United States as well as imports by U.S. MNEs from their overseas affiliates. Jarrett also found evidence that inter-affiliate trade in manufactures reflects several conventional forms of vertical integration: More of it occurs in industries populated (in the United States) by large plants and companies, capable of realizing the scale economies accessible in the international disintegration of production, and in industries that carry out extensive multiplant operations in the United States.

Sleuwaegen and Yamawaki (1991) showed that the prevalence of Japanese foreign investment in U.S. distribution (relative to manufacturing) is greater for durable and heterogeneous goods that cannot be promoted to buyers simply through media advertising. The productivity of foreign investments in forward integrated distribution activities is shown directly by Yamawaki's (1991) finding that such investments in the U.S. distribution sector contributed substantially to increasing Japanese exports to the United States. As Williamson and Yamawaki (1991) showed, these investments get the foreign MNE over a substantial entry barrier into distribution that provides rents to manufacturers who surmount it.

The entwining of vertical and horizontal relations has important corollaries for the behavior of MNEs that will emerge in later chapters. For example, it suggests why the expansion of output by foreign subsidiaries can coincide with expansion of the parent's production for export to the same market. A purely horizontal relationship between parent and subsidiary implies that their outputs will be substitutes for one another, whereas the confluence of horizontal and vertical relations raises the possibility that they are complementary within the MNE. Evidence lending some support to this proposition will be reviewed in Chapters 2 and 5.

### **1.3. Portfolio Diversification and the Diversified MNE**

This section completes the typology of international multiplant firms by considering those whose international plants have no evident horizontal or vertical relationship. An obvious explanation of this type of MNE (though not the only one, it turns out) lies in the spreading of business risks. Going multinational in any form brings some diversification gains to the enterprise,

and these are increased when the firm diversifies across “product space” as well as geographical space.

### **Gains from Diversification versus Losses from Uncertainty**

Economic analysis normally assumes that individual investors are risk averse and hence seek to compose portfolios of assets so as to eliminate nonsystemic risks associated with particular securities (companies), leaving them to face only system-wide risks. For this purpose, the international diversification of portfolios holds an obvious attraction, although that process might be inhibited by various factors discussed in Chapter 6.

Given the diversification achieved by shareholders, the value-maximizing firm’s management selects a risk/return trade-off that values risk at the market price of residual, systemic risk (Greenberg, Marshall, and Yawitz, 1978). It is widely recognized, however, that firms might behave as if averse to risks specific to the enterprise itself. This behavior could result even with optimal principal-agent contracts between the firm’s owners and its manager because risks to the firm’s survival threaten its employees with large adjustment costs. Also, the firm as a working coalition of heterogeneous inputs – a characterization notably consistent with the standard model of the horizontal MNE – has a substantial organizational investment at hazard of obsolescence. The likely reaction of MNEs to opportunities for international diversification can be viewed against this background. On the one hand, individual foreign investments might be regarded as particularly risky. Risks arise in the behavior of host-country governments that in many ways can disfavor an alien firm lacking local support. Also, information on the host-country market is more costly to the foreign investor than to the native; even after rational investments in information, the MNE settles for incomplete knowledge and hence exposes its investment to a larger variance of expected outcomes. On the other hand, the firm that makes investments in several national markets should enjoy diversification gains, benefiting not only itself but also shareholders, if they are constrained from international diversification (Chapter 6). The larger variance of international projects fights against the lower correlation between the returns to the firm and the “market factor,” making it unpredictable whether investors will place a premium or a penalty on the MNE’s cash flows.

### **Empirical Evidence**

Now we consider empirical evidence on diversification as a motive for the MNE. Within a national economy, many shocks affect most firms rather

similarly – recessions, major changes in macroeconomic policy. Between countries, such disturbances are less closely correlated. Also, changes in exchange rates and terms of trade tend to favor business profits in one country while worsening them elsewhere.<sup>15</sup> Statistical evidence confirms that MNEs enjoy gains from diversification: The larger the share of foreign operations in total sales, the lower the variability of the firm's rate of return on equity capital (Cohen, 1972; Rugman, 1979, Chapter 3; Miller and Pras, 1980).<sup>16</sup> MNEs also enjoy lower levels of risk in the sense relevant to the stock market – financial risk (beta), according to Hughes, Logue, and Sweeney (1975), Thompson (1985), and Michel and Shaked (1986). Kwok and Reeb (2000) added an interesting perspective by showing that multinationality reduces risk (standard deviation of monthly market returns) for firms based in unstable and uncertain national economies while increasing it for those based in stable economic environments.

Other variables related to diversification and risk have also been analyzed. One of those is beta, which embraces both the variance of disturbances and the correlation of the firm's returns with the market factor. No sign is predicted for its relation to multinationality, and indeed opposite-sign results have been reported – negative for Hughes et al. (1975), Thompson (1985), and Michel and Shaked (1986), but positive in the article by Reeb, Kwok, and Baek (1998) which employs a larger data set than its predecessors. Another variable that should reflect the net influence of uncertainty and diversification is the debt ratio (debt/assets). Earlier articles summarized by Chkir and Cosset (2001) found debt ratios negatively related to firms' extent of multinational activity, implying a predominance of variability of disturbances in foreign markets. Burgman (1996) similarly concluded that debt ratios of domestic firms and MNEs are driven by different determinants, and that MNEs' debt ratios are depressed by large uncertainties such as political and exchange-rate risks.

Jacquillat and Solnik (1978) investigated the degree to which large MNEs based in Europe and America can be regarded as “walking mutual funds” that are diversified across national economies. They found that the rates of return on the market values of their firms' equity shares are still quite closely tied

<sup>15</sup> See Rugman (1979), especially Chapters 2 and 4.

<sup>16</sup> Miller and Pras (1980) found that the variability of operating income for U.S. MNEs is negatively related to both their sizes and the numbers of foreign countries in which they have subsidiaries; they also concluded that being diversified among heterogeneous regions offers more stabilization than being in closely similar countries. Oddly, with these influences controlled, they did not find significant stabilization of profits due to the companies' exports and their product-market diversifications in the United States.

to economic conditions in their national home markets, except the MNEs based in the smaller European countries. In general, this evidence supports the hypothesis that the MNE attains appreciable international diversification. However, the diversification might result from investments that were propelled by other motives; whether foreign direct investment yields diversification gains for which shareholders will pay is considered in Chapter 6.

MNEs' productivity and efficiency could be affected by international diversification under congenial conditions, although the counterbalanced forces already noted deny access to any clear predictions. Hitt, Hoskisson, and Kim (1997) is a recent addition to studies of multinationality's relation to accounting profitability (return on assets, equity, and sales). Its authors found that international diversification appears to have an internal optimum, with profits lowered for the firm operating in too many or too few countries. Baek (2004) investigated another performance measure – the firm's productive efficiency (its productivity relative to an estimated frontier defined by the most efficient firms). For a large sample of U.S. firms, he found that efficiency is positively related to international diversification.

### **Geographic and Product Diversification**

Further evidence on MNEs' diversification can be found in specific transactions with potentials for spreading risk. The most diversification should accrue to the MNE that acquires a foreign subsidiary diversified in product line as well as geographical space. If diversification promotes foreign investment, we should find some of this "double diversification" in MNEs' structures. Early surveys (Barlow and Wender, 1955, p. 159) asserted that diversified foreign investment is a rare phenomenon. Caves (1975) and Dubin (1976, Chapter 6) found statistical evidence that MNEs' activities are more diversified among products on their national home ground than in foreign subsidiaries, confirming the impression from surveys (Dunning, 1958, pp. 115–18; Safarian, 1966, p. 211; Saham, 1980, pp. 172–75). Apparently, the extra costs and risks of adding activities abroad look unappetizing to the firm that seeks diversification from whatever source;<sup>17</sup> also, minor related products in the firm's line tend to get made at the home base.

<sup>17</sup> If foreign investment typically had diversification value that offset its specific risks, we should expect MNEs to accept lower expected rates of return on foreign investments than on domestic investments. But survey evidence, such as that of Barlow and Wender (1955, p. 114), points to a higher minimum for foreign investments.

Nonetheless, diversifying in domestic product markets and investing abroad are alternatives for mature companies (Caves, 1975; Wolf, 1977) even though in uncontrolled samples the larger and more mature firms will have expanded in both directions (Pearce, 1993). Also, specifically diversified foreign investments are growing more numerous. Kopits (1979) found that the diversified foreign investment of U.S. MNEs in 1968 was positively related to the extent of R&D activities in the U.S. base industry of the parent (company size and seller concentration were also controlled in this regression analysis but did not prove significant). The result agrees with the hypothesis that a firm's research activities often produce proprietary assets useful outside its base industry; these should lead to international diversification, just as they promote diversification at home (also see Pearce, 1993). In this vein, Hisey and Caves (1985) analyzed a sample of international acquisitions by U.S. companies that could be classified as either related or unrelated diversifications relative to the acquirers' U.S. activities. The unrelated ones are significantly associated with risk-spreading properties, the related ones only weakly with spillovers of proprietary assets among product markets. Kim, Hwang, and Burghers (1993) undertook an elaborate analysis of the means and standard deviations of U.S. MNEs' returns on assets in the 1980s, estimating how each firm's risk/return pattern differs from that of its (U.S.) industry and relating the residuals to the properties of the firms' diversification patterns. They found (consistent with Hisey and Caves) that highly geographically diversified MNEs had apparently located an attractive niche of high returns coupled with low risks. Other groups of MNEs reveal the trade-off normally expected: either low risks and returns (with high unrelated product diversification but low diversification of other types) or high risks and returns (with high related and low unrelated product diversification). Davies, Rondi, and Sembenelli (2001) studied the prevalence of product and geographic diversification of large European Union firms, seeking evidence of either substitution or complementarity in these two types of diversification. Overall, neither could be detected; their most interesting result was that firms based in differentiated product industries tend to diversify in both directions – consistent with the properties of proprietary assets.

Some other hypotheses not covered in this statistical analysis also help to explain MNEs' diversification. MNEs in the United States make a somewhat larger proportion of diversified foreign investments in developing countries than in developed countries. This is probably due to controls imposed by governments on the remittance of profits by MNEs operating within their boundaries; restricted from repatriating its profits, the MNE's best



alternative might be to invest in some diversifying activity within the country. Another explanatory factor is the large wave of conglomerate mergers that took place in the United States in the 1960s and 1970s. Suppose that firm *B*, either a horizontal or a vertical MNE, is acquired by the larger firm *A*. If *A*'s base industry remains the principal activity of the merged firm, *B*'s overseas assets will appear to be a diversified foreign investment of the merged firm. Or if *A* diversifies domestically, whether by merger or otherwise, its diversified domestic division might later sprout a horizontal foreign subsidiary, making the firm as a whole appear (to the statistician) diversified internationally.<sup>18</sup>

### 1.4. Summary

The existence of the MNE is best explained by identifying it as a multiplant firm that sprawls across national boundaries, then applying the transaction-cost approach to explain why dispersed plants should fall under common ownership and control rather than simply trade with each other (and with other agents) on the open market. This approach is readily applied to the horizontal MNE (its national branches produce largely the same products) because the economies of multiplant operation can be identified with use of the firm's proprietary assets, which suffer many infirmities for trade at arm's length. This hypothesis receives strong support in statistical studies, with regard both to intangible assets and to capabilities possessed by the firm. Foreign investments also take place to augment the investor's proprietary assets via leakage from host countries.

A second major type of MNE is the vertically integrated firm, and several economic models of vertical integration stand ready to explain its existence. Once again, the transaction-cost approach holds a good deal of power because vertical MNEs in the natural-resources sector seem to respond to the difficulties of working out arm's-length contracts in small-numbers situations where each party has a transaction-specific investment at stake. Evading problems of impacted information also seems to explain some vertical foreign investment. The approach also works well to explain the rapid growth of offshore procurement by firms in industrial countries, which involves carrying out labor-intensive stages of production at foreign locations with low

<sup>18</sup> For evidence, see Horst (1974a, pp. 110–11). That overseas diversification represents some kind of optimizing global calculation is suggested by Gorecki's finding (1980) that the diversification levels of Canadian domestic firms can be explained by Canadian market variables, whereas the diversification levels in Canada of foreign subsidiaries operating there cannot.

labor costs. Although procurement occurs through arm's-length contracts as well as foreign investment, the role of foreign investment is clearly large. Finally, numerous vertical transactions flow between the units of apparently horizontal MNEs as the foreign subsidiary undertakes final fabrication, fills out its line with imports from its corporate affiliates, or provides ancillary services that complement these imports.

Diversified foreign investments, which have grown rapidly in recent decades, suggest that foreign investment serves as a means of spreading risks to the firm. Foreign investment, whether diversified from the parent's domestic product line or not, apparently does offer some diversification value, but it may face a larger variance of outcomes on the world market. For attracting risk-averse investors from domestic investments, the MNE's more uncertain outcomes trade against its lower correlation with the market factor. Diversified foreign investments can be explained in part by the parent's efforts to use its diverse R&D discoveries and certain other influences as well. However, other diversified investments appear specifically aimed at spreading risks through international diversification, especially among geographic markets.

## The MNE and Models of International Economic Activity

In Chapter 1, we presented a microeconomic view of the multinational enterprise (MNE) based on the theory of economic organization. Yet foreign direct investment was traditionally a concern of international economics, a branch disposed to use general-equilibrium tools for explaining economy-wide or worldwide phenomena: nations' patterns of commodity trade, the allocation of their endowments of factors of production, and the functional distribution of income. Does international economics offer a distinctive and sufficient explanation of MNEs to place against the organizational explanation from Chapter 1? If so, which has the more explanatory power? If not, how can organizational models of the MNE be consistently embedded within models of international production and exchange?

### 2.1. Foreign Direct Investment and International Capital Flows

The key junction between international economics and the MNE is the export of equity capital that occurs when a company starts a foreign subsidiary. International flows of capital are a central concern of international economists, who long explained the MNE as simply an arbitrageur of equity capital from countries where its return is low to countries where it is high. If the differing rates of return to capital that induce these movements correspond to differences in the social marginal productivity of capital, then the MNE's activity also raises the world's real income.

This approach ties the MNE to a considerable body of general-equilibrium theory about the interrelationships of international trade, international movements of factors of production, and the distribution of income (see Section 2.3). Furthermore, this body of theory has many empirical implications: MNEs should be based in the countries best endowed with capital (where its domestic marginal productivity is therefore the lowest).

They should move capital toward the countries least well endowed with capital (with, presumptively, the highest marginal products of capital). However, the theoretical role of the MNE as a capital arbitrager was neither developed analytically nor tested empirically. This tranquil, if unsatisfactory, situation was assaulted by Hymer (1960), who argued that the capital-arbitrage hypothesis was inconsistent with several obvious patterns in the behavior of MNEs:

1. The United States was long a net exporter of foreign direct investment but net importer of portfolio capital. How could equity capital be cheap and portfolio capital dear in the United States, relative to the rest of the world, unless American investors were exceptionally keen to take risks?
2. MNEs move in both directions across national boundaries, and some countries are both home bases for many MNEs and hosts to many subsidiaries controlled abroad. If MNEs merely arbitrage capital, then rates of return to capital must be high in some industries in each country and low in others. How could this pattern arise unless national capital markets are balkanized?
3. If foreign direct investment were pure arbitrage of capital, large financial intermediaries should be prominent participants. However, non-financial companies make up most of the crowd, and the profits that they earn in particular markets hardly have an intimate relationship to the long-term rate of interest – which should represent a nation's marginal product of capital.

Hymer not only deked the capital-arbitrage explanation for foreign direct investment but also laid the foundations for a microeconomic explanation of the MNE by pointing out that they are not randomly distributed among industries and that competitive conditions, in particular product markets, clearly influence foreign investment. His and subsequent microeconomic explanations of foreign direct investment still assume that the MNE goes abroad to raise its total profit, but they recognize that differences between countries in some overall marginal product of capital are neither necessary nor sufficient. Specifically, the capital-arbitrage hypothesis runs into trouble on two points.

First, an international difference in expected profits does not suffice to induce foreign direct investment. Suppose that a given industry in each of two countries is organized on the classic model of pure competition. Let demand for the industry's product increase abroad, so that the price rises there and the existing firms make excess profits in the short run. Do the firms

in the domestic industry now turn themselves into horizontal MNEs? The proprietary-assets model of Chapter 1 says no. A purely competitive industry has ample new local entrants to compete down the windfall profits in the foreign market. And purely competitive firms by definition lack any unique rent-yielding assets that offset the intrinsic disadvantages and transactions costs of operating in a foreign environment. As Hymer (1960, Chapter 1) and Kindleberger (1969, Chapter 1) argued, MNEs are logically incompatible with purely competitive organization of an industry. Something else must account for the rise of MNEs, so the capital-arbitrage hypothesis is not sufficient. Hufbauer (1975, pp. 261–63) showed formally that foreign investment depends on demand elasticities and production-function parameters, not just capital-cost differences.

One can also argue that the capital-arbitrage hypothesis is not necessary. From habits of thought and accounting, we identify the rents earned by proprietary assets as excess returns to capital. However, they are pure rents (or quasi rents) that are tied to capital only in the sense that risks associated with their use and transfer are borne by equity capital. That function is consistent with equity capital earning the same (risk-adjusted) return in all uses in every country.

For these reasons, the capital-arbitrage hypothesis was swept from the field by the transaction-cost approach set forth in Chapter 1. Empirical investigations resting solely on the arbitrage hypothesis accordingly have not fared well. Capital intensity per se is never a significant predictor of which industries are prone to heavy involvement with foreign direct investment.<sup>1</sup> When the flow of foreign investment from the United States to Europe increased considerably from the 1950s to the 1960s, D'Arge (1969) and Bandera and White (1968) sought to determine whether this increase corresponded to an increase in the profit rate on U.S. investments abroad relative to that at home. They found the statistical relationship insignificant or even perverse: The foreign profit differential seemed to fall just as foreign investment was increasing. However, that pattern naturally reflects the low short-run cash-flow profits expected for new foreign investments: Some subsidiaries fail in these risky ventures, and others run substantial shake-down losses.<sup>2</sup> Rapidly increasing foreign investment raises the proportion

<sup>1</sup> There is no difference in capital intensity between foreign-investing sectors and others in either source countries (U.S. Tariff Commission, 1973; Juhl, 1979) or host countries. (O'Loughlin and O'Farrell, 1980, did find MNEs in the more capital-intensive Irish industries, but they are no more capital-intensive than Irish firms in those industries.)

<sup>2</sup> This pattern has been suggested by many surveys such as Ågren (1990) and demonstrated statistically by Lupo, Gilbert, and Liliestedt (1978). See Caves (1995).

of the population of subsidiaries that is young and still in the shakedown period or fated to exit, and average accounting profits appear to be falling. Better-controlled studies have confirmed the expected positive relationship of foreign investment to profit differentials; at the same time, theoretical research on corporate finance has shown that the risk-averse MNE need not do all its borrowing in the cheapest place (see Chapter 6). Finally, Wilkins (1986) examined the histories of some MNEs that had operated purely as arbitragers of finance and showed their success rate to be negligible. Clearly, the capital-arbitrage hypothesis, without something more, is neither satisfying theoretically nor confirmed empirically.

Nonetheless, once we accept the necessary role of the transaction-cost approach, international economics helps in several ways to explain the existence and behavior of MNEs and evaluate their normative implications. Section 2.2 is concerned with the relationship between exporting and direct investment at the level of the individual enterprise. Section 2.3 takes up general-equilibrium models that are useful for understanding the causes and consequences of MNEs. Section 2.4 considers the relevant empirical evidence on the distribution of MNEs' activities among countries.

## 2.2. Exporting or Foreign Direct Investment?

This section develops an important extension of the proprietary-assets model from Chapter 1. The firm equipped with such an asset enjoys several possible ways to claim rents in a foreign market. The product embodying the asset can be produced by a foreign subsidiary for local sale. It can be licensed for local production by an independent firm. Or it can be produced in the asset-holding firm's base location and exported. The proprietary-assets model thus identifies exporting and direct investment as alternative strategies for the potential MNE. An immediate corollary is that forces restricting trade encourage foreign investment where it is an option. Tariffs protecting a national market from imports therefore encourage direct investment.

### Theoretical Models of the Firm's Decision

The behavior of the profit-maximizing MNE in the face of tariffs was worked out by Horst (1971; see also Copithorne, 1971), and a simple version of his analysis is presented here (based on Horst, 1973).<sup>3</sup> Assume that the MNE can sell its product in two countries, Home and Foreign, and faces a

<sup>3</sup> Also see Hirsch (1976) and Rugman (1980*b*, Part 1).

downward-sloping demand curve in each market. Its costs of production in each country depend on the amount produced there, and we are interested in cases of both diminishing returns (marginal costs increase with output) and increasing returns (marginal costs decline as output increases). The firm is assumed to maximize its total profit. Home is the MNE's base, and Figure 2.1 is constructed so that the firm will always maintain production there; the question is whether it supplies Foreign by export or local production. Panel A of Figure 2.1 shows the market in Home and the firm's marginal cost ( $c_1$ ), demand ( $p_1$ ), and marginal revenue ( $r_1$ ) curves. If it sold only in the domestic market, it would produce the quantity indicated by the intersection of  $r_1$  and  $c_1$ . Panel C similarly shows demand conditions in Foreign and the firm's marginal cost function ( $c_2$ ) if it becomes a MNE and undertakes production. Panel B contains a construction that brings this information together. First, if the firm starts to export from Home, it will incur rising marginal costs as output expands and higher marginal revenue as the number of units sold to Home's buyers contracts. Suppose (contrary to assumption) that the firm faced a fixed price of  $M$  at which it could sell abroad. Then it would choose to produce  $Q_1$  in 1, selling  $S_1$  of it at home and exporting  $S_1 Q_1$ . The domestic price would become  $P_1$  instead of the lower price that would prevail if there were no exports. Curve  $c_x$  in panel B is what Horst calls the marginal cost of exporting from the home country, and it illustrates the quantity that would be exported for each price like  $M$ . From panel C, we derive an analogous construction by allowing the firm to import various quantities of its product for resale at prices such as  $M_t$ . If  $M_t$  is less than the firm's no-imports level of marginal cost in local production, it transfers some imports, cutting back its local production and expanding its sales. Given  $M_t$ , the firm would produce  $Q_2$  locally, sell  $S_2$ , and import  $Q_2 S_2$ . The lower is  $M_t$ , the larger are its imports, and the more does its production in Foreign contract (eventually disappearing). By experimentally varying  $M_t$ , we construct the schedule  $r$  in panel B, which is the marginal revenue from importing into Foreign.

Only one more step is needed to complete this construction. Assume that Foreign imposes a tariff that elevates the delivered price of imports over their foreign price by an amount indicated by the shift from  $c_x$  to  $c_x + t$  in panel B.<sup>4</sup> Now we have constructed schedules showing the firm's marginal revenue from importing ( $r_m$ ) and its tariff-adjusted marginal cost

<sup>4</sup> This potential flow of exports, of course, is trade within the MNE, and so there may be no identifiable market price. That may be a problem for the tariff collector if  $t$  is expressed as an ad valorem tariff. Transfer pricing will be discussed in Chapter 8.

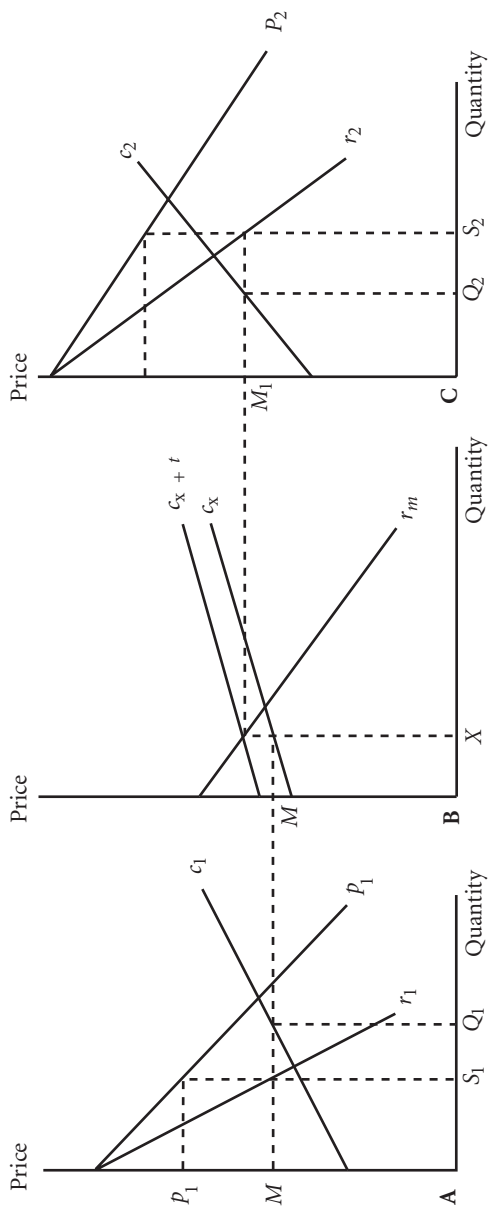


Figure 2.1. Revenue and cost functions in Home country. B: Intra-firm trade. C: Revenue and cost functions in Foreign country.



of exporting ( $c_x + t$ ). Just as it sets its domestic price in each market by selling the quantity that equates marginal revenue and marginal cost, so does it determine the amount of intra-corporate exports. Equilibrium exports are  $X$ , and the quantities sold ( $S$ ) and produced ( $Q$ ) are shown in the Home and Foreign markets.

As Figure 2.1 is drawn, the firm serves Foreign partly by local production and partly through exports from Home. If Foreign raises its tariff, the MNE responds by increasing its local production and reducing its exports. But the MNE's locational decisions also reflect the difference in real costs between the two markets – the classic forces of comparative advantage (as costs affect the production pattern for the country as a whole) and absolute advantage (as these costs appear to producers in a particular industry). One other factor influences the outcome: The MNE cannot set prices in the two national markets so different that other parties find that it pays to arbitrage between them.

Horst also explored the case in which the MNE enjoys scale economies in production, so that the marginal cost curves slope downward rather than upward. In that case, the firm will not both produce in a market and transfer exports to it. It might produce only in Home and export to Foreign, produce only in Foreign and export to Home, or produce in both but not export. Suppose that the firm initially produces only in Home. Foreign then imposes a high tariff. The firm might find that Foreign's market is most profitably served entirely by local production. Indeed, it might even shift *all* of its production to Foreign, serving Home's market with imports from Foreign (this would depend on Home's tariff). Another consequence of scale economies is that where the MNE locates its production depends not just on tariffs and absolute advantage in production costs (at any given scale) but also on the sizes of Home's and Foreign's national markets. Make Home a large market and Foreign a small one. The firm could rationally locate all its production in Home, serving Foreign through exports, even though Foreign has an absolute advantage in production costs at any given scale. For this pattern to emerge, home must impose a tariff high enough to discourage the location of all the firm's production in Foreign.<sup>5</sup>

Horst's partial-equilibrium approach was extended in a series of articles by Horstmann and Markusen (1987a, 1987b, 1992). They represented the MNE's proprietary-asset advantage by assuming that the firm incurs a fixed cost of operation as a company ( $F$ ) and another fixed cost ( $G$ ) for a plant in

<sup>5</sup> Accordingly, research on production scales in Canada often has blamed the small scales prevailing there in part on the U.S. tariff (Wonnacott and Wonnacott, 1967).

any national location; a potential local competitor in a host country must incur  $F + G$  to start production, but the MNE must incur only  $G$ . Horstmann and Markusen (1992) developed the implications of Horst's decreasing-cost case, showing how the relative sizes of  $F$ ,  $G$ , variable production cost, and trade costs (transport and tariffs) can determine whether a two-country world industry consists of two single-plant exporting firms, one MNE with two plants, or two MNEs. (Other results of Horstmann and Markusen will be noted subsequently.) In a similar article, Motta (1992) showed how unexpected shifts in the organization of such a world industry can occur as the size of the host country's market exogenously increases. Also, Ethier (1986) focused on the fact that the MNE's operation intrinsically requires incurring costs in two different countries (the proprietary asset in one, the good embodying it in another, when trade is infeasible). The MNE's configuration can then be deterred when cost structures differ too much between the two countries, rendering unprofitable this two-stage process that starts with investment in the proprietary asset.<sup>6</sup>

### **Exports and Foreign Investment: Joint Determinants**

If the (potential) MNE chooses the cost-minimizing way to serve any profitable foreign markets, then it should take simultaneous account of all the factors favoring the one or the other. Anything that favors foreign investment (such as tariffs) discourages the use of exports, and vice versa. As was noted in Chapter 1, many cross-section statistical studies of the determinants of foreign direct investment took some account of factors affecting the alternative flows of exports.<sup>7</sup> Others more properly regarded exports and foreign investment as jointly determined variables or analyzed determinants of the *relative* use of exporting and local-market production through affiliates.

Horst (1972a) originated this methodological approach, and Swedenborg (1979), used data on Swedish exports and foreign investment to provide a

<sup>6</sup> Itagaki (1987, 1991) developed the implication of risk aversion for the MNE's investment choice when foreign investment involves incurring first a fixed and then a variable production cost in a foreign market subject to a random outcome.

<sup>7</sup> Tariffs and other trade-related variables proved statistically insignificant in many of these studies. The misspecification of the model from not endogenizing exports is no doubt one explanation, but another misspecification is also common: relating the stock of foreign investment at a given time to tariff rates at that time. When foreign investment has accumulated over many years and is subject to sunk costs, it can appear unrelated to tariffs (or other current determinants of trade flows), even if that causal relation was active when the original investments were made. Studies that analyzed flows rather than stocks of foreign investment have been more successful (e.g., Caves and Mehra, 1986).

thorough application. She found that those Swedish industries with high levels of foreign investment tended also to have high levels of exports. However, the ratio of exports to total production for Swedish industries and the ratio of foreign production by subsidiaries to Swedish domestic production were influenced in opposite ways by certain forces. Notably, she found that industries whose plants are capital intensive and exhibit extensive economies of scale tend to export rather than invest abroad. She also concluded that both exports and foreign production are positively related to R&D activities and workers' skill levels in Sweden – indicators of the importance of proprietary assets. This finding agrees with various studies summarized in Chapter 1. An article that is methodologically noteworthy in this literature is Grubert and Mutti (1991a), who demonstrated the appropriate use of exogenous policy instruments – host-country corporation income tax and tariff rates – to identify the models determining U.S. foreign investment in and exports to various host countries.

Other studies have confirmed and extended these results. Horst (1972a) found that the ratio of U.S. MNEs' exports to Canada divided by local sales by their subsidiaries was higher the smaller was the Canadian market relative to that of the United States, presumably indicating the deterrent effect of scale economies on Canadian production. Girma, Kneller, and Pisu (2005) reached the related conclusion that U.K. firms show a strong ranking by productivity. MNEs average highest in total factor productivity, followed by firms that export (but no foreign investment), with domestic firms last. Again, scale economies in foreign investment require a large advantage to get into the game. Buckley and Pearce (1979) analyzed the exports and foreign-subsidiary sales of the world's largest manufacturing enterprises, noting that those most active in exporting and least active in foreign investment are based in sectors with the greatest apparent scale economies. Their data also confirm Horst's theoretical finding that scale economies can pull the MNE's production abroad rather than concentrating it at home. MNEs in some small countries (Benelux, Switzerland) exhibit high ratios of foreign-subsidiary sales to total sales (Sleuwaegen, 1988). Many studies have confirmed this finding indirectly by demonstrating that minimum efficient scale puts a lower bound on the size of the foreign investment transaction.<sup>8</sup> Andersson and Fredriksson (1993) demonstrated another aspect of this scale-efficiency effect: Foreign subsidiaries of large MNEs export more,

<sup>8</sup> For example, in the smaller industrial countries, foreign subsidiaries are on average larger than their national-firm competitors (Caves et al., 1980, Chapter 4, on Canada; Deane, 1970, pp. 64–65, on New Zealand; O'Loughlin and O'Farrell, 1980, on Ireland).

the fewer the countries in which their parents have subsidiaries. Presumably, the relationship reflects variation in the extent of scale economies and the incentive to locate production close to the site of consumption or use.

Recent research on foreign investment and competing exports has benefited from richer data (available over time, not just in cross section) and an improved theoretical framework (use of the gravity model to specify the determinants of trade). Exploiting these advances, Clausing (2000) confirmed the pervasive positive relationship between foreign investment and trade flows – a complementarity widely suspected of being a statistical artifact. She also separated trade flows within MNE organizations from trade between arm's length parties, finding the positive relationship between foreign investment and trade even stronger in the intra-firm trade. However, the effect of foreign investment on inter-firm trade has recently turned negative, for which Clausing suspected tariff-jumping foreign investment (discussed subsequently). Head and Ries (2001) explained the degree to which vertical links (supply of inputs and components; investment in the distribution sector) could account for the positive trade-foreign investment relationship. Blonigen (2001), analyzing U.S. imports of auto parts from Japan, concluded that substitutability is strongly evident between import and U.S. production. Belderbos and Sleuwaegen (1998; also Belderbos, 1997) reported similar results for Japanese electronics producers' exports to and production within the European Union. Other such narrowly defined consumer goods also showed substitution. More aggregated analyses have likely been picking up the diversifying activities of large MNEs (see Section ). Swenson (2004) analyzed U.S. inflows of imported goods and foreign investment that she disaggregated in varying degrees (though less than Blonigen's), concurring that complementarity prevails only in more aggregated data. The most thorough study of intra-firm trade in intermediate goods is that of Hanson, Mataloni, and Slaughter (2005), whose statistical analysis undertook to explain individual affiliates' imports for further processing from their U.S. parents. The explanatory variables are what a cost-minimizing vertical MNE would choose: low wages for unskilled labor (although high wages for skilled labor) and low trade costs and taxes. The size of the host country's market is a negative influence because it promotes horizontal configurations of foreign investment.<sup>9</sup>

Other results link the relationship between exports and foreign investment to specific structural differences among industries. S. Lall (1980) found that

<sup>9</sup> R. Svensson (1996), working with data on Swedish multinationals, also found complementarity between affiliates' production abroad and parents' exports of intermediates.

the ratio of U.S. MNEs' exports to the sum of their exports and foreign-subsidary sales increases with the importance of their R&D expenditures, but it is inversely related to the importance of advertising expenditures: High advertising levels indicate traits of buyers' behavior that encourage local production and discourage serving the market from abroad.<sup>10</sup> Kravis and Lipsey (1992) confirmed these results and added labor intensity as a negative factor. Caves et al. (1980, Chapter 4) analyzed imports into Canada and subsidiaries' shares in the Canadian market as jointly determined parts of a larger cross-section model. They reported at least weak evidence that advertising intensity discourages imports and encourages direct investment (see also Owen, 1982); scale economies (inferred from U.S. production patterns) favor imports, whereas tariffs and transportation costs deter them (the statistical significance of these last findings is marginal).<sup>11</sup> However, the R&D level is positively related to both exports and foreign investment, a finding echoed by Buckley and Pearce (1979) and S. Lall (1980). Head and Ries (2003) introduced another industry-level factor in the productivity differences (total factor productivity) among firms in individual industries. They expected that exporting firms would average more productive than home-market companies, foreign investors more productive still. In their large sample of Japanese firms, the pattern was only weakly present. However, when relative firm size replaces firm productivity, an appropriate shift where scale economies are likely present, the predicted pattern is evident, though still with limited statistical significance.

Brainard (1997) provided a capstone to this line of cross-section research with an investigation of flows of trade and subsidiaries' sales in both directions between the U.S. and twenty-seven other countries in sixty-four industries in 1989. For the typical country/industry cell, she found that sales by subsidiaries of U.S. MNEs (as a proportion of those sales plus U.S. exports) increase significantly with the cost of transporting goods between the United States and the foreign country, tariff protection of the foreign market, and

<sup>10</sup> The extent to which intangible proprietary assets should favor foreign investment depends on the security of the property rights given them in the host country. P. J. Smith (2001) tested this, finding that strong property rights reduce exports to the host (not statistically significant) while raising direct investment and raising licensing even more.

<sup>11</sup> Plant scale economies, however, could support a positive relationship between foreign investment and trade. Consider the firm facing a stochastically growing world demand. Supplying bursts of demand growth abroad could be through imports pending expansion of foreign plant capacity (Rob and Vettas, 2003). This practice could produce long-run though not short-run complementarity between trade and investment. Empirical evidence from the chemical processing industries seems to confirm this pattern.

the host nation's openness to foreign direct investment. They decrease with production scale economies and recent appreciation of the host's currency relative to the U.S. dollar. R&D levels in the United States and physical distance strongly affect whether *some* subsidiary sales are recorded for a country/industry cell, but they do not appear in the model of the subsidiaries' sales share. For flows into the United States, the same relationships generally hold. Brainard regarded these findings as strongly confirming the MNE's trade-off between the cost saving from concentrating production at one location and the artificial and natural transportation cost that such concentration entails.

### **Inter-Affiliate Trade**

Much research has addressed trade flows within MNEs (intra-firm or inter-affiliate trade – see Hipple, 1990, and UNCTC, 1988*b*, p. 92, on its importance). The clearest approach to inter-affiliate trade is as vertical integration in vertical MNEs, and Hanson et al. (2005) demonstrated its considerable explanatory power. However, the empirical literature points to other rules played by inter-affiliate trade. Zejan (1989) studied the imports by Swedish MNEs' subsidiaries from their parents (normalized by the subsidiaries' sales), finding that they decrease with the proportion of the parent's global assets that are located outside of Sweden; this relationship can reflect simply the degree to which the parent has substituted host-country production for production in Sweden as the way to serve local markets. Similarly, a foreign subsidiary's dependence on imports from its parent increases with the parent's capital intensity, an indicator of the degree to which scale economies deter the decentralization of production (Zejan's own interpretation of these results is rather different). Zejan, like nearly all other researchers, found intra-firm trade to increase with the parent's research intensity, presumably indicating the parent's disincentive either to decentralize production of innovative goods (see Chapter 7) or to trade them at arm's length. Sleuwaegen (1985) traced the positive influence of R&D intensity on inter-affiliate trade in both intermediate and final goods.<sup>12</sup>

Another general finding is that subsidiaries are more likely to be involved in exporting and/or importing than are comparable domestic host-country enterprises (e.g., van den Bulcke, 1985, pp. 271–72; MacCharles, 1987;

<sup>12</sup> Also see Pearce (1993, Chapter 3) and Siddharthan and Kumar (1990). Benvignati (1990) is an exception, but she did not control for the extent of (U.S.) parents' assets placed abroad to receive the intra-firm trade.

Willmore, 1992).<sup>13</sup> A sufficient explanation is that multinationality lowers the fixed cost of engaging in international transactions, which presumably exceeds that of establishing a comparable flow of transactions in the business's domestic market. Whether the involvement entails exporting, importing, or both depends on the business's activity (within its MNE's family of affiliates) interacting with the nation's comparative advantage structure. The heavy participation of foreign subsidiaries in trade and the complementarity of inter-affiliate trade with their local production (and sales) activities is well established. Swedenborg (1985, pp. 233–36) showed that Swedish exports to foreign affiliates increase significantly with the affiliates' production, while Swedish exports to unaffiliated parties decrease with the affiliates' output.

Inter-affiliate trade attracted the rather ill-conceived hypothesis that it would adjust tardily to short-run disturbances, compared with inter-firm trade because of the bureaucratic sloth of large enterprises. One could just as well hypothesize more rapid adjustments as a corollary of efficiently internalized transactions. Rangan and Lawrence (1993) demonstrated the responsiveness of intra-firm trade to exchange-rate movements. Rangan (2000) indeed argued that the fixed cost associated with a firm's multinational status is partly a prepaid "trade cost" that brings it information at little marginal cost. Goldsbrough (1981) noted that intra-firm trade flows are likely to involve more distinctive and less substitutable goods than arm's-length trade, so that it should differ not in its elasticity but in its predictability; that hypothesis was confirmed.<sup>14</sup>

### **Differences in Production Costs: Comparative Statics**

The MNE's decision where to locate production should be determined by differences among candidate locations in production costs (converted to a common currency). This hypothesis has not been much tested, perhaps because it is obvious, perhaps because appropriate unit-cost data are seldom available. The hypothesis is a bit less obvious than it seems. For many reasons, the minimization of production costs can diverge from the maximization of profits. Maki and Meredith (1986) pointed out that MNEs might transfer production from a low-cost to a high-cost location if their proprietary assets embrace the ability to transfer their source-country cost advantages.

<sup>13</sup> Similarly, studies have noted that foreign direct investments in several industrial countries tend to concentrate in industries that export heavily (Driffield and Munday, 2000).

<sup>14</sup> There have also been studies indicating that MNEs' total trade flows are no less sensitive to macroeconomic variables than those of domestic firms (Blomström and Lipsey, 1993; Lipsey, 1993). It is not obvious why any difference should be expected.

Maki and Meredith's measurement of cost advantages is biased in favor of this hypothesis, so their confirmation of it should be discounted, but the possibility remains that proprietary assets' effects might swamp nominal cost differences. The most useful evidence on cost differences and location choices comes from studies of changes due to exchange-rate movements. Cushman (1985; also Batra and Hadar, 1979) showed that how exchange-rate changes affect foreign investment depends on the activity that the subsidiary will undertake: Permanent depreciation of the host's currency encourages investments in facilities to produce exports from the host and discourages investments in fabricating externally sourced inputs to supply the host market, while temporary depreciation encourages arbitrage-type transactions.

Empirical research on actual changes in nominal or real effective exchange rates has generally confirmed that depreciation of a host-country's currency encourages foreign-investment inflows while depreciation of a source country's discourages outflows. Goldsbrough (1979) found that foreign-investment inflows and outflows of the major industrial countries depend significantly on movements of relative exchange-rate adjusted unit labor costs. Caves (1989) observed that, among source countries, flows from the smaller and newer foreign investors were more sensitive to the dollar exchange rate than were established investors engaged mainly in plowing funds back into existing foreign investments. Others who confirmed exchange-rate sensitivity include Kohlhagen (1977), Ray (1989), and Brainard (1997).

### **Evidence on Tariffs and Foreign Investment**

A great deal of survey and anecdotal evidence confirms the influence of tariffs on MNEs' location decisions, not least because many trade restrictions have sought just that result. Countries such as Canada and Australia used tariff increases to encourage the growth of local production. Firms that had established markets for their exports then found it more profitable to establish production facilities behind the tariff wall than to write off their investment in the local market or continue to serve it from lower-cost locations abroad. This pattern was confirmed in numerous studies, such as those of Brash (1966, Chapter 3), Deane (1969), Saham (1980, pp. 69–70), Nicholas (1986), and Ågren (1990). Studies of import restrictions by the United States repeatedly conclude that they induce large inflows of foreign investment, sometimes on the basis of mere threats of protection (Burton and Saelens, 1987; Yoffie, 1993). Wilkins (1974, pp. 172–73) found the effect operating even in the depths of the depressed 1930s, when foreign countries



elevated tariffs by enough to cause many U.S. MNEs to create or expand subsidiaries behind the tariff barriers. The influence has been confirmed in some statistical studies of the shares of host-country markets held by MNEs through exports and through local production. The higher the host country's tariff protecting the industry, the larger the fraction of MNEs' sales should be accounted for by local production. Horst (1972a) reported this result for U.S. exports to Canada,<sup>15</sup> and Swedenborg (1979, Chapter 5) confirmed the finding for Swedish exports and foreign investment. Brainard (1997) provided a broad confirmation for U.S. inflows and outflows.

Many developing countries have followed the policy of attracting MNEs first with tariff protection and quantitative restrictions on imports, then inducing them to expand their investments by means of domestic-content requirements and other such devices (see Chapter 9). For example, Reuber et al. (1973, pp. 120–32) and Guisinger et al. (1985) found that substantial proportions of foreign investments had benefited from tariff or quota protection on their outputs and tariff concessions on their imports of inputs or machinery.

Recent research on trade restrictions and foreign investment has focused on targeted policy changes and strategic interaction between foreign exporters (potential foreign investors) and domestic entities (import-competing firms; government tariff-setters). Anti-dumping regulations, widely used and prone to strategic involvement, warrant particular attention. They are repeatedly found to cause foreign exporters to become foreign investors.

Theoretical and empirical contributions have touched on various facets of anti-dumping enforcement. Haaland and Wooton (1998) and Belderbos, Vandenbussche, and Veugelers (2004) provided theoretical frameworks for evaluating the foreign firm's decision whether to respond with an investment in the country that imposes a dumping charge. Blonigen, Tomlin, and Wilson (2004) used event studies of stock-market reactions to establish the profit gains expected for domestic firms favored by anti-dumping cases' outcomes.<sup>16</sup> Barrell and Pain (1999), investigating Japanese foreign investment in the United States and European Union countries, demonstrated that foreign investment increases significantly with a count of

<sup>15</sup> Horst's results were not confirmed in a replication by D. Orr (1975), and several other studies failed to confirm the hypothesis; however, misspecifications are common in this literature.

<sup>16</sup> The U.S. firm's gain following a positive anti-dumping averages 2.8 percent. Its loss when its foreign rival jumps the tariff is -0.7 percent for green-field entries but +0.5 percent for acquisitions (anticipating cooperative behavior by the acquiring entrant?).

anti-dumping cases in the host countries. Foreign investors may act in anticipation of targeted tariffs. They may undertake their investments in green-field form rather than acquisitions because the former appeals more to governments ever eager to create jobs. Blonigen and Feenstra (1997) discussed these issues and established empirically that foreign investments, but especially green-field entries, occur in response to predicted trade restrictions. Domestic competitors may limit the protection that they seek to ward off foreign investments by their competitors (Ellingsen and Wärneryd, 1999).

### **Preferential Trading Arrangements**

Another policy that affects the choice between trade and foreign investment is the preferential trading arrangement (PTA). The European Union and North American Free Trade Area are just the best known of the hundreds of PTAs in existence. A PTA generally eliminates artificial border-crossing costs for commerce within the agreement while retaining trade restrictions against nonmember countries. PTA member countries need not be adjacent, but many of them are, so we can regard them as creating an enlarged geographic market. If we assume that foreign investment incurs a fixed cost, giving rise to scale economies, while commodity trade does not, size matters. Assume also that the PTA pools  $n$  identical members. For firms outside the PTA that previously exported to PTA members, the market's enlargement might warrant a shift to foreign direct investment, increasing MNE activity within the PTA. For firms inside the PTA that previously served the other PTA members by direct investment, consolidating production in one PTA member and exporting to the other  $n - 1$  members might maximize profits, reducing MNE activity (Motta and Norman, 1996; Neary, 2002).

When theory allows that anything can happen, the empirical researcher can hardly be surprised when no systematic patterns are found. That is clearly the case with studies of the European Union, where the completion of the Single Market around 1992 provided the requisite experiment. (Girma, 2002; Egger and Pfaffenmayr, 2004). An exception is the study by Feinberg and Keane (2001) of Canadian affiliates of U.S. MNEs over the period 1983–1992, covering the formation of the Canada–United States Free Trade Agreement. From this panel data set, they estimated the effect of tariff changes on these trade flows: Canadian affiliates' sales to their U.S. parents increase significantly when U.S. tariffs fall; Canadian affiliates' arm's-length sales to the United States also increase significantly when U.S. tariffs decline, two-thirds

as strongly as the intra-firm exports; Canadian affiliates' purchases from their U.S. affiliates are unaffected by tariff changes; Canadian affiliates' sales within Canada are unchanged by reduced Canadian tariffs but decline significantly when U.S. tariffs decline. Thus, the main effect is to let Canadian affiliates use a presumed cost advantage in the (much larger) U.S. market when U.S. tariffs decline, without this being offset by increased competition in the Canadian market.

The earlier history of the European Union yielded empirical patterns of interest. Schmitz and Bieri (1972; see also Schmitz, 1970) examined the share of U.S. foreign direct investment going to European countries that took part in tariff-preference arrangements, finding an acceleration of the upward trend in U.S. foreign direct investment and a deceleration of the trend in U.S. exports. Scaperlanda and Balough (1983) found that (with other forces controlled) U.S. plant and equipment investment in European Community (its name then) manufacturing industries increased with an indicator of the Community's tariff discrimination against imports from outside. Sleuwaege (1984, 1988) demonstrated how the Community's formation directed foreign investment to small countries such as Belgium which now gained a locational advantage for serving the whole Community (see also Cantwell, 1989, Chapter 4). Benito, Grøgaard, and Narula (2003) compared foreign affiliates operating in Denmark and Finland, members of the (now) European Union, to those in nonmember Norway. Questionnaire data indicated the former carried out a broader scope of activities with greater average competence. Cantwell (1988) also associated intra-Community investments in some industries with rationalizing locations and concentrating production for scale efficiencies.<sup>17</sup>

### 2.3. Foreign Investment and Resource Allocation in the World Economy

International economics does not offer a successful explanation for MNEs, but it does contribute substantially to explaining their scope of operation through the trade-off between exports and foreign investment. More than that, the general-equilibrium models of international economics provide a framework for understanding certain aggregate causes and consequences of the MNE's behavior implied by the partial-equilibrium transaction-cost models. For example, they explain the price adjustments that ultimately limit profitable flows of direct investment.

<sup>17</sup> Useful studies of individual industries appear in Dunning and Robson (1988).

### **Basic General-Equilibrium Tools**

The Heckscher-Ohlin model, a textbook staple in international economics, provides the main tool for pursuing the MNE into the context of general equilibrium. The model's advantage is that it concentrates on the interrelationship between a nation's pattern of international trade and its endowment of factors of production (including capital). It can therefore be used to explore the consequences of international movements of factors of production – the MNE's transfer of capital – by identifying them as changes in the factor endowments of the sending and receiving countries. The relationship between trade and foreign investment can be fully developed and effects deduced of foreign investment on rewards of factors of production and thus the distribution of income.

In its simplest form, the Heckscher-Ohlin model assumes that the world consists of two countries, Home and Foreign. Two commodities, food and clothing, are produced and traded. Each nation has a given endowment of two factors of production, labor and capital. A crucial assumption of the model is that the production functions of food and clothing differ in their requirements of capital and labor; let us suppose that for any given prices of these factors, food production uses proportionally more capital per worker employed than does clothing. The Heckscher-Ohlin model also assumes that a good's production function is the same in each country: A given number of units of capital and of labor produce the same number of clothing (or food) units, both at home and abroad. Markets for products and factors of production are assumed to be perfectly competitive, and transportation costs are ignored.

Some key features of the model's treatment of the domestic economy can be reviewed in terms of the transformation (or production possibility) curve for the home country, shown in Figure 2.2. That curve indicates all combinations of food and clothing that can be produced efficiently with the home country's assumed stocks of labor and capital – “efficiently,” meaning that any increase in the output of one good can be accomplished only by cutting production of the other. One condition for efficient production is that the value of the marginal product of labor in food be the same as the marginal product of labor in clothing, and the same for capital. In the absence of international trade, the amount of each good produced equals the amount consumed, and demand conditions determine which point is chosen on transformation curve *FC*. Let us suppose that it might be either *A* (much food consumed, little clothing) or *B* (much clothing, little food). To see how output and factor use are interrelated, assume that equilibrium was

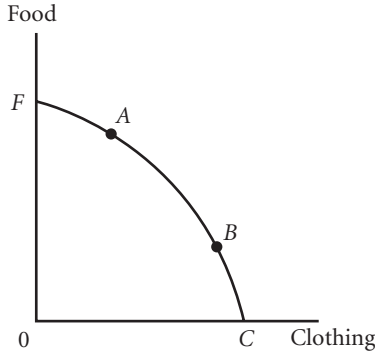


Figure 2.2

at  $A$  but now shifts to  $B$  because of a change in consumers' tastes. The shift in preferences toward clothing raises the price of clothing relative to that of food. Output declines in food, the capital-intensive sector, and expands in labor-intensive clothing. Whatever levels of wages (to labor) and rentals (to capital) prevailed at  $A$  will be thrown out of equilibrium by the change because the contracting food industry discharges a lot of capital, whereas the expanding clothing industry seeks to hire a lot of labor. Therefore, wages rise relative to capital rentals. This link between production (product prices) and factor rewards obviously has some significance for the incentive to undertake foreign investment.

If the home country in fact trades with the foreign country, equilibrium in the model is depicted in Figure 2.3. Each country produces at some point  $P$  or  $P^*$  on its own transformation curve, but the processes of international exchange determine some equilibrium point  $T$  that describes the (different) bundle of goods that each country consumes. As Figure 2.3 is drawn, the transformation curve for the foreign country  $F^*C^*$  is shown upside down, with its production point  $P^*$  superimposed on  $P$  for the home country. The home country produces a lot of food and a little clothing ( $P$ ), exporting food and importing clothing to achieve the bundle of goods consumed depicted at  $T$ . Likewise, from the foreign country's viewpoint, a high level of domestic clothing production ( $P^*$ ) is converted through trade into the consumption bundle  $T$ .

We have not explained exactly how the equilibrium associated with  $P$ ,  $P^*$ , and  $T$  gets established; we simply assume it is an equilibrium and note some of its properties. A sufficient reason for the equilibrium to involve this trade pattern is that the home country is relatively well endowed with capital (used heavily in food production) and the foreign country in labor (used heavily in

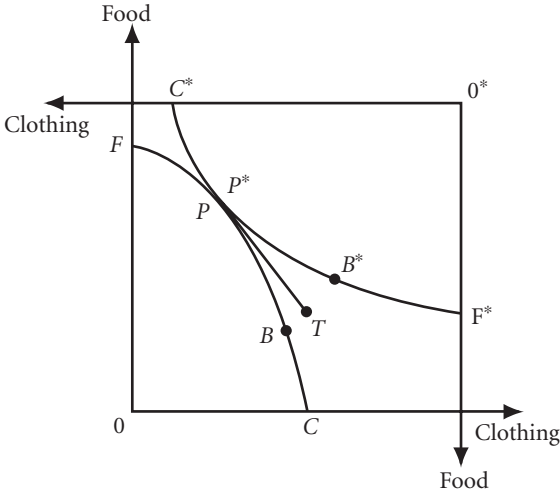


Figure 2.3

clothing). Home has a comparative advantage in food, Foreign in clothing. If  $P$  and  $T$  represent an equilibrium for Home, consumption without any international trade would occur at a point like  $B$  (Home consumes more of both food and clothing at  $T$  than at  $B$ ; those are the “gains from trade”). When production shifts from  $B$  to  $P$ , as trade is established, the relative price of food rises in Home, and therefore capital rentals rise relative to wages. In Foreign, the opposite process takes place: At  $B^*$ , clothing was cheaper than in equilibrium with international trade at  $P^*$ , and the shift of production from  $B^*$  to  $P^*$  raises wages relative to capital rentals. Indeed, with further assumptions, it can be shown that introducing trade not only pulls factor rewards in different countries in opposite directions but also brings them into absolute equality – that Home and Foreign wages become equal in equilibrium with unrestricted international trade, as do Home and Foreign capital rentals. If foreign investment took place in such equilibrium, it would leave world output unchanged.

These fundamentals support some propositions about international factor movements and the MNE. Suppose that no international trade takes place, so that the countries are consuming outputs indicated by  $B$  and  $B^*$ , and factor payments are in equilibrium accordingly. Now, permit capital to move internationally. Without trade, capital earns less in capital-rich Home than in capital-short Foreign. Therefore, investment is induced to flow from Home to Foreign. Because the transformation curves depend on the factor endowments, the capital transfer will shift them as shown in Figure 2.4. from

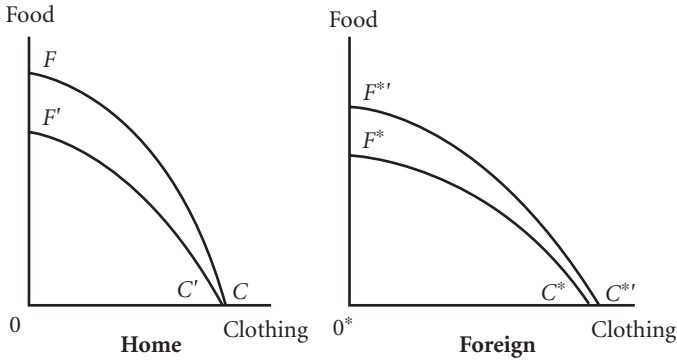


Figure 2.4

$FC$  to  $F'F'$  and from  $F^*C^*$  to  $F^*C^*$ . The discrepancy in capital's earnings between the two countries will be reduced, possibly eliminated. The shift provides a real-income gain for whatever owners move their capital from Home to Foreign, and it indeed raises the rentals accruing to *all* capital in Home. But the erstwhile scarce units of native capital in Foreign lose – the inflow from abroad bids down their reward. Labor is also affected in both countries. Home's labor finds less capital to collaborate with, and so its wage falls; Foreign labor finds more capital seeking for its services, so that wages there rise.<sup>18</sup>

We could investigate international factor movements by starting not with trade absent but with free-trade equilibrium ( $T$  in Figure 2.3). Assume that sufficient conditions hold in this trading equilibrium for each factor's reward to be equalized in the two countries. Now suppose that Foreign imposes a tariff on imports of food from Home. The tariff reduces its international trade (and Home's) and shifts its production point from  $P^*$  some distance toward  $B^*$ . The reward to capital rises in Foreign and falls in Home. Capital tends to move from Home to Foreign, and trade between them continues to diminish as its factor-endowment basis is eroded.<sup>19</sup> Eventually trade ceases, except for exports from Foreign needed to repatriate the profits from Home's foreign investment. Thus, this model shows dramatically the substitution between trade and foreign investment (see Section for normative implications). Just as the individual firm chooses between exporting and investing

<sup>18</sup> This summary omits a number of refinements to the analysis: in particular, demand conditions might be changed by international factor movements.

<sup>19</sup> Mundell (1957) developed this analysis. We omit some details. It matters, for example, whether Foreign's terms of trade (shown by  $P^*T$ ) are affected by the tariff that it imposes.

abroad (Section 2.2), so are trade and capital movements alternatives for the economy in the large. In general equilibrium, though, they are not always substitutes. Suppose that factor-endowment differences are extreme, with Foreign having very little capital and therefore specializing completely in the production of clothing in the free-trade equilibrium. Purvis (1972) showed that a movement of capital from Home to Foreign can then lead to a new equilibrium with more trade between the two countries. That is because the marginal product of capital in Foreign may then be greater than in Home, so that the capital transfer increases Foreign's gross domestic product more than it reduces Home's. Markusen (1983) developed a series of cases in which capital flows to the country exporting capital-intensive goods, so that trade expands (also see Wong, 1986).<sup>20</sup>

### **Foreign Investment and Specific Factors of Production**

The standard general-equilibrium trade model lies far afield from the theoretical basis of the MNE developed in Chapter 1, in which international capital movements serve only to loft proprietary assets across national boundaries, and competition is presumed to be imperfect. Two classes of general-equilibrium models have sought to bridge this gap. The first seizes on the horizontal form of foreign investment, in which the firm based in the source country's food industry transplants its capital to that same industry in the host nation. The assumption is therefore made that capital is *specific* to that sector: It can move from country to country, but not between the food and clothing industries in either country. The assumption is extreme, but it captures the notion that the MNE transfers a bundle of assets when it invests abroad; the capital itself might not be tied specifically to that sector, but the managerial skills and intangible assets are. Furthermore, all types of capital are specific in the short run, and the assumption of short-run, sector-specific capital gives theoretical results more reasonable than the contrary assumption that capital is continuously mobile between industries (Neary, 1978).

Labor as before is assumed to be immobile between countries, although freely mobile between each country's food and clothing industries. If labor markets are purely competitive, the marginal products of labor should be equal in the Home food and clothing industries, and also in the Foreign food and clothing industries, but not in general between countries. Similarly, if

<sup>20</sup> The weakness of the Heckscher-Ohlin model's empirical explanatory power was established early. For an evaluation, see Maskus and Webster (1995).



MNEs move capital between countries to eliminate arbitrage profits, the marginal products of capital become equal in the Home and Foreign food industries, and in the Home and Foreign clothing industries, but not between the two sectors.<sup>21</sup>

Specific factors change some properties of the standard model. Suppose that a MNE moves some capital from Home to the Foreign clothing industry. As before, the rentals to clothing capital are driven down in Foreign, and labor's wage is raised. Capital specific to Foreign's food sector also loses. That happens because Foreign's expanding clothing sector attracts labor from Foreign's food sector, raising the marginal product of labor there and hence reducing the marginal product (and rental) of food specific capital. Even though capital is sector specific, an increase in Foreign's stock of clothing capital depresses the rentals there of food capital as well as clothing capital. Indeed, the rental of food capital in Foreign could fall more than the reward to clothing capital there. The effects of the capital outflow on factor rewards in Home are the opposite of those in Foreign: labor loses and specific capital gains in both sectors. This model predicts that direct investment will be cross-hauled between countries. If the MNE transfers clothing-specific capital from Home to Foreign (an exogenous disturbance), the rentals to food-specific capital in both countries change so as to encourage it to migrate from Foreign to Home.

In the specific-factors model as in the standard model, a tariff can serve to attract foreign investment. Foreign's tariff on food imports raises rentals to food-specific capital, food capital flows in, and Foreign labor shifts toward the food sector. But clothing-specific capital suffers. In practice tariff policy often seems designed to protect or enhance the rentals received by factors of production specific to a sector.<sup>22</sup>

Batra and Ramachandran (1980) developed a slightly different version of this model in which multinational capital is freely mobile between countries

<sup>21</sup> Suppose the necessary assumptions are satisfied for the strong result mentioned earlier: Trade flows alone suffice to equalize factor prices between countries when there are two factors and products, not specific factors. Now, with specific factors, we need make only *one* industry's specific capital mobile between countries, and that – along with free trade in commodities – suffices to equalize wages, rentals to food capital, and rentals to clothing capital between countries. If *both* types of capital are made mobile, there is in general no longer an equilibrium with incomplete specialization in international trade: Either production of one good ceases or all international trade ceases except for international factor payments. See discussion in Caves (1971), Amano (1977) and Neary (1980).

<sup>22</sup> The analysis of the preceding paragraphs is based on the work of Caves (1971, pp. 17–19) and R. W. Jones (1971). Certain problems with countries' sizes and abilities to influence world prices are neglected here; see Falvey (1979).

in one sector, but local capital in the other sector is immobile between countries as well as between sectors. Many of their results deal with corporation income taxes and will be noted in Chapter 8. Their other conclusions closely echo those just set forth. For example, make the food sector the one occupied by MNEs and Foreign the net importer of MNE capital as well as the importer of food. Foreign's tariff on food imports attracts more MNE capital, raises wages in Foreign, and lowers the return to local capital in Foreign's clothing sector. Wages fall in Home, and the returns to local capital in Home's clothing industry rise. They showed that the returns to MNE capital may either rise or fall as a result of this tariff-induced capital movement.

Another modification of the model is due to Burgess (1978; also see Tsai, 1987), who introduced goods that do not enter into international trade (nontraded goods). Suppose that Foreign's economy contains two sectors. Its clothing sector produces an internationally traded good – such as primary fibers used as an input by textile-based MNEs elsewhere in the world. Its other (food) sector is now assumed to produce a good consumed domestically and not entering into international trade. A disturbance in the form of an inflow of direct investment to the traded-goods (clothing) sector shifts factor rewards in the same manner as before – capital loses in both of Foreign's sectors, and labor gains. However, a new element enters into the adjustment process in the form of a rising price of food, Foreign's nontraded good. That rise occurs because labor is drawn from the food sector to the clothing sector, while demand remains basically unchanged. This increase in the relative price of food can offset the initial fall in rentals for food capital – indeed, more than offset it, leaving this specific factor better off. And the rise in the relative price of food puts workers' welfare gain in doubt. The smaller the increase in wages relative to the increase in food prices and the more of their incomes workers spend on food, the more likely is for their real-income gain to be erased. Other results can be mentioned briefly. Jones, Neary, and Ruane (1983) developed the specific-factors model for the case in which one good is nontraded in each country. Panagariya (1986) injected the element of trade based on increasing returns in production.

Specific-factor models can also imply that the presence of internationally mobile capital (through the agency of MNEs) alters the basic pattern of comparative advantage. Make sector-specific capital a necessary input to food production, along with labor, whereas clothing production requires only labor. Workers do not move internationally, but capital moves freely to wherever it can earn the larger rentals. Which country exports clothing and which exports food depends not only on David Ricardo's comparative labor productivity but also on the absolute advantage that mobile capital has for

producing food in the two countries. Home labor could be relatively more efficient in textile production than in food, and yet the food productivity of capital in Home might attract so much capital as to co-opt enough of Home's labor supply to make food Home's export good.<sup>23</sup> In general, the more mobile are factors of production, the less does comparative advantage have to do with patterns of production.

In the standard Heckscher-Ohlin model (no specific factors), similar results emerge when technology differs between countries, so that a given bundle of capital and labor produces more clothing (or food) in one country than in the other. Make Foreign's food industry technically more efficient than Home's (no difference in clothing). Even though factor endowments favor Foreign to export clothing, the technology difference permits Foreign to export food as well as attracting more MNE capital. If *both* of Foreign's industries are more efficient, the capital transfer from Home is further enlarged, and Foreign definitely exports food if her efficiency advantage is as great in food as in clothing (R. W. Jones, 1970; Purvis, 1972).

### **Multinationals' Activities in General Equilibrium: Horizontal MNEs**

Recent research on MNEs in models of the international economy have focused on providing a general-equilibrium framework for the microeconomic bases for foreign direct investment and drawing conclusions about welfare. Markusen characterized the horizontal MNE as incurring a fixed cost per firm (the cost of establishing the proprietary asset), another fixed cost for each plant, and a constant variable cost of production, directly implying that the MNE (producing the same good in two countries) will be found where trade costs are high (limiting exports) and the foreign market is large (warranting a plant's fixed cost). This apparatus, driven by fixed costs, carries implications about the market's structure in each country – monopoly or duopoly, and the expected output restriction has important welfare implications (Markusen, 1984).

Markusen (2004, and numerous earlier works cited therein, especially Markusen and Venables, 1998) placed his approach in the familiar context of general equilibrium with two countries, two goods (X and Y), and two factors of production (skilled and unskilled labor). Sector X produces headquarters services or proprietary assets using skilled labor. An integrated X firm (headquarters services plus production) is less skill-intensive, a branch plant producing X still less. Least skill-intensive is Sector Y, producing a

<sup>23</sup> This model was developed by R. W. Jones (1980); also see Jones and Dei (1983).

good (actually the rest of the economy) under pure competition with constant returns to scale. The prevalence of MNEs depends on the sizes and the factor endowments of the two countries. Specifically, it increases with their similarity. If (say) Foreign is very small relative to Home, the presence of scale economies in X would discourage production of X there. Similarly, if Home were much more skill-rich, headquarters services would concentrate there, while production would take place in skill-short Foreign. Similar endowments promote MNEs by making production and headquarters services feasible in both countries. In contrast, vertical MNEs, with international trade in inputs or components, would expand as national factor endowments grow more different.

These properties are conducive to many sorts of empirical investigation, but one that is particularly apt is the prevalence of intra-industry foreign direct investment – the counterpart of intra-industry trade. A high level is implied for differentiated-product industries and countries similar in factor endowments and sizes. Markusen and Maskus (2002*b*) confirmed that the extent of intra-industry investment (measured by affiliates' sales) increases with the countries' sizes and decreases with their differences in size and in human-capital endowments.

### **Multinationals' Activities in General Equilibrium: Vertical MNEs**

Helpman (1984, 1985) and Helpman and Krugman (1985, Part 4) treated the vertical MNE as a firm employing two inputs. An input is produced in one country and shipped to another, where it is combined with another input to obtain a final product. Each activity is carried out in just one country (owing to scale economies). One might think of Foreign as the supplier of a raw material, Home as the finished-good producer. Or Foreign might be the research enterprise that incurs a fixed cost to produce a proprietary asset, which is combined with another input at Home. The approach immediately suggests assuming that the two activities are carried out with different combinations of factors of production, allowing these differences to be related to differences between Home's and Foreign's factor endowments. It also invites bringing these structural elements of the international economy together with governance and incentive problems that arise in the make-or-buy decision: Should the MNE that obtains one input abroad supply itself or outsource to an independent supplier?

A principal concern of Helpman is how the presence of MNEs affects the possibility of factor-price equalization, which (in the standard model) can be precluded if (given identical tastes) the two countries' factor endowments

differ so much that both goods are no longer produced in both countries. Factor-price equalization might be feasible without any foreign direct investment, in which case (on Helpman's assumptions) none will occur: Each country is likely to produce some number of varieties of manufactures using homemade proprietary assets, and manufactures flow both ways between the two countries to supply consumers who (on Helpman's assumption about their tastes) each consume all available varieties of manufactures. If factor endowments differ too much, however, foreign investment (exports of the intermediate proprietary asset) takes place, expanding the domain of factor endowments for which factor-price equalization is possible.

Grossman and Helpman (2002a) continued with the integration of the microeconomic make-or-buy decision with a general-equilibrium trade model. Attention focuses on a differentiated product subject to a fixed ("design") cost at Home. It requires an input produced more cheaply in Foreign. The input is also differentiated, and the Home firm's problem is to obtain that variety of input that best matches its design. The designer tends to "buy" if an extant input closely matches its needs, "make" if it does not. The share of "buy" decisions increases with the productivity of independent input suppliers (obviously), increases with the size of the market (which makes room for more input suppliers to produce profitably), and increases with the efficacy of arm's-length contracting. Another approach (Grossman and Helpman, 2002b) turns on the cost of searching for the input that best matches a given design. Grossman and Helpman (2004) dealt with the comparative costs of managing vertical integration and arm's-length contracts with input suppliers. They concluded that the designer with prospects for middling productivity will prefer in-house production of the input (MNE status), while outsourcing will dominate for designers with either very high or very low prospective productivity.

An understanding of make-or-buy decisions benefits from comparing goods that differ in ways affecting these transactions. Antràs (2003) observed empirically that complex input goods (capital-intensive; research-intensive) are prone to vertical integration whereas simple goods (labor-intensive) are bought under contract. Internationally, this contrast drives the relative prevalence of intra-MNE and arm's-length trade. Arm's-length contracting between designer and input supplier can seize the advantage of high-powered incentives for the supplier. For complex goods, however, each party must be involved in making some of the decisions this entails, and this sharing conduces to a vertically integrated enterprise.

Antràs and Helpman (2004) connected the make-or-buy decision to the distribution of productivity levels of headquarters (assembler) firms that

need a labor-intensive input. More efficient assemblers with lower marginal costs will operate at large scale, which warrants their incurring a higher fixed cost to obtain the input. That fixed cost is assumed higher for vertically integrated production taking place abroad; obtaining the input at arm's length or acquiring it at home rather than abroad reduces the fixed cost but imposes higher variable cost. Therefore, multinational firms will be larger than firms outsourcing and importing their inputs; next come domestic firms that are vertically integrated; smallest are domestic firms outsourcing the input.

Differences in the intensity of goods' requirements for inputs of headquarters services also enter into the picture. De Santis and Stähler (2004) provide a theoretical basis for MNEs and domestic firms to compete in the same market, in their case because the large efficiency scales of MNEs can make possible the entry of national firms that operate with lesser scale economies (lower fixed costs). Yeaple (2003*a*) addressed the ways in which MNEs and other firms, and both horizontal and vertical MNEs, could coexist in a market.

This analysis ties into the empirical literature on the relative prevalence of trade and foreign direct investment (Section 2.2). Indeed, Helpman, Melitz, and Yeaple (2004) estimated a model explaining ratios of U.S. exports to U.S. MNEs' foreign affiliates in industry-country cells. They predicted and confirmed statistically that it would decline with tariffs, decline with shipping costs, increase with plant-level fixed costs, and decrease with any of several measures of the dispersion of firms' productivity levels within an industry. Related to this is an econometric model by Carr, Markusen, and Maskus (2001) that seeks to embrace the central features of both horizontal and vertical foreign investment (see also Blonigen, Davies, and Head, 2003).<sup>24</sup>

#### 2.4. Distribution of Foreign Investment Among Countries

The preceding sections of Chapters 1 and 2 supply many predictions about the allocation of foreign investments (headquarters, subsidiaries) among countries. Some predictions are straightforward to test, even though the empirical literature on national and intra-national location choices is not particularly rich. Other propositions resist empirical test. One of them holds that discrete jumps occur sometimes in response to small changes in parameters when scale economies are present (Horstmann and Markusen, 1992).

<sup>24</sup> For another article comparing the econometric implications of various models of MNEs, see Markusen and Maskus (2002*a*).

Another is the anomaly of an increase in activity in Home when wages rise in Foreign, despite unchanged product prices, because the contraction of the MNE's activities in Foreign relaxes the constraint of scale diseconomies in administering the MNE's plant in Home (Ethier and Horn, 1990).

### **Theoretical Framework and Two-Way Foreign Direct Investment**

The theoretical models of MNEs clearly suggest that some countries will attract more foreign investment than others, but empirical tests are not easy to devise. A country that is small and distant from source countries, or one that imposes stringent rules on foreign investors, can be directly predicted to harbor little foreign investment. But important factors giving rise to foreign investment are industry specific (Chapter 1). And the theory of comparative advantage identifies factors that determine an economy's pattern of comparative advantage, and therefore its mixture of industries. Thus, a country could be heavily involved in foreign direct investment because its industry mix runs to those congenial to MNEs' activities. This consideration does not spoil the game for simple empirical tests of what determines a country's prominence as source or host of foreign investment, but it does impel caution about interpreting the results.<sup>25</sup>

In terms of the preceding general-equilibrium models, the standard Heckscher-Ohlin and specific-factors models link country characteristics to MNEs' prevalence solely through the industry mix determined by the endowment (and other factors). This would also hold if proprietary assets are regarded as capital assets (Helpman, 1984). The models that inject product differentiation, however, open the possibility that country traits – those of one country, or interacting traits of pairs or groups of countries – wield an influence independent of the industry mix. Although they have not found a home in general-equilibrium models, country traits favoring or impeding the organization of complex business enterprises could have the same effect. The intrusion of product differentiation raises the possibility of two-way foreign investment that can erase the distinction between source and

<sup>25</sup> We can note some statistical evidence that bears directly on this problem and the underlying approach to the international distribution of foreign investment. Dunning's (1980) study of the international distribution of U.S. foreign investments found that the share of U.S. sales in foreign markets (whether through exports or subsidiary production) is larger, the larger the foreign market. If there are substantial fixed costs to each bilateral international transaction (whether trade or investment), one would then expect the prevalence of MNEs' activities in any given industry to be higher in larger countries. Caves (1980*b*) found grounds for rejecting the hypothesis that the extent of foreign investment in a national industry is independent of the scales and productivity levels of the establishments operating within it.

host country. Theory predicts that the extent of bilateral balance in foreign investment depends on countries' sizes and the reciprocal attraction that their differentiated varieties hold for each other.

Dunning (1981*b*, Chapter 5) provided a useful setup for analyzing two-way foreign investment by examining countries' gross outflows and inflows per capita. A pure Heckscher-Ohlin pattern would involve large gross and net outflows from capital-rich (high-income) countries and large inflows to capital-poor (low-income) countries. The actual pattern is otherwise. Gross outflows are high for the highest-income countries but then drop off sharply; gross inflows also decline systematically with income per capita, though not as fast as outflows. Only the richest countries have net outflows; countries with middling incomes per capita exhibit the largest net inflows; and two-way foreign investment is substantial for all the industrial countries. Evidently the simple Heckscher-Ohlin hypothesis performs poorly. It is also rejected by the many simple regression analyses testing the hypothesis that foreign investment is attracted to low-wage countries and obtaining perverse results (e.g., Wheeler and Mody, 1992). These are discussed subsequently.

We turn to statistical treatments of two-way foreign investments. Brainard (1993*b*) analyzed two-way foreign direct investment between the United States and twenty-seven other countries (overall or aggregated over sixty-four industries). She found that the total value of subsidiaries' sales in a pair of countries (combined sales of country  $i$ 's subsidiaries in  $j$  and  $j$ 's subsidiaries in  $i$ ) increases with their combined national incomes and with the similarity of their sizes – as predicted by models of monopolistic competition in international trade. The same holds for two-way exports passing between unaffiliated parties. Two-way foreign direct investment decreases (that is, the imbalance of reciprocal flows increases) with the difference in a country's skilled-labor endowment from that of the United States and with the difference in normalized arable land endowments. She concluded that something like the product-differentiation model is important for explaining the activities of MNEs, but that the factor-proportions model "explains some portion of their activities."<sup>26</sup>

Markusen and Maskus (2002*b*) also studied two-way foreign investment (and two-way international trade) between the United States and

<sup>26</sup> Also see Wickham and Thompson (1989) who, in an otherwise interesting article, were less successful in relating two-way foreign investment to two-way (intra-industry) trade. Several other pieces of evidence weigh in against the Heckscher-Ohlin or capital-arbitrage explanation of foreign investment. No difference is found between foreign-investing industrial sectors and others in source countries (U.S. Tariff Commission, 1973; Juhl, 1979), although differences sometimes turn up in host countries (O'Loughlin and O'Farrell, 1980).



ten countries or regions. They found that it increases with the combined sizes of the countries' economies (gross domestic product) and declines with the squared difference between their GDPs. It also declines with the squared difference in the skilled-labor shares of the countries workforces. Extensive regulatory barriers to foreign investment naturally reduce two-way investment, but the countries' trade barriers do not have a significant effect. Eckholm (1998, 2002) replicated this analysis exactly for two-way affiliates' sales between Swedish and U.S. multinationals. Two-way foreign investment has been analyzed in the setting of the European Union. Cantwell and Sanna-Randaccio (1992) found the incidence of two-way investment closely associated with reciprocal patent holdings, and Savary (1992) showed how French-Italian two-way patterns reflect the reciprocal strengths of the national industries' proprietary assets.

### **Source Countries' Attributes**

We turn from two-way foreign investment to gross flows and stocks out of source countries, then into host countries. Other research identifies attributes of MNEs' source countries that explain variations in their outflows to host countries. These affinities resemble the factors indicated by the product-differentiation hypothesis (Brainard, 1993*b*), but they also cover factors that reduce the MNE's cost of entering a foreign market or increase the cost-effectiveness of its internal control mechanisms. Many of the more interesting findings come from informal and historical inquiries rather than statistical tests of hypotheses.

Krainer (1967) and Franko (1976, Chapters 2 and 3) argued that the paucity of raw materials in the European industrial countries, coupled with their high levels of industrialization, brought into being a large stock of MNEs integrated backward into the acquisition of raw materials. High raw-materials costs and risks to the continuity of overseas supply also promoted the rise of chemical firms specializing in man-made substitutes for natural materials; their discoveries then provided the intangible assets that floated subsequent foreign investments (also see Davidson, 1976). Swedish multinationals, however, tended to build their proprietary assets in manufacturing activities that draw on natural resources abundant (or once abundant) in Sweden (Swedenborg, 1979; Olsson, 1993). Franko (1976, Chapter 4) argued that the small national markets of some European countries induced heavy foreign direct investment because the narrow domestic-market base provided successful firms with only limited opportunities to diversify their risk (see also Sleuwaegen and de Backer, 2001).

The literature of economic history (e.g., Hertner and Jones, 1986) shows how periods of rapid national economic development and reverses to them (e.g., wars) have led to expansions and contractions of countries' status as sources of MNEs. This can be seen in the rapid growth of U.S.-based MNEs after World War II, followed by successes for the revived European countries and subsequently Japan in raising the relative outflows of foreign investment from those countries (UNCTC, 1988*b*, pp. 28–31; Dunning, 1988, Chapter 8). Although Porter (1990) focused not on foreign investment but a generalized inference about national industries' successes in garnering rents in foreign markets, his research shows clearly how lucky accidents of institutional development and successful agglomerations in particular industries generate national firms' proprietary assets. Finally, on the downside of the development process, Blomström and Lipsey (1989) and Kravis and Lipsey (1992) showed how the rent-yield potential of its foreign subsidiaries can outlive a country's exporting success when it faces increased international competition.

Japan, a latecomer to foreign investment, is a case well suited for testing hypotheses about national characteristics and their changes. The cultural distance of Japan from the Western industrial countries and its substantial net dependence (until recently) on foreign technology left successful Japanese companies with little basis for going multinational. Indeed, the important intermediary role of the Japanese general trading companies in economizing on the country's scarce skills for business transactions with foreigners – direct investment included – clearly identifies cultural distance as a negative predictor of a nation's participation in foreign direct investment.<sup>27</sup> Drake and Caves (1992) showed statistically that the development of proprietary assets (R&D, sales promotion) in Japan came to exert an increasingly strong influence on Japanese investment abroad.<sup>28</sup>

### **Affinities Between Source and Host Countries**

Evidence set forth on source and host countries separately can be supplemented by findings on affinities between pairs of countries that promote investment flows between them. Such an affinity might come from

<sup>27</sup> See the work of Yoshino (1976), Tsurumi (1976), and Ozawa (1979*a*).

<sup>28</sup> Ray (1989) investigated inflows of direct investment to finely disaggregated U.S. industries between 1974 and 1985, testing for affinities between industry traits and investing firms' source countries. He found, for example, that Japanese firms shun diversifying activities, while (small) Canadian firms avoid industries with extensive scale economies in production.

product differentiation, consistent with its link between two-way foreign direct investment and similarities in countries' incomes per capita. Affinity also results from factors that reduce communication and information costs associated with transborder transactions or otherwise create common interests, even in the political and social realms, but need not generate two-way flows. Nankani's (1979) statistical study showed that foreign investment is enlarged between those pairs of industrial nations and developing countries that were formerly connected by a colonial tie. Not only did the colonial ties offer political protection and lower transaction costs to MNEs, but also their termination posed a threat to the industrial nation's remaining exports to its former colonies and promoted foreign investment – an effect that eventually eroded as other source countries gained access to the former colonies (Svedberg, 1981). Several statistical tests found that (*cet. par.*) foreign investment in host countries is increased by their political alliances with the source (Schneider and Frey, 1985; Tallman, 1988; Koechlin, 1992).

An especially ample literature suggests that bilateral affinities in foreign investment arise because they minimize transaction costs or risks for firms making foreign investments. The pattern is commonly documented in the series of moves made by a nascent MNE on its way to the status of a large “global” company. Davidson (1980) showed that low-information-cost countries such as Canada, Mexico, and the United Kingdom bulk disproportionately large as destinations for U.S. MNEs, and they were even more prominent in earlier times. Davidson established the existence of a typical sequence of moves that starts with Canada (also see Horst, 1972*b*) and proceeds with the United Kingdom, West Germany, Mexico, Australia, France, and Brazil. Kravis and Lipsey (1980) pointed out that the rankings of destination countries by the numbers of U.S. subsidiaries that they contain vary too little among industries to reflect perfectly informed static cost-minimization decisions by MNEs. The implication is that low-information-cost stepping-stone host countries will remain disproportionately prominent even after some MNEs go on to (as it were) bigger and better things.

This pattern of bilateral affinities is repeated regularly for other source countries that have been studied. Italian MNEs start with neighboring southern European countries and the developing countries that received heavy immigration from Italy (Onida and Viesti, 1988, pp. 49–74); Japan goes to Southeast Asia (Yoshihara, 1978, pp. 24–31; Tsurumi, 1976, Chapter 3), Australia to New Zealand (Deane, 1970, pp. 61–62), Sweden to neighboring European countries and the United States (Swedenborg, 1979, pp. 56–60), and France to French-speaking lands and adjacent European countries (Michalet and Delapierre, 1976, pp. 8–9). From the viewpoint of host

countries, O'Loughlin and O'Farrell (1980) noted that Ireland, which provides public services that reduce risk and transactions costs for the MNE, has thereby attracted MNEs that are smaller than typical of the breed. In a useful statistical test Veugelers (1991) not only confirmed the positive effects of common language and neighbor status but also showed how fully they dominate production-cost factors – unit labor costs, tariffs.

Unfortunately, none of these studies of affinities parcels out the various types of determinants: demand-side factors associated with product differentiation, cost-side factors associated with initial fixed costs of search and investigation or continuing (flow) costs of transportation or coordination. Each is clearly involved, but the only evidence to give some feeling for their respective roles comes in studies of the choices of location by export-oriented foreign subsidiaries. Product differentiation and other demand-side factors are irrelevant for them, and so cost factors should and do dominate the determinants of their locational choices. Kravis and Lipsey (1980) hypothesized that the exports of majority-owned foreign affiliates of U.S. MNEs tend to be concentrated where unit labor costs are least and access to material inputs is easy.<sup>29</sup> They also controlled for country size (scale economies). Their results confirm the hypotheses about access to materials and economies of scale; for unit labor costs, the coefficient is not significant.

### **Host-Country Attributes**

We now turn from explaining source countries' varying investments abroad to host countries' varying receipts of foreign investment. The findings of interest here apply mostly to developing countries, but we also review studies of foreign investors' choices among states or regions of developed countries. These studies are quite numerous.<sup>30</sup>

Aside from their mixed findings about wages and labor availability already noted, their results largely agree. More foreign investment is found in larger countries, but in most studies this result is not tied to any specific hypothesis (such as justifying the fixed cost of foreign investment over exporting). It typically also increases with national income per capita, as Dunning

<sup>29</sup> Their proxy for this is "residual openness": A country is assumed to have better access to material inputs if the ratio of its total trade (exports plus imports) to its GNP is higher than its population and density would suggest.

<sup>30</sup> They include Root and Ahmed (1978), Nankani (1979), Swedenborg (1979), Schneider and Frey (1985) who summarized the preceding studies, Clegg (1987), Culem (1988), Yamawaki (1990), Lecraw (1991), Veugelers (1991), Li and Guisinger (1992), Koehlin (1992), Wheeler and Mody (1992), Woodward and Rolfe (1993), Schroath et al. (1993), Shatz (2003), and Globberman and Shapiro (2003).

(1981*b*, Chapter 5) observed. Nankani (1979) and Wheeler and Mody (1992) controlled the congeniality of the host country's mixture of industries for MNEs' activities. Some studies confirmed the positive influence of host-country tariffs documented in Section 2.2. However, more interesting are general indicators of the host country's riskiness for foreign investors or of the liberality of policy toward foreign investment, merchandise imports, or both. Openness to foreign investment (Lecraw, 1984; Li and Guisinger, 1992; Koechlin, 1992; Brainard, 1997) and good economic infrastructure (Root and Ahmed, 1978; Wheeler and Mody, 1992) increase it, while a difficult language or remote culture decrease it (e.g., Hjerpe and Ahvenainen, 1986). Risk factors and political instability decrease it in some studies (Schneider and Frey, 1985; Lecraw, 1984) but not in others (Wheeler and Mody, 1992).<sup>31</sup> The legal firmness of industrial property rights increases investment in host countries (Lee and Mansfield, 1996); this relationship is discussed further in Chapter 7.

Recent research has probed several issues. Shatz (2003) noted that most studies have omitted a number of observations with no foreign investments—zero cells in country or country-industry observations. His more inclusive analysis assigns human capital an important role, clear even though it is highly collinear with other indicators of development. Globerman and Shapiro (2003) compared the statistical performance of six summary indicators of a host country's economic, legal, and social development to explain U.S. foreign investment. Among the developing and transitional economies in their sample, the indicator of human development (literacy, schooling) The “zero cells” property was flagged by Razin, Rubinstein, Sadka (2003), who assessed the degree to which agglomeration pulls foreign investment to sites already populated by competing producers. Zero cells account for 83 percent of their sample, but the elasticity of foreign investment with respect to host GDP is quite large for the nonzero cells, consistent with the role of fixed costs and scale economies.

### **Interregional Choices of Location**

Parallel to studies of host countries are tests of the factors determining how foreign investment is spread among regions of single country (chiefly

<sup>31</sup> Corresponding to the negative effect of host countries' political instability on investment from abroad is its positive influence on their own foreign investments in the United States (Tallman, 1988). Political instability thus should be distinguished from a host government's purposive expropriation of sunk foreign-owned assets, discussed in Chapter 4. Akhter and Lusch (1991) concluded that political instability does not directly deter foreign investment; rather, high productivity (and incomes) and social infrastructure favor both foreign-investment inflows and political stability.

the United States): Glickman and Woodward (1988); Coughlin, Terza, and Arromdee (1991); Woodward (1992); Ondrich and Wasylenko (1993); Axarloglu (2005); and earlier works cited in these. They agree closely on the statistical significance and economic importance of most location determinants. Although wages are not a systematic influence, unit labor costs are. Human-capital resources are clearly an attractive factor, the incidence of union membership a deterrent. Labor-market tightness is a significant deterrent. Infrastructure (highways, railroads, airports) attracts foreign investors while state and local taxes deter them.<sup>32</sup> Corruption has no significant influence, although it might be expected to facilitate the provision of infrastructure and the lax enforcement of cost-imposing regulations (Fredriksson, List, and Millimet, 2003).

Agglomeration effects have been studied in this regional context. Head, Ries, and Swensen (1995, 1999) inquired whether Japanese foreign affiliates' selection of a state is affected by the prior arrival of U.S. domestic establishments, other Japanese enterprises, and fellow keiretsu members. Common state characteristics affecting all of these investors were controlled by state fixed effects. Agglomeration effects both in a state and its immediate neighbors proved statistically significant. Shaver (1998) took a different approach, testing whether significant differences can be found between the location choices of U.S.- and foreign-controlled establishments. Their choices differ significantly, even taking account of the high overall geographic concentration of some industries. By and large, foreign and domestic establishments respond to the same attracting and repelling forces, but the foreign units avoid heavily unionized states and are more attracted to coastal locations. Foreign investors tend to locate in parts of the United States nearest to the source country – Canadians in the north, while the Europeans avoid the West Coast and the Japanese avoid the Southeast (also see Harrington, Burns, and Cheung, 1986). Mariotti and Piscitello (1995) found domestic and foreign units to make different location choices in Italy, which they attributed to information costs.

U.S. state governments compete vigorously to attract foreign MNEs, raising the question of whether sufficiently large ex post benefits can be identified to warrant the bids. Figlio and Blonigen (2000) found that a foreign MNE's new plant exerts a strong upward pressure on local wages – stronger than domestic firms, which bestir much less vigorous bidding.

<sup>32</sup> Hines (1993a) showed that state corporate tax rates are a strong influence; a 1 percent higher rate causes a decrease of 7 to 9 percent in the share of manufacturing investment by MNEs from source countries that do not give credits against taxes paid abroad.

However, local government budgetary outlays (per capita) decline, so a puzzle remains.

Little formal analysis is available on location patterns within other host countries, but van den Bulcke and de Lombaerde (1992) illustrated the working of similar location forces within the European Union's metal-working sector. Mariotti and Piscitello (1995) found domestic and foreign units to make different location choices in Italy, which they attributed to information costs.

## 2.5. Summary

If the field of international economics offers a sufficient explanation for the MNE, it would seem to lie in the arbitrage of capital between countries where its marginal product is low and those where it is high. However, this is inconsistent with many obvious facts about the distribution of foreign investments and neither necessary nor sufficient in light of the transaction-cost model of Chapter 1. Nonetheless, foreign investment generally does involve some net transfer of capital, so it is desirable to draw on the relevant theory of international capital movements.

Horst (1971) first presented a microeconomic model of the choice that the MNE faces between investing abroad and exporting from the home base. If it faces a downward-sloping demand curve in each market and its production is subject to scale economies, the MNE chooses to concentrate production in one location, unless trade restrictions block this choice, and it can wind up producing only in a large national market even though it would enjoy lower costs in a smaller one. The most sophisticated empirical studies regard MNEs' exports and foreign investments as jointly determined. Although theory strongly suggests that foreign investment (affiliates' sales) and exports should be substitutes, exposing that pattern requires subtle research strategies, and complementarity often makes its appearance. Abundant empirical evidence confirms the value-maximizing locational choices made by MNEs, taking account of production and transport costs, scale economies, and product differentiation and other demand-side factors. Historical evidence strongly confirms the effect of a tariff to lure the MNE's production behind the barrier, and the market enlargement effected by the European Community had the same consequence. Exchange-rate changes also affect foreign investments when they are expected to be long-lived (i.e., to change the real terms of trade). It is important to distinguish arm's-length trade from inter-affiliate trade, which is complementary with foreign production activities.

General-equilibrium concepts from international economics also address the causes and consequences of foreign investment, even though they commonly presume perfectly competitive markets and equate the MNE's activity with capital arbitrage. The Heckscher-Ohlin model establishes a link among the factor endowment of a country, the mix of goods it produces, and the rewards to its factors of production. A capital-rich country tends to export goods that use capital intensively. When its exports expand, the rentals to its capital rise and workers' wages fall. In a free-trade equilibrium, under specialized assumptions capital will earn the same at home and abroad, leaving no incentive for MNEs to move capital internationally. Conversely, where trade is restricted, capital flows can effectively substitute for it; trade and foreign investment thus are alternatives in general equilibrium as well as for the individual company.

Some efforts to bring general-equilibrium theory closer to the MNE have centered on the concept of specific factors of production, sector-specific capital that is mobile between countries but not between industries. The sector-specific model has its own implications for foreign investment and income distribution, and it has attractively realistic properties such as an ability to explain the cross-hauling of foreign investments. One broadly important implication of sector-specific mobile factors is that they tend to locate wherever in the world their reward is greatest, causing absolute advantage and not classical comparative advantage to determine patterns of commodity trade. Other efforts incorporate models of imperfect competition – oligopoly or monopolistic competition – to capture the effects of MNEs' proprietary assets and to relate foreign investment to two-way trade in differentiated products. Important recent research by Markusen, Grossman, and Helpman provides strong links between general equilibrium in world trade and the microeconomic models of horizontal and vertical foreign direct investment.

These elements of international-trade theory help to explain the distribution of foreign investments among countries, and many studies have sought to explain the distribution of foreign direct investment among source countries, among host countries, and among countries viewed as gross (source plus host) participants in international investment. Although foreign investment does tend to flow from capital-rich toward capital-poor countries, the prevalence of two-way foreign investment and the importance of a nation's human capital as a factor attracting foreign direct investment sharply confine the predictive power of the standard trade model. Bilateral affinities among countries are important for explaining the international location of foreign investment. These affinities come from many sources. Countries



with similar incomes per capita probably tend to demand similar varieties of differentiated goods. More readily documented, languages and cultures shared between countries reduce MNE's transaction costs, just as neighboring countries reduce their communication and coordination costs. The influence of pure production-cost factors dominates MNEs' locational choices only in the case of foreign investments in export-processing facilities.

## Organization and Growth of the MNE

Economic analysis traditionally has treated the firm as a single decision-making center, as if one mind were absorbing all relevant data and making all decisions on the basis of well-formulated objectives. In fact, decision making is decentralized within firms, and the decisions reached can be colored by the structure of internal organization chosen by the firm and the incentives and resources that it provides to its various groups of functional specialists. This coloration arises from precisely the costs of information and transactions discussed in Chapter 1. The multinational enterprise (MNE) enjoys certain advantages over the arm's-length market, but they must trade against the organizational costs and constraints that the firm encounters in coordinating multinational operations. Therefore, an examination of the MNE's internal structure is a logical extension of the transaction-cost model of the MNE's underlying rationale. This should aid understanding of how the firm will respond to both market stimuli and public policies.

### 3.1. Expansion of the Firm

An apt starting point is the process of the growth of the firm, as it pertains to the MNE. We can link the transaction-cost model of the MNE to constraints on the firm's process of growth and adjustment and to evidence on riskiness and turnover in multinational activities.

#### **Adjustment Costs in Expansion of the MNE**

The transaction-cost approach to the MNE can explain the course of the firm's development over time, as well as its pattern of activities at a given time. If the MNE can sometimes seize an advantage to displace a market and reduce transactions costs, the firm's costs of securing information and

arranging transactions shape its behavior. The transaction-cost approach makes an elementary point about why MNEs are not ubiquitous. The typical entrepreneur, a native of some particular country, brings to business decisions a general knowledge of its legal and social system and its particular “ways of doing things.” The business firm (possibly excepting some mature MNEs) has a clear-cut national base and identity, with its internal planning and decision making carried out in the context of that nation’s legal and cultural framework. When the entrepreneurial unit founds or acquires subsidiaries in foreign lands, it must incur a fixed cost of learning how things are done abroad. Home-office personnel sent to manage and develop the subsidiary will (for a time, at least) be less effective than at home. Foreign nationals can be hired to run the shop, but then a different fixed cost must be incurred to teach them the firm’s way of doing things. Either choice leaves the potential MNE facing a virtual disadvantage in the foreign market with respect to its local competitors, who access that social and cultural milieu as a spillover without explicit cost. The transaction-cost advantages of the MNE are necessary to get it over this intrinsic disadvantage. Buying control of a going local firm avoids some of these costs but incurs others.

The transaction-cost approach also implies that firms’ proprietary assets are first developed in some national market. These assets influence a series of investment decisions taken over time by successful firms, including decisions to begin and expand foreign investments, subject to various adjustment costs and constraints. First, the firm cannot instantaneously undertake all the profitable projects using that asset which it can locate. Constraints limit the firm’s growth, such as how rapidly it can expand its management cadre and its equity-capital base.<sup>1</sup> The firm considers various plans for using its distinctive assets to maximize the expected present value of its future profits. Suppose that its proprietary advantage over (at least some of) its rivals becomes clear when it is a single-nation firm holding only 10 percent of its national market. Its next most profitable move might be either to expand into foreign markets or increase its share of the domestic market. Although the choice could go either way, information costs and other fixed costs associated with foreign investment create a bias toward continuing domestic expansion, which does not require the new information and search costs associated with going abroad.

<sup>1</sup> Penrose (1959) first emphasized the constraint on growth due to the firm’s limited ability to expand its management; Horst (1974*b*) summarized the literature on financial constraints on the firm’s growth in the context of MNEs (see Section 6.1).

As the firm's share of its domestic market grows, the marginal returns to further expansion at home eventually decline. Given the elasticity of the market demand curve and its competitors' expected reactions, the higher an expanding firm's market share, the lower the demand elasticity that it perceives. Also, its increasing market share might come at the cost of dislodging stronger and stronger competitors. Expanding to serve overseas markets becomes more and more attractive.

Once expansion abroad tops the firm's list of profitable investments, the choice of destination should be affected by information costs, as they vary among foreign locations. The first site for overseas investment is likely to be the national market where the entrepreneur faces the least disadvantage of language and culture (see Section 2.4). Successful foreign investments themselves can augment the firm's proprietary assets (Chapter 7), making the course of international expansion highly path dependent (Kogut, 1983, emphasized the sequential process of multinational expansion).<sup>2</sup>

### Firm-Specific Determinants of Foreign Investment

The first body of evidence bearing on this expansion process links foreign-investment decisions to proprietary assets accumulated by the firm. Horst (1972*b*) first compared firms within industries to test what traits discriminate between those that go abroad and those not yet holding MNE status. The only significant difference he found was in the size (market share) each had already attained in the domestic market. This result supports the hypothesis that the firm runs through its opportunities in the domestic market before incurring the transactions cost of going abroad. Horst (1974*b*) later found that overseas expansions by successful U.S. food-processing firms could be explained by qualitative differences among their proprietary assets. Subsequent statistical studies detected a number of differences among firms that significantly affect their contemporary decisions whether to undertake foreign investments. Caves and Pugel (1980, Chapter 2) confirmed Horst's result on firm size but also associated differences in firms' advertising outlays with their foreign-investment choices (also see Wolf, 1975, and Swedenborg, 1979, Chapter 6). Grubaugh (1987*a*) revisited Horst (1972*b*), finding significant positive influences, not only for market share but also research intensity, product diversity, and the importance of selling and administrative

<sup>2</sup> The preceding text conveys the impression that firms grow gradually into multinational status. The time span depends on the incremental profits involved; quite young innovative firms may become active exporters (Knight and Cavusgil, 2004).

expenses (weakly significant). Several statistical studies have added to this literature: Ball and Tschoegl (1982) on international banks' entries in California and Japan, Marion and Nash (1983) on entries of foreign food retailers into the United States, Y. Kimura (1989) on foreign investments by Japanese semiconductor firms, and Belderbos and Sleuwaegen (1996) on foreign investments by destination of Japanese firms. The innovations made by the semiconductor firms and the breadth of their product lines and extent of "down-stream" integration into consumer electronics promote their foreign investments in industrial host countries, as well as their sizes in the Japanese market. Marion and Nash, however, found that not absolute size but share already claimed in the firm's home market predicts investment in the United States. Other investigators have tied the firm's foreign-investment decision or the extent of its foreign operations to its age or accumulated experience.<sup>3</sup>

These variations in MNEs' decision variables reflect differences in the quality of the proprietary assets dealt to them by nature and fortune. At any one time, we observe a given sector's MNEs that vary in the degree to which they cover the globe. Belderbos and Sleuwaegen (2005) showed that they could predict which Japanese MNEs would stick to Asia for subsidiaries' sites, which would invade the Western industrial countries, and which would operate worldwide.

Several authors investigated the relationship between product-market diversification and foreign investment (see Section 1.3 and Galbraith and Kay, 1986). The results are somewhat diverse and reflect differences in samples and methods of measurement, but they are consistent with the short-run trade-off hypothesized previously (Caves, 1975; Wolf, 1977; W. H. Davidson, 1984; Kimura, 1989; cf. Marion and Nash, 1983). Other studies that compare product-market and geographic (international) diversification levels achieved by firms of varying sizes and maturities (e.g., Grubaugh, 1987*b*) usually find positive correlations: given time and resources, a firm can exploit opportunities for diversifying in both directions, and the sorts of proprietary assets that support foreign investment are the same ones associated with "related" diversification.<sup>4</sup>

<sup>3</sup> Swedenborg (1985); B. Beaudreau in a dissertation summarized in Enderwick and Associates (1989, p. 47).

<sup>4</sup> Baldwin, Braconier, and Forslid (2005) investigated the linkage between international (geographic) diversification and product diversification that is created by plant scale economies. They showed (theoretically and empirically) that MNEs' subsidiaries are more prone to diversify their outputs in a tariff-ridden host-country market but equally prone to scrap this diversification when the host moves toward freer trade.

### Foreign Investment Decisions

The clinical literature of business administration contains investigations of the process by which firms make their decisions about foreign investments, and conclusions from these bear on the adjustment and information costs hypothesized previously. Commonly stressed is the random fashion in which firms initiate investigations of opportunities for foreign investment, perhaps as a parochial response to a problem perceived somewhere down in the firm's administrative hierarchy (Aharoni, 1966; Brooke and Remmers, 1970, Chapter 4; Michalet and Delapierre, 1976, pp. 27–29). An unfortunate conclusion sometimes drawn is that the foreign-investment process itself is highly random, which ignores the likelihood that many firms ill-endowed for foreign investment similarly toy with but reject the idea of venturing abroad.

Section 2.4 shows that each source country's MNEs pick foreign markets for their debuts to minimize the information and transactions costs associated with foreign investment. The new MNE can accommodate to a not-too-challenging environment while it is learning the ropes – acquiring knowledge that reduces the cost (or risk) of future expansions into more alien terrain. And its intangible assets provide it with some offsetting advantages at the earliest stages. It can work its plant at designed capacity sooner than a comparable independent firm (Forsyth, 1972, pp. 60–62), and a product innovation borrowed from its parent involves fewer shakedown difficulties for the subsidiary (Dunning, 1958, p. 120). This accumulation of experience has been modeled theoretically as paying a fixed cost to improve one's ability to distinguish between low-return and high-return opportunities (Casson, 1994).

The process by which the firm investigates the foreign-investment option shows certain important properties (Aharoni, 1966, Chapters 4 and 5). Information and search costs are quite high for foreign investment as compared with other investment decisions, because of overseas site visits, the cost of acquiring the necessary approvals from foreign governments, and the like.<sup>5</sup> These high fixed costs of decision making constitute an important reason for expecting that foreign investment will be mainly an activity of firms whose accumulated resources could support a large capital commitment abroad.<sup>6</sup> Closely related to these fixed costs of search is Aharoni's finding

<sup>5</sup> Aharoni (1966, Chapter 5) suggested that the commitment to invest abroad often comes not from a conscious strategic decision but from a series of investigative steps (investigation and market development) that bring the incremental cost of foreign investment down to a level that finally seems attractive.

<sup>6</sup> An indirect indication of these fixed costs appears in Antonelli's (1985) analysis of diffusion among MNEs of computer-based management of international data telecommunications.

that the perceived risk of foreign investment is quite high. The more costly information is, the less of it one acquires, and the more risky is the outcome perceived to be.<sup>7</sup> At least one survey of MNEs' experience confirms that firms' foreign subsidiaries perform better when they initially choose sites with low information costs and gather information roundabout by first exporting or licensing independent foreign producers than when they proceed "cold turkey" with the foreign-investment decision (Newbould, Buckley, and Thruwell, 1978, Chapters 4 and 6). Because the firm's previous stock of knowledge holds little value for the foreign-investment process itself, an incremental investigation of foreign markets is likely an efficient procedure (Johanson and Vahlne, 1978).<sup>8</sup>

The pattern described here can be traced through many historical and case studies. Indeed, the early process of expansion of firms to national-market status in the nineteenth-century U.S. economy was apparently quite similar to their evolution to multinational status more recently (Kindleberger, 1969, pp. 33–35). We have evidence on the behavior of early MNEs such as Singer Sewing Machine Company (Wilkins, 1970, Chapters 3 and 4; Nicholas, 1983), which became foreign investors through a process of incremental problem solving, such as dealing with the unsatisfactory performance of foreign licensees and sales agents. The historical case studies also show that the evolution of the decentralized multiplant and multinational firm depended on nineteenth-century innovations in communications (telegraph and telephone) that allowed the firm to achieve economies of integration.<sup>9</sup>

The historical evidence also confirms the incremental approach that companies have taken to the countries they chose for foreign investments. Wilkins (1970, Chapters 6 and 7) stressed that the initial investments undertaken in Canada and Mexico during the 1890–1914 period represented cheap, natural extensions of domestic activities for many U.S. companies.

Larger MNEs with more internationalized operations and more centralized management structures tended to be earlier adopters.

<sup>7</sup> It is possible to treat these decisions as more abstract and rational, with investment in proprietary assets optimized along with the decision by what method to reap their rents. The stock of proprietary assets depreciates at a rate that also influences the choice of how to deploy them (Ethier and Markusen, 1996).

<sup>8</sup> We note a purely tax-based incentive for starting foreign subsidiaries with a small dowry of capital and letting them grow by retained earnings (Sinn, 1993): This practice maximizes expected profit to the extent that profits are taxed when they are repatriated rather than when they are earned (see Chapter 8).

<sup>9</sup> Vernon (1977, Chapter 1) made the same point about the expansion of MNEs after World War II.

Dubin (1976, Chapter 5) found that the smaller the firm and the less diversified its portfolio of overseas assets, the more likely are its foreign assets to be concentrated in familiar countries. Wells (1983, Chapter 7) explained how the expansion of MNEs from third-world countries is strongly influenced by the presence of expatriate communities that reduce the incipient MNE's costs of securing reliable information. Evidence reviewed in Section 2.4 shows how strongly this pattern is imprinted on the aggregate distribution of foreign direct investments. For example, Davidson (1980) showed how the distribution of U.S. foreign investments among host countries is affected by the sequences of moves of expanding MNEs from more to less familiar countries.<sup>10</sup>

Several other types of evidence indicate the effects of information and adjustment costs on the expansion of MNEs. Exporting activity serves potential foreign investors as a low-cost source of specific learning (Denis and Depelteau, 1985). The expansion process also uses experience gained in one host to support investment in similar hosts (Benito and Gripsrud, 1992). The method of entry into foreign markets (discussed in Sections 3.3 and 3.4) is picked with an eye to minimizing the costs of inexperience or making repetitious use of a systematized procedure (Caves and Mehra, 1986; Franko, 1989; Zejan, 1990a). Firms proceeding through a series of incremental steps have emerged more successful than those that take discrete jumps (Newbould et al., 1978; Buckley, Berkova, and Newbould, 1983). Some tests of experience effects, however, have turned out negative (Yu, 1990; Benito and Gripsrud, 1992).

### **Turnover Processes**

MNEs face uncertainty about the environments in which they operate abroad and the longevity of their proprietary assets. These hazards generate turnover in this business population: in the firms that decided to enter foreign markets, in the churning of the distribution of extant foreign subsidiaries, and in the exit of unsuccessful ventures (Caves, 1995).

Studies of entries into foreign investment generally find the best-qualified firms at the head of the queue, when "qualification" embraces the factors congenial to profits. Chang (1995) investigated the likelihood of foreign

<sup>10</sup> Similarly, Blonigen, Ellis, and Fausten (2000) found that Japanese machinery firms' likelihood of investing abroad increased if they were preceded by a keiretsu sibling that will presumably share information. They expected to find it reduced by previous entry of a keiretsu nonmember and presumed competitor, but the data did not confirm that hypothesis.



investment by business lines of Japanese electronics firms. He found the likelihood of foreign investment to increase with the parent's research and development (R&D) activity (although not its advertising outlays), with the parent's international experience in other products, with the parent's membership in a keiretsu group, and with a favorable exchange rate. Each investor tended to start with its core products and its most successful items.

Other studies addressed the correlates of entrant subsidiaries' ex post success. Bane and Neubauer (1981) found that the mortality rate is higher for a foreign subsidiary that specializes in products different from its parent's original product. Mitchell, Shaver, and Yeung (1992) confirmed that the risk of business failure is reduced for firms that have already achieved MNE status but is inflated for a firm that is changing (either increasing or decreasing) its multinational strategy. Mitchell et al. (1993) showed that in an industry in transition to increasing multinational operation the domestic firm tends to enjoy more success (both abroad and at home) if it expands its international operations and also a greater risk to its domestic survival if it does not. Mitchell et al. (1994) concluded that the odds of survival are improved for the foreign entrant that waits for the information revealed by the fates of early entrants, although not so long that competition squeezes out all prospective rents.<sup>11</sup>

Research on the turnover of ongoing business units (plants) has paid little attention to the foreign/domestic distinction, but with a few exceptions. Baldwin and Dahliwal (1999) divided Canadian manufacturing plants into those increasing and those decreasing their real outputs. Foreign-controlled growing establishments grow faster than expanding small domestic units; this pattern did not appear for larger growing plants, and it suggests the foreign subsidiaries' advantages in proprietary assets. The larger foreign affiliates that are shrinking achieve greater labor-productivity gains than their domestic counterparts. Mata and Portugal (2002) compared hazard rates for foreign affiliates and domestic firms operating in Portugal. The former spring from firms previously successful at something, so they naturally outlive same-age domestic firms. The authors showed that this advantage is completely explained by various assets and advantages favoring the subsidiaries – “foreign-ness” itself has no residual predictive value. Blonigen

<sup>11</sup> But in the special case of China, where foreign investment was first permitted in 1979, Pan, Li, and Tse (1999) concluded that early investors were rewarded with higher profits and larger market shares than later entrants. Entrants who established a wholly owned affiliate or an equity joint venture did better than those entering with contractual ventures.

Ellis, and Fausten (2000) reached similar conclusions. Bernard and Jensen (2002) and Bernard and Sjöström (2003) indeed found that with controls in place MNEs' establishments are more likely to exit, which they attribute to greater uncertainty and governance difficulties.

The transaction-cost approach suggests that the decline and demise of MNEs should reflect the depreciation and obsolescence of MNEs' proprietary assets (Boddewyn, 1983). Data for the 1967–71 period analyzed by Torneden (1975) and Wilson (1979) suggest that hazard rates for foreign investments were high. Torneden found that 16 percent of new subsidiaries were divested, and the evidence in both studies seems consistent with high rates of infant mortality. Yamawaki (1994*b*), however, observed lower rates for Japanese foreign subsidiaries. Subsidiaries closely integrated with the MNE parent are more likely to survive, as are larger new subsidiaries and those with more diversified outputs. Yamawaki (1994*b*) observed that divested subsidiaries are significantly more likely to have been acquired rather than built *de novo*: A business once sold as a unit can more readily be sold again. The same pattern is evident in the data of the Harvard Multinational Enterprise Project (Curhan, Davidson, and Suri, 1977, pp. 21, 168). Divestments are not concentrated in developing countries, and the data suggest that normal market hazards and not “country risks” are the main factor (Glickman and Woodward, 1989, pp. 129–35). Divested subsidiaries are commonly sold off to domestic host-country enterprises, consistent with their demise being associated with the random hazards specific to foreign investment (Wilson, 1979).

Barkema, Bell, and Pennings (1996) analyzed the longevity of large Dutch firms' foreign subsidiaries. It declines with “cultural distance” from the home country, and green-field entries are not less vulnerable than acquired businesses and joint ventures. The parent's previous international experience overall does not matter, only its local experience with respect to the host country. Shaver Mitchell, and Yeung (1997) analyzed the traits of foreign subsidiaries in the United States that survived from 1987 to 1992 (76 percent of them did). Their study's focus is on the effects of previous international experience possessed by the subsidiary's parent and also the extent of other foreign firms' experience in that industry. The hypothesis about the general foreign presence in the U.S. industry is that other foreign firms possess knowledge and experience that can spill over to the observed subsidiary; that was confirmed for subsidiaries whose parents themselves had previous experience in the United States, but not for others. Indeed, survival rates of subsidiaries with internationally inexperienced parents showed significant relationships to no forms of experience.

Gaba et al. (2002) also confirmed the role of parents' experience – in their case, for explaining how early firms established foreign subsidiaries in China. Benito's (1997) findings about causes of the demise of Norwegian firms' foreign subsidiaries included the looseness of their links to their parents and location in the European Community, where consolidation of affiliates was occurring.

Recent researchers have commonly heeded rational expectations: The firms that stay in are those that undertook investments that would sustain them in the face of negative shocks indeed survived; those that withheld investments more likely exited. Song (2002) explored Japanese MNEs' Asian affiliates' responses to adverse exchange-rate changes. Those who had previously made upgrading investments survived, while those that downgraded more likely exited.

Kimura and Fujii (2003) took a different approach to turnover – studying the situations of large Japanese firms that undertook significant downsizing during the 1990s. Making substantial sales abroad helped the firm avoid downsizing, as the role of proprietary assets implies. Making substantial procurement or outsourcing abroad, however, likely leads an enterprise to downsize. The reason these international vertical connections should drag down Japanese firms is unclear.

We conclude with some evidence on reported profits and their relationship with firms' growth and size. Indirect evidence of business risks appears in various studies of longevity and turnover among MNEs. New foreign investments are subject to high risks, evident in the low aggregate profits regularly reported for foreign subsidiaries after a recent burst of foreign investment (e.g., Ågren, 1990). These risks then decline with age, as is shown by strong associations between its subsidiaries' age and a firm's extent of MNE development (Swedenborg, 1985) and by the strong relation between the profit rates of foreign affiliates and their ages, with the country and industry of the subsidiary controlled (Lupo et al., 1978). However, smaller and newer MNEs that prove profitable apparently grow faster than do large and mature, profitable ones (Rowthorn and Hymer, 1971; Droucopoulos, 1983). This conclusion also emerges from studies of firm size and growth that compare domestic firms and MNEs (Siddharthan and Lall, 1982; Cantwell and Sanna-Randaccio, 1993). Similarly, the average profitability of MNEs usually exceeds that of domestic firms (e.g., Benvignati, 1987), presumably because of rents to the MNEs' proprietary assets, and increases in multinationality are accompanied by increases in profit (e.g., Grant, 1987). Profitability does not increase with size outside of small firm-size classes, however, and growth, if anything, decreases with (initial) size (M. S. Kumar, 1984).

### 3.2. Organizational Structure

Once a firm undertakes its first foreign investment, it must devise ways to integrate that activity with its overall decision-making structure. The devices used build on the organizational structures that have evolved in large enterprises of all types. These organizational devices are economically significant for several reasons. Their design depends on the structures of the markets in which the firm operates, and they influence firms' market behavior. Hence, a knowledge of organizational structures helps explain the behavior of MNEs as economic actors. Recently research has turned from organizational structures to information flows.

#### **Organizational Forms and Foreign Subsidiaries**

Once an enterprise grows large enough to install a formal hierarchical organization, two principal forms are available to it. The functional (F) organization consists of a group of functionally specialized departments reporting to a chief executive. The multidivisional (MD) organization places two or more F organizations under the supervision of a single top executive. The F organization attains the virtues of specialization: Members of each department concentrate on their own tasks without any redundant communication with other departments. The F organization is good at doing one thing as efficiently as possible. The MD form evolved when business enterprises found that they could profitably undertake diverse activities (diversify in products or geographically) so that it became inefficient to place all production activities, say, within a single production department. The MD firm benefits from making each division a "profit center," responsible for turning a profit on its own designated activities. If profit performance gives top management an efficient means of supervising its divisions, then chief executives can concentrate on longer-run strategic matters – anticipating environmental changes, allocating capital among divisions, devising methods for the best use of the firm's resources. The more diversified a firm's activities, the more likely that it employs MD organization. The MD form, incidentally, evolved in the United States around 1920 and subsequently diffused widely throughout the United States and other countries.

Stopford and Wells (1972, Chapter 2) found that U.S. companies usually are organized in the F form at the time they acquire their first foreign subsidiaries. The first foreign venture commonly is tied to the parent by loose organizational links because of the risk and uncertainty surrounding

it and because nobody knows what performance level to expect from it. Also, it simply does not pay at this stage to establish an elaborate apparatus to administer foreign subsidiaries: Steuer et al. (1973, Chapter 7) found that they are more loosely supervised the smaller their parents (also see Baglini, 1976). As foreign operations mature, the enterprise establishes an international division to coordinate such functions as transfer pricing, finance, and the distribution of exports among production units. That event often accompanies or follows the evolution of the parent's overall organization from F to MD. Adoption of the MD form provides the enterprise with flexibility for entering and coordinating new areas of business that makes the proliferation of foreign subsidiaries more likely. Nonetheless, coordinating foreign operations through an international division is problematic for the MD enterprise. Its domestic divisions usually are organized by product, whereas its international division is concerned with overseas production of these same products. Domestic product managers have no direct incentive to give the international division access to assets helpful to foreign units producing the same line, a problem of "suboptimization" for the MNE. Firms therefore cast about for other organizational structures to contain this problem. One solution is to organize the whole company into worldwide product divisions, but that invites a different problem of suboptimization: common aspects of overseas operations are handled in separate divisions. A different solution is to divide an international division into area divisions, each responsible for all operations in some overseas region. This solution is popular where the foreign subsidiaries supply one another with components or intermediate products, requiring close coordination.

The choice of an organizational structure thus represents a balancing of advantages among discrete alternatives. Consider the choice between global product divisions and international or area divisions. The economic principle behind this choice is to place within a division those activities that require or reward extensive communication or coordination with each other and to keep separate other activities not needing continuous or regular interchange. The more diversified are the outputs that a firm produces abroad, and the more international are the markets for its inputs and outputs, the more likely it is to choose global product divisions. Without them, too many interchanges over product-specific problems must pass across divisional boundaries. Also, with an international division or area divisions, a highly diversified company grows entangled keeping track of internally heterogeneous product lines. A single international division is seldom used if the firm makes 40 percent or more of its sales abroad, because the power

structure of claimants for the top executive's ear then grows imbalanced.<sup>12</sup> Davis (1976) noted the prevalence of global product divisions in firms with spending heavily on research, demanding close global management of their product-specific proprietary assets. International area organizations flourish where mature product lines are supplied to common end-user markets, so that the MNE's chief coordination problem lies in its regional marketing organization. Egelhoff (1988) confirmed these patterns.<sup>13</sup>

Matching its organizational structure properly to its pattern of activities is important for a firm's efficiency and profitability. A firm with MD organization and diversified operations abroad that are supervised by an international division probably suffers a mismatch. Stopford and Wells (1972, pp. 79–82) found that the mismatched MNEs they studied were, on average, less profitable than those they deemed properly matched. They also concluded that for a MNE the F form of organization is typically less effective than MD.

Brooke and Remmers (1970, Chapter 3) took a somewhat different approach to explaining MNEs' organizational structures but obtained conclusions consistent with those of Stopford and Wells. They classified management systems in MNEs as "close" or "open," depending on the intensity of the parent's supervision of its subsidiaries and the density of communications and information links between them. The close structures occur in vertical MNEs, where interruption of the product flow through one affiliate promptly affects the operations of others. They also occur in horizontal MNEs that extensively share common technologies or that distribute an identically branded good in several regions, so that malfunction of one affiliate impairs the profitability of others. Another warrant for close control is differences between national markets that do not impel local adaptation of the product (Alsegg, 1971, pp. 120–21, 175). Similarly, de Bodinat (1975) and Hedlund (1981) related the closeness of control to several traits of the enterprise's technology, strategy, and market environment. Supervision is more centralized where the plant sizes and activities of parent and subsidiaries are similar, where technology is complex, where many transactions occur

<sup>12</sup> Perhaps reflecting the same factor of intra-corporate political balancing are the results of some studies of MNEs based in small countries, whose individual foreign subsidiaries might exceed the size of the parent firm. Forsgren (1989) described the units' interaction as a political relationship among equals rather than as a managerial hierarchy.

<sup>13</sup> A complicating factor for MNEs is that their international proprietary assets commonly do not involve the international transfer of all core functions (R&D, manufacturing, marketing) at the same pace, so the same set of coordinating mechanisms is not ideal for all (Malnight, 1995; K. Kim, Park, and Prescott, 2003).

between parent and subsidiaries, where idiosyncratic dealings with national governments are not important, and where the market environment (specifically, level of demand) is relatively predictable. Young, Hood, and Dunlop (1988) and Jarillo and Martinez (1990) demonstrated the sharpness of the distinction between close (centralized) and open (localized) subsidiaries.<sup>14</sup>

MNEs based in different nations made different organizational choices because of differences in national cultures and especially to the gradual diffusion of organizational innovations that originated in the United States. European MNEs once commonly used informal supervision of subsidiaries through nothing more than a personal reporting relationship between the presidents of the subsidiary and parent (Franko, 1976, Chapter 8; Jedel and Kujawa, 1976, pp. 60–62; Jones, 1986a, pp. 13, 16). As late as 1971, more than a third of European MNEs surveyed by Franko retained a “mother-daughter” system, whereas the rest used organizational patterns similar to those of American MNEs (global product divisions, international divisions). Hulbert and Brandt (1980, pp. 11–23) observed this differential diffusion in Brazilian subsidiaries of U.S. and European MNEs. Similarly, Chandler (1980) found that U.K. firms became multinational later than their U.S. counterparts because family control of British firms survived longer. The rate at which the family firm can expand without slipping from its owners’ control is limited by the family’s thrift and fecundity, and the absolute scale of investment in and management of international expansion presses hard on the family’s capacities.

Because the basic organizational structures open to firms are discrete, a dilemma confronts the MNE that needs the types of coordination supplied by both international divisions and global product divisions. Should it live with a pure but ill-suited form? Should it attempt the formal synthesis offered by the novel matrix organization? Or should it muddle through with various coordinating devices to patch up the cracks that appear in a traditional organization? Surveys (Business International, 1981) suggest a drift toward global product divisions, but with copious use of patchwork devices. Egelhoff (1988) found worldwide product divisions prevalent among European-based MNEs, international and area divisions among U.S. MNEs – a natural reflection of the geography of their continents of origin. The matrix organization did not realize its potential (Pitts and Daniels,

<sup>14</sup> Ghoshal, Korine, and G. Szulanski (1994) investigated how the volume of communication between parent and subsidiary varies with the subsidiary’s autonomy. Either sign is plausible: The autonomous subsidiary looks after its own problems, or alternatively it substitutes informal communications with the parent for formal authority links. In the event, no relation was found.

1984). The cross-coordination problems that it addressed have not gone away, however, and perhaps for that reason research has shifted to coordinating mechanisms within the MNE and away from general organizational structures (Martinez and Jarillo, 1989).

### **Economizing on Internal Coordination**

What matters economically for these relationships between the MNE's market environment and its internal organization is not so much the substantive details (which can be left to business practitioners) as the general economizing process that takes place. MNEs lavish resources on internal coordination when close coordination pays, as when the profits of different affiliates are strongly interdependent and inconsistent policies would be costly. Fewer resources are devoted to control when it is costly (for a subsidiary in a remote location), when the affiliate's local environment is unstable or highly distinctive (making coordination ineffectual) (Alsegg, 1971, pp. 9–11), or when dealings with governments are especially important (Pralhad and Doz, 1987), although not highly interdependent (Mahini and Wells, 1986). Fewer resources are used on coordination with a small subsidiary than with a large one, or one in a large and potentially lucrative market.<sup>15</sup> Consistent conclusions come from field studies of the relative influence of parent and subsidiary on various classes of decisions (Negandhi, 1983). Such comparative-statics evidence also appears in the consequence of temporal changes in environmental costs and benefits of MNEs' coordination policies. The mother-daughter organization held greater attraction when international communication and travel were slow and costly (Jones, 1986b), and the decreased impediments (both natural and artificial) to the international movement of goods since the 1950s have raised the payout to inter-affiliate trade and close coordination (instead of each subsidiary doing its best within an insulated national market) (Martinez and Jarillo, 1989).

Research on coordinating mechanisms used by MNEs clearly shows that they seek to make value-maximizing choices. There is wide agreement that MNEs systematically centralize some functions, especially finance (uniform financial reporting, budgeting, accounting, and forecasting) and usually research and development (e.g., Goehle, 1980), while decentralizing others. Given this difference, various control mechanisms can be used together to achieve greater or lesser degrees of centralization as the MNE's situation warrants. Hedlund (1981) equated centralization with the formalization of

<sup>15</sup> See Alsegg (1971, pp. 209–10) on the effects of formation of the European Community.



controls (manuals, written reports, etc.) as distinguished from informal or behavioral controls (visits between subsidiary and parent personnel, long-run transfers of personnel, etc.). He found formal controls more prevalent where subsidiaries' environments are more predictable, other owners are present (i.e., joint ventures), or subsidiaries are regarded as being in trouble. Hulbert and Brandt (1980) and Egelhoff (1984) similarly found a strong contrast between these types of controls and noted that formality increases with the subsidiary's size. Ghoshal and Nohria (1989) distinguished between centralized and formalized control systems, expecting that environmental complexity would increase formality but reduce centralization; however, their data did not support the distinction (complexity reduces both), although subsidiaries in strong bargaining positions within the firm (large, cash rich) are subject to high formality but low central control. Hulbert and Brandt (1980) observed that parents enjoy scale economies in applying parallel controls to all their subsidiaries that limit optimization to each subsidiary's situation.

Not much research links MNEs' positions on this trade-off to their industry bases or other such readily quantified data, but Goehle (1980) showed that the expected sorts of strong contrasts are observed among industries. Attempts have also been made to associate the trade-off with differences in national culture and business practice that might make either formal or informal controls relatively more effective. Among source countries Japan attracts the most interest in this regard (Yoshino, 1976, Chapter 5). No particularly clear patterns emerge, however; Hulbert and Brandt (1980) found that U.S. MNEs use more of both formal and informal controls than do other countries' MNEs, and Japanese MNEs do not rely strongly on informal controls. Where subsidiaries of MNEs with diverse national origins operate in similar host-country environments, their control arrangements show no obvious imprint of their differing source countries (e.g., Safarian, 1966, pp. 85–86).

A standard question in research on business administration is whether one organizational choice yields more profit than another. Since each option's choice should be based on a proper match to the firm's economic environment, one would expect no unconditional difference in profit associated with the control mechanism chosen, but firms with control systems properly aligned to their environments might be more profitable than others. Roth and Morrison (1990; also see Goehle, 1980) found no unconditional differences among business units that could be cluster-analyzed into locally responsive, globally integrated, and bifocal. Leksell (1981) stressed how much organizational idiosyncrasy could prevail in MNEs without seeming

to affect their relative performance. Habib and Victor (1991) tested whether MNEs' profits suffer where mismatches occur in the major organizational choices, finding that "fit" considerations affect organizational choice about as strongly for MNEs in services as in manufacturing, but that only in manufacturing is there appreciable evidence that mismatches impair profits.

### **Organization and Information Links**

A shift has occurred in research on MNE organization away from the organization chart to the communication network and information-processing capabilities of the firm. This shift is ascribed to "globalization" – with that slippery word here having a clear meaning. The disturbances – threats and opportunities – that call for response from the firm tend to be global, in their implications if not their immediate demands. The firm's response needs to be coordinated with a corresponding scope, perhaps involving far-flung assets and facilities. "Global" and "local" responses are contrasted – the respective tasks of the MNE's regional and national affiliates. Faster diffusion of innovations, greater homogeneity of tastes (or at least, more widespread demands for any particular variety) are among the seismic shifts alleged to occur (Bartlett and Ghoshal, 1999).

If the MNE's balance has shifted from local response to local disturbances toward far-flung response to global disturbances, several broad implications follow. Lateral communication among the enterprise's various units is vitally important for ensuring the right response to disturbances of broad scope. Efficient vertical (hierarchical) communication, the focus of traditional organization-chart logic, is correspondingly downgraded. The firm's assets that once sat in the shadow of the world headquarters may be optimally dispersed around the world – optimally in relation to the scope and pattern of expected disturbances (Nohria and Ghoshal, 1997).

This deployment generates costs as well as benefits. Widespread lateral communication and responses imply the presence of some optimal amount of normal-day slack, available for assault on some new threat or opportunity (Nohria and Ghoshal, 1997). The increased density of communication links has its own cost. Maintaining efficient effort bargains with employees would seem to grow more difficult, as the effort and revenue-productivity levels of individuals and business units grow harder to measure. Furthermore, the whole approach turns its back on the patterns of recurring rivalry between the firm and its long-term market rivals. That population when globalized perhaps shows accelerated turnover, but surely retains some identity.

These propositions resist systematic testing, and not much has yet appeared. Nohria and Ghoshal (1997, Chapter 9) sought to characterize forty-one major firms with regard to two aspects of an efficient information network, which they call “national responsiveness” and “global integration.” They concluded that for seventeen of these firms these aspects were properly attuned to the basic market structures of the industries in which they operated, while twenty-four were not. Profit, its growth, and the growth of revenue all were more favorable for the fit firms than for the misfits. Lord and Ranft (2000) investigated the efficiency of information transfers between divisions of diversified U.S. firms established in China, India, or Russia to their siblings that were currently entering. They found that transfer increases with the enterprise’s organizational centralization and certain incentive factors, decreases with the tacitness of the knowledge transferred.

There is also some empirical evidence on changes in foreign subsidiaries’ activity patterns associated with MNEs’ information-linking networks. Papanastassiou and Pearce (1999) found in U.K.-based MNEs a decline in the traditional miniature-replica pattern (the subsidiary produces a subset of the parent’s products) toward “strategic mandate” in which the subsidiary carries the banner for some product worldwide. This shift presumably increases the need for information flows throughout the MNE’s network. Investigating MNEs based in Spain, Martinez and Jarillo (1991) confirmed that shifts in subsidiaries’ activity patterns fed back to influence the intensity of coordinating mechanisms between subsidiary and parent.

### 3.3. *Effects of Organization: New Venture or Acquisition?*

These relationships between the market environment of the MNE and its internal organization hold economic interest because they affect economic efficiency, but they do not directly engage the issues of public policy that motivate most economic analysis. In this and the following sections, we consider some business policy decisions flowing from MNEs’ organizational structures that are significant for public policy. Public opinion sometimes takes offense when a national enterprise is acquired by a MNE domiciled in a foreign land. The stir might result simply from the nationalistic urges that have motivated so much policy toward MNEs but also from a more rational concern for effects on competition (among other national interests): so-called green-field entry by the MNE adds a new enterprise unit to the national market, whereas entry by acquisition does not. Whether for public policy or the behavior of enterprises, the expansion of MNEs through merger

and acquisition deserves attention for its quantitative predominance in the business assets involved.

The organizational costs and patterns of MNEs suggest a series of hypotheses about circumstances in which the foreign firm is more likely to enter a market by acquisition. Influences on MNEs' decisions to acquire rooted in the market for control of business units are also taken into account. Entry via a joint venture with another enterprise cuts across this choice and is discussed in Section 3.4.

### **Risk, Size, and Experience**

Evidence presented previously established foreign subsidiaries as risky ventures. They require fixed and variable costs of administrative coordination, and MNEs incur these only where the expected payout warrants. Both risks and coordination costs affect the choice between acquisition and green-field entry. To start a subsidiary by acquisition, the prospective parent goes into the market for corporate control and acquires equity shares in a going business. There it must compete with equity shareholders in general, and their rivalry forces the buyer to pay a price that would let a noncontrolling investor earn a normal or competitive rate of return. It likely pays a control premium in addition. The MNE might expect positive payoffs, of course, if running the acquired business increases rents to its proprietary assets, or if the MNE enjoys a lower cost of capital. The MNE that instead starts a new venture avoids paying the going-concern value for an acquired business, which it may not value highly if it wants to install its own management practices (a strong preference of Japanese MNEs, according to Tsurumi, 1976, pp. 194–95).<sup>16</sup> However, high start-up costs penalize the outsider relative to a native entrepreneur. Hence, no general presumption favors either method of entry. Extraneous factors can prove quite important: When the stock market is depressed, for example, picking up physical assets by buying companies grows cheaper relative to building plants.

Entry by starting a new business unit might also be more risky than acquisition. The going business is a working coalition. From the viewpoint

<sup>16</sup> Michalet and Delapierre (1976, pp. 33–34) suggested that acquisition is more likely in sectors where the advantages of MNEs rest in general organizational ability and not technology or other specific assets. One might expect that the survival rate of subsidiaries founded by acquisition would exceed that of newly founded subsidiaries, because of the risk difference, but evidence mentioned in Section 3.1 shows that the easier salability of an acquired business is the dominant influence. The paradox might be resolved if failures leading to closure could be distinguished from those that end in sale of the business unit.

of the foreign MNE, it possesses an operating local management familiar with the national market environment. The MNE that buys the local firm also buys access to its stock of information. These factors surely reduce the uncertainty about the new subsidiary's prospective cash flows. Therefore, in general, to choose acquisition over a new venture is to choose a lower but less uncertain expected rate of return.

That conclusion can now be linked to the evidence about MNEs' organizational structures. When a firm first goes abroad, it faces especially high uncertainty and hence cherishes the information stock and lower riskiness of entry via acquisition (or a joint venture with a knowledgeable partner). Of course, the firm launching into MNE status with an innovative proprietary asset might not locate a going concern suitable for its purposes, but otherwise acquisition is attractive. This hypothesis was confirmed by Dubin (1976, Chapter 5) and Stopford (1976). The MNE past its first steps abroad apparently does not balk at the uncertainty associated with a new foreign venture, as Dubin found that large MNEs are more likely to add new subsidiaries through new ventures than are small ones.<sup>17</sup> Finally, the MNE's rate of growth can affect its preferred method of expansion overseas. The evidence suggests that the novice MNE's stock of information increases with the time it has been in the business. If age brings wisdom, the fast-growing MNE holds a smaller stock of experience than the equal-size MNE that has reached its current state more slowly. The fast grower will therefore value more the information stock in the hands of a going firm and more likely add to its subsidiaries through acquisition. Dubin (1976, Chapter 6) seems to confirm this hypothesis.<sup>18</sup>

### **Diversity and Other Influences on Acquisition of Subsidiaries**

The MNE's diversification should also affect the expansion process. First, consider the geographic diversity already achieved by a MNE. This factor, like size and experience generally, increases the MNE's information stock and reduces the premium it will pay for the security of acquiring a going firm

<sup>17</sup> Two points of qualification: First, Dubin examined his hypotheses about acquisition behavior one at a time, and so his finding that  $x$  and  $y$  are related could be because  $z$  is not controlled. Second, there has been a clear trend over time for more subsidiaries to be added through acquisition (Wilson, 1980; Hörnell and Vahlne, 1986, pp. 34–36), and this trend could color conclusions reached by comparing MNEs that have started their subsidiaries at different points in time.

<sup>18</sup> Similarly, in a fast-growing national market, it is more costly to forego profits because of the longer delay associated with building a subsidiary from scratch. Dubin (1976, Chapter 9) reported higher acquisition rates in faster-growing foreign markets.

rather than building anew. Dubin (1976, Chapter 5) and Wilson (1980) accordingly found that MNEs already highly diversified among overseas regions are less likely to add new subsidiaries through acquisition. Diversity also enters in the degree to which the product line of a new subsidiary differs from the MNE's established activities. The more remote the new activity, the greater its uncertainty and potential for costly mistakes, and the more likely is the MNE to pay for the greater security of entry by acquisition (Dubin, 1976, Chapter 6). Cutting across these results, however, is evidence that some widely diversified companies set up a process of expanding via acquisition, whether in their national home markets or abroad, and reap administrative scale economies in that process itself.

Although the effect is ill-documented, product-market competition can influence the entry mode. Hörnell and Vahlne (1986, pp. 97–101) suggested that acquisition is cheapened when the MNE can credibly threaten product-market competition that will impair the target's value. Also, acquisition can occur as a defensive measure to keep the target assets from falling into the hands of a rival.

Some influences on the MNE's method of expansion come directly from the market for corporate control. The net advantage of buying a going concern depends on the price one must pay. The more going concerns that are potential purchases, the lower the market price the acquiring MNE is likely to pay. MNEs should choose to acquire less frequently in less-developed countries, where few suitable firms can be found (Wilson, 1980) and in small economies generally (Dubin, 1976, Chapter 9). The latter result is striking, because the smaller the market, the more competition does the firm entering with new efficient-scale facilities stir up.

The market for corporate control also shows up in the traits of the local firms that MNEs select for acquisition. Little (1981) found U.S. acquirees to be slightly less profitable than other firms in their industries and notably heavy on long-term debt, suggesting that they were constrained for supplies of capital. Similarly van den Bulcke (1985) observed that Belgian targets suffer internal finance problems (38 percent) or capital shortage (29 percent) or need infusions of product technology (17 percent). Other studies have indicated similar patterns. Erland (1980) found that Swedish firms with foreign participation started out with technology intensity below average for their industries, but the majority showed increases after their infusion from abroad. Stubenitsky (1970, pp. 73–77) learned that Dutch entrepreneurs who sell control of their firms to MNEs need specific assets brought by the MNEs (technology, capital) as well as new managerial talents. Reuber and Roseman (1972) stressed the illiquidity of Canadian firms,

which would tend to depress their market values, as a cause of international mergers.

### Statistical Tests

These one-by-one tests of hypotheses have given way to multivariate statistical tests, which also inject some new hypotheses. Caves and Mehra (1986) analyzed decisions of foreign MNEs entering the U.S. market. They found that the larger the business started or acquired relative to the parent's size, the more likely is the security of acquisition sought. Their results on the parent's diversity, however, clash with previous findings based on U.S. investments abroad: The likelihood of acquisition increases with the parent MNE's geographic and product diversification, so large MNEs have apparently routinized the process of entry by acquisition. Specialized parents adding undiversified subsidiaries show no statistically significant preference for a green-field approach. Acquisition is chosen when the entered market is growing rapidly but also when it grows very slowly (which presumably cheapens the existing business assets). Competitive considerations matter: The MNE opening a large business in a concentrated industry is more likely to acquire, avoiding the intensified competition likely when new capacity is added by a green-field entry. Also, a weak tendency toward acquisition is seen when the MNE is joining a rush to the U.S. market of other enterprises based in its industry and country. The number of potential targets (independent firms in that industry and size class) does not affect the entry method, nor does the type of proprietary assets brought by the parent (R&D, advertising related), except that durable-goods producers significantly favor green-field entries.<sup>19</sup>

Other multivariate studies have probed these and other relationships. Kogut and Singh (1988), who also analyzed entries into the U.S. market, added the role of source countries' cultural characteristics. Cultural distance from the United States weakly deters green-field entries (and significantly promotes joint ventures), while a cultural aversion to uncertainty significantly promotes both green-field entries and joint ventures. Zejan (1990a) and Blomström, Kokko, and Zejan (2000) determined that diversified Swedish MNEs also tend to obtain new subsidiaries through acquisition

<sup>19</sup> Brouthers and Brouthers (2000) did find that more technology-intensive Japanese MNEs investing in Europe are significantly more likely to make green-field entries (see also Harzing, 2002). They confirmed the pattern whereby experienced and diversified MNE parents seem to routinize the process of entry via acquisitions.

and that acquisition grows more likely in high-income host countries (larger supply of business units? open market for corporate control?). Zejan (1989) added the conclusion that acquired subsidiaries subsequently undergo less integration into the MNE's operations (inter-affiliate trade). Hennart and Park (1993) analyzed Japanese MNEs' entries into the United States, confirming the findings of Caves and Mehra about industry growth and the size of the U.S. business. However, they also observed that R&D intensity disposes the Japanese MNE toward green-field entry, although entry into a diversifying business is effected by acquisition (Brouthers and Brouthers, 2000).<sup>20</sup> They found no influence for financial factors (stock prices or the parent's leverage) or for the parent's past experience. Related to these results on the MNE parent's extant product and geographic diversification, Harzing (2002) found that the parent's choice of entry mode depends on its chosen organizational structure and intensity of supervision of its affiliates. Ågren's (1990) results are consistent with the preceding studies but not strong statistically.<sup>21</sup>

Healy and Palepu (1993) pointed out that host countries differ greatly in foreign MNEs' access to the market for corporate control, because either regulations are discriminatory or shareholdings are concentrated in financial institutions, so that the market for corporate control is generally inactive. Both factors influence the total value of (normalized) international acquisitions, but the authors did not investigate the substitutability of green-field investments.

A MNE's correct choice of entry mode should in some sense lead to improved performance and vice versa, so that evidence on ex post consequences should complement the preceding findings about the correlates of ex ante conditions. Morosini, Shane, and Singh (1998) observed that Italian firms acquired by culturally distant foreign MNEs subsequently displayed more rapid growth than those with culturally more proximate acquirers. Their interview evidence attributes this surprising result to the acquirers' motive of enhancing their proprietary assets; they perceived a need for an injection of the distant culture. An important if unrepresentative question is the ex post performance of businesses (most previously state owned) acquired in Central and Eastern Europe. Uhlenbruck and De Castro (2000) related the manager-assessed ex post performance of these acquisitions to

<sup>20</sup> Analyzing foreign investments by Dutch multinationals, however, Barkema and Vermeulen (1998) found that the parent's extant product and geographic diversification both pointed toward green-field entry.

<sup>21</sup> A useful article on the limits of our ability to explain choice of entry mode is Yamawaki (1994a).



various factors including the similarity of acquirer's and target's product lines, the presence of a direct vertical link between them, and the amount of investment injected by the acquirer.

### **Volumes of Mergers and Green-Field Investments**

This section has focused on the microeconomic choice between acquisition and green-field investment. A closely related question is what drives the respective volumes of these two types of transaction. Nocke and Yeaple (2004) showed theoretically how a distribution can be derived of home-market firms, exporters, and MNEs created by green-field and acquisition investments. It is driven by the (exogenous) distribution of productivity levels of the firms. The model has no empirical counterparts, but some efforts are suggestive.

Feliciano and Lipsey (2002) analyzed a panel of data by country, industry, and year on foreign entries into U.S. manufacturing industries. The combined acquired assets were normalized by the entered industry's total assets. The model was almost wholly unable to explain the volume of green-field investment (much the smaller component, of course), so the conclusions bear on entries by acquisition rather than the difference between entry modes. The volume of merger entries does respond to several macroeconomic forces: positively to growth in the source country; negatively to U.S. stock prices; positively to the price of the source country's currency. There is some evidence that the source country's comparative advantage in trade ("revealed comparative advantage") promotes acquisitions, and for green-field investments U.S. revealed comparative advantage has a significant negative influence. Employing a similar approach, Globerman and Shapiro (2005) analyzed foreign-investment inflows and outflows for fifty-four countries, with their GDPs' controlled. The principal conclusions concern national growth rates and development measures: for inflows, privatization and a corporate-governance indicator are significant; for outflows, governance and a human-development indicator.

### **3.4. Joint Ventures or Other Agreements Between Firms?**

The joint venture provides one choice on the MNE's menu of organizational options for expansion, along with acquiring a going firm or starting a new business unit (covered in Section 3.3) and entering into some other sort of contractual arrangement with another firm. In this section the joint venture is considered. Specifically, we treat the equity joint venture as an agreement

between two (possibly more) firms, each with a substantial equity interest in the project. It is distinguished from a wholly owned subsidiary, on the one hand, and various contractual dealings, on the other. These latter may be called contractual joint ventures, to emphasize that they take a principal-agent form rather than a pooling of interests.<sup>22</sup>

A great deal of research has recently addressed the choice between equity joint ventures and their contract-form neighbors. Indeed, a principal reason for researchers' strong interest in joint ventures lies in the recent development of the theory of contracts, which provides a strong framework for understanding both equity and contractual joint ventures. We examine that interface after a review of early empirical findings based on case studies and field research.<sup>23</sup>

### **Early Empirical Findings**

In what circumstances have firms entered into international joint ventures? Projects that required two or more major capacities or skills frequently lead to joint ventures between firms each holding part of the needed resources or capabilities. This basis for joint ventures remains prevalent in the present day (Choi and Beamish, 2004). A new product might induce the innovator to take on a distributor as partner, to supply markets that are small or diversified from the innovator's main activities. One survey allocated 40 percent of joint ventures to such technology-complement hookups. The MNE's proprietary assets seem to play a complex role in inducing joint ventures. Their public-good character favors their deployment in joint ventures: The contributed asset remains available for other uses. However, the solidity of the MNE's property right in its proprietary asset matters for successful use in joint ventures. A partner firm working with the MNE's asset can more readily copy it or appropriate it for its own benefit. Intangible assets thus seem to point sometimes toward and sometimes away from joint ventures.

Joint ventures are often found in extractive industries, undertaking projects that are risky or that involve large minimum efficient scales. Risks

<sup>22</sup> Joint ventures here embrace specific agreements that vary in numerous ways. The parties may contribute equal equity, or their interests may be unequal. At the limit only one party may hold equity, so that the agreement converges on a principal/agent contract. The formality of the agreement may vary from precisely drawn (e.g., a franchise contract) to a general pledge to cooperate. See Oxley (1997) and Gulati and Singh (1998).

<sup>23</sup> What follows is a brief summary without citations to the early literature. Previous editions of this book provide fuller summaries with documentation.

can be spread between the participants, and the sharing of the venture's output simplifies its governance.

One factor that has affected joint ventures' prevalence and success is their compatibility with the MNE's organization structure. The MNE that organizes its subsidiaries into geographic area divisions does not treat each subsidiary as a local profit center and hence finds joint ventures inconvenient.

Two issues complicated early efforts to understand equity joint ventures. First, governments have often mandated joint ventures, forcing a local partner on an entrant MNE. Its presence might siphon some rents from the venture or, in the government's eyes, might ensure the consistency of the foreigner's conduct with the national interest. For researchers, that practice at the least blurs any attempt to understand the structural determinants of joint ventures' usage. Second, it was early observed that joint ventures seem short-lived, at least relative to the enterprises that take part in them. They are terminated, or one partner buys out the other. This has been taken to imply that joint ventures frequently are failures (Franko, 1971). A short life, however, can be a merry one. Joint ventures pursue specific objectives, unlike freestanding firms that (presumably) seek profits wherever they may lie. Joint ventures are indeed prone to governance problems, as we shall see, but short life does not establish the predominance of failure.

### Theoretical Framework

An important and recently emerged branch of economic analysis is the theory of contracts (Bolton and Diwatripont, 2005), directly applicable to equity and contract joint ventures and to the choice between them and wholly owned subsidiaries. A simple (and crude) account of some key features follows. Contracts' implementation raises two classes of questions: How well does the contract align the parties' incentives so that they act (as fully as possible) so as to maximize the value of the overall deal? How effective are the governance arrangements under the contract in holding parties to the contract's terms and averting opportunistic behavior?

Equity joint ventures raise major issues of both incentives and governance. Each party commonly can take individual actions that contribute to the deal's joint value. If these actions are observable (verifiable) by the other party, they can be stipulated in the contract. When they are unobservable, however, the deal's efficiency depends on how much the party captures of the resulting increment to the project's value. If the parties agree to split the total profit, each dollar of effort to improve the outcome is rewarded with just fifty cents

of each dollar of extra value. Effort will be underprovided. The parties can indeed fix this problem, raising the marginal reward and using lump-sum transfers to reconcile the superior (stronger) incentive with an acceptable division of the project's total profit. In any case, the extent to which efficient incentives are feasible affects the worth of the joint venture relative to other project structures.

Empirically important governance issues arise because of the role of proprietary assets and intellectual property in the operation of MNEs. Collaborator *A* in a joint venture cannot agree to reward party *B* highly for *B*'s contribution of proprietary technology to the project, without evidence of the technology's worth. However, if *B* reveals its secrets and lacks a firm property right in them, *A* directly obtains access to the knowledge and has no reason for contributing a rent to *A*. More generally, the joint-venture partner will inevitably absorb some of its partner's asset, limited by the state of legal property rights and private enforcement mechanisms (such as symmetrical spillage of knowledge, when both parties contribute proprietary assets).

The theory of contracts makes important points about the allocation of decision rights. Suppose that the parties are asymmetrically informed about the consequences of combining their assets, or about the best action to take after the assets are combined. That is, one party readily observes the outcome of the combination, or subsequent outside events that determine how the combined assets are best deployed. The other party does not. For the maximum value of the combined resources to be realized, decision rights should be placed in the hands of the better informed party. This sharp-eyed party will, however, also have an incentive to make decisions along the way so as to slide the maximum benefit into its own pocket. Both parties recognize this incentive at the outset. Therefore, the best contract assigns the decision rights to the sharp-eyed party but requires an initial payment to the other party calculated on the assumption that its partner will behave opportunistically once the venture is under way and the external information in hand.

### **Wholly Owned Subsidiaries and Joint Ventures: Evidence**

From this early background we turn to the large volume of research that has recently addressed the choice between wholly owned subsidiaries and joint ventures. While we shall concentrate on recent contributions, we can list some of the more significant earlier papers: Lecraw (1984), Kogut and Singh (1988), Gatignon and Anderson (1988), Contractor (1990), Gomes-Casseres

(1989, 1990), Hennart (1991), Agarwal and Ramaswami (1992), and Kim and Hwang (1992).

The choice between wholly owned subsidiaries and joint ventures is unavoidably hazardous, because it ignores other modal choices that should enter into the comparison (licensing, exporting); we consider this problem subsequently. Although a wholly owned subsidiary has one simple governance arrangement, a joint venture is subject to various options. A joint venture must embrace some division of ownership. The MNE joining with a single partner can take a majority or a minority equity position, or the parties can split the ownership 50-50. Whatever ownership split is chosen, its consequences are shaped by other contractual terms affecting the parties' decision rights and sharing of the rewards. Equity joint ventures also compete with contractual joint ventures in which one party is the principal who hires the other as an agent to undertake some task. The agent's compensation may include a component linked to the project's success, but the agent is not a residual claimant. (A franchise agreement is a prominent example of a contractual joint venture.)

A complication of the empirical analysis arises from public policy. Many governments have required MNEs to enter via a joint venture, perhaps mandating the parties' shares of equity and other important terms. The extant stock of joint ventures in some countries comprises some government-mandated projects and some unfettered commercial choices, in proportions that are not always known. Policy-makers' fingerprints on the basic governance arrangements may be invisible to the researcher. Researchers need to filter out the influence of public policy. Another important complication lies in the research sites where scholars have found wholly owned subsidiaries and joint ventures for analysis – China, Japan, Korea, Central and Eastern Europe, and the United States. Although this mixture facilitates a test of “cultural distance” as a determining factor, it raises doubt about whether we can expect to identify global patterns and replicate salient results.

Among the factors affecting firms' choices between wholly owned subsidiaries and joint ventures, Chen and Hennart (2002) focused on barriers to the entry of Japanese firms into the U.S. market. They expected to find joint ventures where U.S. competitors had accumulated large goodwill stocks and where U.S. competitors controlled the channels of distribution. The latter prediction was not confirmed by the data, and the former was indeed overturned. The Japanese parents' expenditures on advertising prior to entry, however, significantly encourage wholly owned subsidiaries. Japanese entries into natural resource-based industries tend to be via joint ventures (reasons were suggested previously).

Chen and Hennart (2004) shifted to a data base that distinguishes Japanese joint ventures that were partially acquired as going firms and wholly owned acquisitions (the units analyzed in Chen and Hennart (2002) were green-field investments). In this data set, Japanese firms' research and development and marketing capabilities both foster full ownership, but the U.S. industry's stocks of intangibles push the Japanese entrant toward joint venturing. The proprietary assets approach to the MNE implies a presumption that the enterprise prefers whole ownership of subsidiaries to avoid leakage and capture the return to improvement investments. One looks for countervailing positive valuations of joint ventures. They can serve as risk-spreading devices where the MNE is diversifying in product space or the host economy's environment is uncertain. The other positive arguments for joint ventures include compensating for large cultural distances between source and host countries and the need for assets available from other firms, although not on an open market. Finally, the hazard of opportunism by a local partner may be avoidable by a device suggested in contract theory: The MNE holds out for an up-front payment by the local party that compensates for its subsequent opportunism.<sup>24</sup>

Consider evidence on these points. Desai, Foley, and Hines (2004a) analyzed the factors influencing U.S. MNEs' choices for organizing their newly acquired subsidiaries. With host-country regulations controlled, the R&D-intensity of the U.S. industry makes wholly owned status more likely. This implication of the proprietary-assets model has been confirmed in numerous studies. MNEs with more international experience tend to be less averse to joint ventures – suggesting that the contracting and governance costs that they incur can be mitigated by experience. No support is found for the hypothesis that affiliates lean more toward joint ventures when diversified outside their parent's principal industry, although this has been affirmed by some other studies. Lu's (2002) similar results for Japanese firms' affiliates in twelve industrial countries are similar. She found the Japanese parents to be creatures of habit, tending to repeat the organizational choices that they had previously made in that industry and host country. Brouthers and Brouthers (2001) pursued the influence of cultural distance between host and source on the choice of organization. A joint venture with a native partner might avert gaffes by the foreigner; or, instead, a joint venture with an alien partner

<sup>24</sup> See McCalman's ((2004) study of international distribution of U.S. movies and video programs. Joint ventures are elected not only in countries with strong protection of intellectual property (partner's opportunism can be controlled) but also where protection is very weak (partner can be made to pay up-front for expected opportunism).

might not prove viable. Case-study evidence can be found consistent with each hypothesis. Examining subsidiaries established in Central and Eastern Europe by MNEs based in five industrial countries, they found that cultural distance clearly points toward joint ventures. The investment risk faced by the MNE intervenes, however, and if it is sufficiently large, the MNE prefers sole ownership.<sup>25</sup>

This evidence on the match between environmental conditions and organization mode has one shortcoming: A lack of indication of how sensitive is the modal choice to an exogenous change in these conditions. A change in U.S. tax rates in 1986 that disadvantaged the choice of an international joint venture by U.S. MNEs led to a dramatically strong shift away from them (Desai and Hines, 1999).

### Ownership Shares in Joint Ventures

The governance problems associated with joint ventures can be approached by investigating their varying ownership shares, which we can divide into equal-share (50-50) ownership and majority ownership by one party. The researcher studying share splits can observe a wide range of them: only 41 percent of joint ventures of U.S. MNEs report ownership shares within the range of 40 to 60 percent (Desai et al., 2004a). A standard economic approach to the issue postulates that a majority-owned venture is under the control of its majority holder, with the minority interest served only to the extent of the decision rights awarded in the venture's contract. The 50-50 venture then poses something of a mystery, as to how clashes of interest are resolved. The empirical literature, however, offers a solution to this mystery: 50-50 joint ventures commonly involve each party contributing a different asset to the project, each necessary for its success, and each giving rise to a continual series of managerial choices. Each party then holds decision rights pertinent to its own asset.<sup>26</sup>

Researchers have searched for predictors of the ownership positions taken by MNEs entering into joint ventures. Henisz (2002) found that the

<sup>25</sup> Makino and Neupert (2000) investigated the symmetry of cultural distance between the United States and Japan by sampling U.S. affiliates in Japan and Japanese affiliates in the United States. For each source country the propensity for full ownership depends very similarly on the usual determinants. However, the Japanese affinity for rules and hierarchies led Japanese MNEs to hold a much higher proportion of wholly owned subsidiaries.

<sup>26</sup> Beamish and Banks (1987) found that appropriation is typically not a problem when the partners contribute disparate technologies. Mariti and Smiley (1983) found such technological complementary agreements to account for 41 percent of the cooperative agreements in their sample, and Stopford and Turner (1985, pp. 112-16) give a similar impression.

likelihood of the MNE taking a majority position increases with the proprietary assets that it holds (R&D, advertising) and also with its sunk physical capital (producer's plant and equipment). As sources of contractual problems, these encourage the MNE to minimize its partner's equity share. Political hazards are an erratic influence, but wield a negative influence on the MNE's share (Henisz pursued the measurement of political hazards in considerable detail).<sup>27</sup> However, political risk interacts with the contract variables to imply that risks reinforce the MNE's preference for holding a majority share.

Pan (1996) undertook a similar analysis of international equity joint ventures started in China between 1979 and 1992. The results are similar to Henisz with regard to the variables pointing to contractual problems and the level of political risk (in China, but varying over time). The MNE's share rises with the duration of the contract underlying the joint ventures. Cultural distance, expected to reduce the MNE's equity share, gives mixed results.

The logic of ownership choices in joint ventures depends on what terms are and are not feasible in the contract covering a venture. Those contract terms potentially substitute for host-country laws and property rights. However, we have little evidence on those contracts. Luo (2005) collected information on joint ventures in China from managers who had been involved in the negotiations. The information addressed the specificity of contract terms, their coverage of contingencies, and the degree to which they obligated the parties. He found that the legal system's incompleteness was a positive influence on all three attributes of contracts. Expected environmental volatility had the same effect (although not on specificity). Expected governmental intervention exerted a negative influence.

### **Performance of Joint Ventures**

It is natural to proceed from what determines the use and structure of joint ventures to how they perform in action. Franko (1971) observed that joint ventures on average had short lives and commonly reverted to sole ownership. Auster (1992) confirmed her hypothesis that joint ventures should occur in less mature and more uncertain markets, which implies that they

<sup>27</sup> In host countries with weak institutional development, the case for a strongly positioned joint-venture partner to ward off political hazards may conflict with the desire to limit the local partner's influence if the host country has weak intellectual property rights (Delios and Henisz, 2000).



will be short-lived.<sup>28</sup> Franko (1971) found that the reversion of joint ventures to single control is positively associated with perceived importance to the parent of internationally standardized product quality, design, and style. MNEs whose strategies depend on standardization fear that a poor-quality product sold under their brand in one country will impair their goodwill asset elsewhere, a circumstance that can bring conflict with a host-country joint-venture partner who has only a local stake in the asset.<sup>29</sup> Franko did not find that R&D activity predicts the abandonment of joint ventures, however, because the research results often are exactly what one partner contributes to the joint venture, taking a share of equity in return. He also found intolerant of joint ventures the MNE that seeks to integrate its subsidiaries' operations. If either its subsidiary *A* or its subsidiary *B* can serve market *X*, the MNE parent will pick the lower-cost supplier (call it *A*). But if *B* is a joint venture and can earn a positive profit from serving *X* (but a smaller profit than can *A*), a conflict arises between the MNE and its local *B* partner, who will want *B* to get the assignment. Similarly, if the MNE's subsidiaries supply components to each other, joint-venture status exacerbates the problem of pricing these intra-corporate transfers. Joint ventures are less troublesome, however, for nontraded goods or products made behind prohibitive tariff walls.<sup>30</sup>

Recent research has confirmed high hazard rates for joint ventures and attributed them to cultural distance between the parents and differences in managerial style. Hennart and Zeng (2002) analyzed a sample that pooled Japan–Japan and Japan–United States joint ventures, confirming the shorter lives of the latter. The Japan–United States ventures tended to be wound up by sale to one party rather than termination or third-party sale, suggesting that the demise stemmed not from failure of the venture but from

<sup>28</sup> Kogut (1988*a*, 1988*b*) provided data on the longevity of joint ventures, showing them to be quite short-lived (peaking sharply at five to six years), with international joint ventures more short-lived than domestic ones.

<sup>29</sup> Also see Stopford and Wells (1972, pp. 109–10), Tomlinson (1970, Chapter 2), and Deane (1970, pp. 75–78).

<sup>30</sup> However, Franko (1971, Chapter 2) could not confirm this statistically. The data of the Harvard Multinational Enterprise Project seem to match the pattern. Of subsidiaries wholly owned by their parents in 1975, 12.1 percent were heavy exporters; the share is 9.4 percent for majority-owned subsidiaries, 8.2 percent for joint ventures, and 8.3 percent for minority-owned subsidiaries. Subsidiaries making heavy sales to other MNE affiliates are about equally numerous among wholly owned subsidiaries (10.5 percent) and joint ventures (10.4 percent), but less among majority-owned subsidiaries (8.2 percent) and minority-owned subsidiaries (7.2 percent). If the population is confined to subsidiaries based in manufacturing, the predicted patterns concerning joint ventures become clearer still (calculated from Curhan et al., 1977, pp. 386, 394).

disagreement over how to run it. The fates of Japan–United States ventures were also associated with the growth and change over time in the proprietary assets that the parents first brought to the joint-venture table; the older the joint venture, the more likely its parents' interests have drifted apart (Nakamura Shaver, and Yeung, 1996). Cultural distance has generally been found a predictor of short lives for joint ventures, but there are exceptions (Park and Ungson, 1997). The performance of subsidiaries, either wholly owned or joint ventures, was found to be superior when the choice of mode matches that one predicted by an empirical model of optimal choice: poor performance as simple mistake (Brouthers, 2002).

A reason why a joint venture is formed is that its parents bring dissimilar but complementary assets to the table. For that very reason they possess different sorts and amounts of experience. These become grounds for disagreement. Luo, Shenkar, and Nyaw (2001) tested this on international joint ventures in China, finding that multinational and Chinese partners did pursue different objectives, and that managers' satisfaction with the venture's performance increased with the respondent's degree of control.

The survival of a joint venture can usefully be regarded as a repeated prisoners' dilemma game, with repeated tests of the parties' ability to cooperate potentially stabilizing a venture that would encounter cheating in a single play. Establishing the value of repeated cooperation then should reduce the cost of maintaining the contract covering the venture and monitoring its adherence. Luo (2002) explored these issues in a study of joint ventures in China. Although informal cooperation and formal contracting are commonly regarded as substitutes, he found that informal cooperation tends to improve the (manager's assessed) performance of the unit. So do favorable contract properties (specificity of terms, adaptability to contingencies). The relationship of past cooperation to the current extent of formal contract seems to indicate that they are complements rather than substitutes, and contribute to serial cooperation.

### **Other Inter-Firm Agreements**

Our roster of inter-firm agreements relevant to MNEs closes with the diffuse category of nonequity agreements. In contrast to the joint venture, the nonequity agreement leaves all equity in one party's hands. This is the principal-agent agreement, in which the principal holds all the equity in the project at hand. Although the agent's compensation may be contingent, it does not comprise an equity share. The universe of principal-agent agreements is large and populous. Some of these are vertical contracts,

technology-transfer agreements (see Section 7.2), franchise contracts, and input-supply arrangements. They all raise the same questions about incentives and feasible governance. For example, to serve a market abroad, the firm might either license its asset's use to another firm or undertake foreign direct investment. The licensing agreement is assumed to give the licensee some share of profits from the venture. This affects the potential MNE's incentives like a tax, limiting its investment in quality. With direct investment, however, setting up abroad is a fixed cost not affecting the quality investment at the margin (if it is profitable overall) (Glass and Saggi, 2002).<sup>31</sup>

Quantitative studies have addressed various pairs or groups of competing organizational arrangements. Technology transfer agreements, examined in Chapter 7, receive extensive study – see Oxley (1999) and Hagedorn, Cloudt, and van Kranenburg (2005). Various comparisons address choices made in particular sectors. Hotel chains, for example, can deal with individual hotels either through franchise agreements or management contracts (Erramilli, Agarwal, and Dev, 2002). Entrepreneurs arranging for processing of inputs outsourced in China can elect either to contract for the output or “rent the plant” (Feenstra and Hanson, 2003). The meta-analysis by Zhao, Luo, and Suh (2004) covers the whole range of modal choice studies.

Forms of cooperation are found that seem to resemble looser versions of joint ventures (Ghemawat, Porter, and Rawlinson, 1986; Porter and Fuller, 1986). The objectives listed for these agreements generally seem to be obvious extensions of the factors explaining the selection of joint ventures. Informal devices seem important to the successful governance of these cooperations: reputations of the parties as hostages to their good behavior, inter-period balancing of equities in uncertain outcomes (Perlmutter and Heenan, 1986). In the computer industry, Gomes-Casseres (1993) identified complex multifirm alliances that seem explainable by numerous coincident sources of market failure. The limited life spans associated with joint ventures also seem to be present, although Johanson and Mattsson (1988) reported an average thirteen-year life span of sampled informal customer-supplier relationships, which commonly persisted over sequences of foreign-investment decisions by one or both parties. These coalitions are found in industries with the same structural properties that are correlated with MNEs' activities overall – research intensive, capital intensive, highly concentrated, export

<sup>31</sup> Some activities such as hotel franchises appear to embody these theoretical issues. The proprietary asset of a hotel franchisor can center either on its reservation system and related marketing skills, a variable cost. Or it might lie in the siting and construction of hotels, a fixed cost (Brown, Dev, and Zhou, 2003).

intensive in the United States, and risky in the sense of inter-temporal variability of firms' rates of return on equity.<sup>32</sup>

Most research on modal choices by the MNE has relied on binary comparisons between modes that are in some sense neighbors. Some researchers have sought an ordering of the modes by some ranking process. Martin and Solomon (2003) argued for such a ranking by the degree to which the technology (or other proprietary assets) represent tacit as opposed to well codified knowledge. Embodiment in exports requires no transfer and thus stands as most tolerant of inchoate knowledge. Wholly owned subsidiaries require proprietary assets to be capable of physical transfer within the enterprise. Joint ventures require not only geographic transfer but also information objective enough to be the subject of arm's-length contracts (verifiable by a court). Finally, franchising and other contracts with principal-agent structure demand the most complete specification of the proprietary asset so as to make its transfer between firms a routine process.

Finally, one can list other exogenous features that turn up repeatedly in diverse binary choices of mode (for example, Pan and Tse, 2000). The relative sizes of relevant markets, interacting with the fixed costs of transfer modes, provide one important example. Another is the role of distance and its effect on costs of transportation and communication. The riskiness of commitments and the risk-bearing capabilities of the parties hold widespread importance. So does the regime of law and property rights as they vary among countries. Pan and Tse sought to use this approach to discriminate between equity and nonequity modes of transfer in entries of foreign businesses into China.

### 3.5. Summary

The transaction-cost model of the MNE implies that the firm is a contractual coalition of heterogeneous assets – long-term employees, physical capital, intangibles. Although ownership links avert market failures in transactions in these proprietary assets, the internal organization of the MNE itself incurs costs and “organizational failures” that color its market behavior and affect important issues of public policy. Evidence on growth processes in MNEs affirms this characterization. The firm takes on ventures abroad only after it has accumulated some critical mass of assets. Because of the novice firm's lack of information and experience, the intrinsically risky first venture usually is

<sup>32</sup> Other studies that identify and describe various “new forms” of international cooperation among firms include Oman (1984), Mowery (1987), and Mytelka (1991).

into a relatively familiar, low-risk foreign environment. The risks of foreign investment are evident in the (limited) evidence on high turnover. Evidence on turnover of MNEs' business units confirms the roles of weak (versus strong) heterogeneous assets and sunk (versus footloose) resources of the firm.

The foreign subsidiary, although first held aloof, must be integrated into the parent's administrative structure – often a functional organization when the first foreign venture occurs, but likely to gravitate into a multidivisional one. Overseas activities can be integrated through either international or foreign area divisions or through product divisions that span both domestic and foreign markets. The MNE's choice tends to devolve from the principle that activities sharing the same problems and needing the most communication should be closeted within the same division. How large an investment the MNE makes in administrative apparatus to coordinate its members depends on whether its activities yield a high return to close integration (subsidiaries in unfamiliar or unstable environments tend to be left on their own). MNEs vary greatly in regard to what decisions are centralized in the parent; finance is always centralized because it provides the nerve system for the parent's efforts to maximize global profits, and it appears that other decisions are centralized to whatever degree is warranted by the technical and market structure of the firm's activities. Nationality-based differences in MNEs' organizational structures reflect the diffusion of organizational innovations from the United States and the persistence of family control and loose organization in noncompetitive markets. Research on MNEs' organization has recently shifted from organization structures to intra-firm flows of information. This shift reflects "globalization" and the decreased pull of geographic centralization of business units' activities.

Whether the MNE enters a foreign market by acquiring a local firm or by starting a new business depends on these organizational traits. Making an acquisition gains the entrant MNE a going local management and represents a low-risk strategy for quick entry, but the market for corporate control capitalizes any rents already accruing to the business into the purchase cost. Green-field entry preserves access to these rents but is slower and riskier. We expect that novice MNEs or those diversifying into unfamiliar product lines tend to make acquisitions, whereas those with extensive experience abroad in their base activities prefer to start their own businesses; the evidence is mixed, in that mature MNEs seem to routinize the process of expanding by acquisition. Among host countries the available supply of local firms and the state of the market for corporate control make a difference.

Some MNEs choose to operate foreign subsidiaries as joint ventures with another partner or partners, and some host governments require MNEs to take on local partners. MNEs vary greatly in their propensity for joint ventures. These may prove welcome where minimum efficient scale is large, risk is considerable, or the MNE lacks some vital input (such as knowledge of host-country conditions). Joint ventures are shunned by the MNE that cherishes appropriable proprietary assets or extensively transfers components among its subsidiaries, but joint ventures are welcome for the firm exploiting an intangible asset in a market diversified from its base. Novices and small MNEs are more likely to welcome joint ventures. The life spans of joint ventures on average are short, reflecting the transient opportunities and/or depreciable proprietary assets that they possess. So-called new forms of cooperation and alliances among MNEs in many ways resemble joint ventures and supply agreements between buyers and sellers.

Recent research has drawn on contract theory to distinguish between equity joint ventures in which each party has an ownership interest and contract ventures – long-term contracts in which one party holds the principal's equity.

## Patterns of Market Competition

Among areas of popular concern with the multinational enterprise (MNE), not the least confusion arises over its relationship to monopoly and problems of competition policy. The MNE that attracts attention is a large company holding a large share in at least some of the markets in which it operates. However, properly analyzed, the normative issues raised by monopoly, large size (or diversification), and international ownership are quite different. In this chapter, we investigate the extent and character of the relationships between the MNE and market competition.

### 4.1. Foreign Investment and Oligopoly

#### Entry Barriers and Bases for Foreign Investment

The transaction-cost analysis of MNEs implies their prevalence in industries with concentrated sellers (Caves, 1971), because the influences giving rise to MNEs are identical to the bases of several barriers to entry into industries, and entry barriers cause high seller concentration. The theory of entry barriers has been controversial at a normative level (Is it socially undesirable that *X* should shield incumbents' profits from entry?), but there is fairly general agreement about where and how entry barriers limit the number of market occupants, our concern here. These are the types of barriers normally recognized:

1. *Advertising outlays* are associated with an entry barrier in certain types of industries where advertising dominates the information sought by buyers and its dissemination is subject to scale economies.<sup>1</sup>

<sup>1</sup> Without the scale economies, the entrant would be at no disadvantage. Without the dominant role of advertising as an information source, the entrant could use other marketing

Advertising is also a good indicator of the prevalence of proprietary and goodwill assets likely to support foreign investment, as we saw in Chapter 1.

2. *Capital-cost barriers* arise where very large outlays are required to enter an industry at an efficient scale of production. It is not clear how much these entry barriers arise from the sunkness of incumbents' capital investments (making the market noncontestable) and how much they devolve from capital-market imperfections. The latter might result from problems in asymmetrical information between would-be entrants and the financial markets – problems that incumbent firms have already somehow solved, bettering their costs of capital. The capital-markets interpretation implies an advantage for firms established elsewhere, including MNEs, as potential entrants, but the sunk-capital case assigns them no such advantage.
3. *Scale economies* in production limit the number of sellers who can earn positive profits. They have the least affinity for foreign investment because they induce firms to centralize production and export to foreign markets rather than to decentralize and acquire MNE status (Section 2.2). However, scale-economy barriers favor multinational operations in some instances. For an assembled product such as automobiles, scale economies might be modest in the final assembly stage but large (relative to the national market) in the production of certain components. If there is no smoothly working international arm's-length market for the components, the MNE can gain an advantage against single-nation firms by producing these components at a single location and assembling them in various national locations.
4. *Research and development* can act as a source of entry barriers because in some settings research activities involve scale economies and provide first-mover advantages to successful innovators.<sup>2</sup> The MNE's advantage for overcoming such barriers lies in the possibility of centralizing research and development (R&D) activities worldwide, just as in the production of components subject to scale economies in production. But the centralization of R&D has a further advantage in that shipping intangible research results around the world may be less costly than shipping physical components.<sup>3</sup>

tactics (lower price, salespersons, etc.). With these conditions, incumbents can enjoy a substantial first-mover advantage.

<sup>2</sup> Like advertising, R&D is associated with appreciable entry barriers only in certain settings. See Mueller and Tilton (1969) and Klepper and Graddy (1990).

<sup>3</sup> See Teece (1977) and the discussion in Chapter 7.



5. *Organizational complexity* is an underworld candidate (Vernon, 1970; Lippman and Rumelt, 1982). If entry into an industry entails organizing a complex coalition of inputs, that task entails a scale economy or fixed cost of its own and more uncertain prospects for the would-be entrant. Many of MNEs' proprietary assets are bound up in the capabilities of just such complex coalitions, which both protects them against entry and favors them as entrants into other markets.

In short, each source of barriers to entry is linked to the reasons why MNEs exist in the first place. And MNEs hold some advantage over newly organized and/or single-nation firms in getting over these barriers to entry (implications to be considered subsequently).<sup>4</sup> Therefore, the height of entry barriers and the extent of foreign-investment activity should be highly correlated. And because entry barriers mostly determine an industry's level of seller concentration, we expect foreign investment and seller concentration to be closely associated.

The empirical evidence clearly supports this conjecture. Dunning (1958, pp. 155–57) found two-thirds of surveyed U.K.-based foreign subsidiaries operating in highly concentrated markets. Steuer et al. (1973, p. 94; also see Dunning, 1973*b*) also observed a significant correlation between seller concentration and foreign subsidiaries' shares of U.K. industries' sales; industries with high concentration and substantial subsidiaries' shares usually contain three or more foreign subsidiaries among the leading firms. Fishwick (1982) reported high correlations between seller concentration and foreign investment in the United Kingdom for later years as well as for France and West Germany, and the pattern also appears for Guatemala (Willmore, 1976), Mexico (Blomström, 1989, Chapter 6), Australia (Parry, 1978), New Zealand (Deane, 1970, pp. 300–303), and Canada.<sup>5</sup> Pugel (1978, p. 68) found a close relationship for U.S. manufacturing industries between seller concentration and the share of activity carried out abroad.<sup>6</sup>

<sup>4</sup> For a particularly clear empirical analysis of how proprietary assets serve to overcome entry barriers, see the study by Hawawini and Schill (1994) of Japanese banks' entry into the European financial services market.

<sup>5</sup> Caves et al. (1980, p. 87); Baumann (1975). The exceptions to this generalization hold some interest. Baba (1975) found no correlation for Japan and suggested that the reason might be the government's solicitous protection of concentrated domestic sellers.

<sup>6</sup> Also see Newfarmer and Mueller (1975) on Brazil and Mexico. Connor (1977, Table 3.19) gave a distribution of estimated minimum four-firm concentration ratios in the industries where these subsidiaries operate. In Brazil, 83 percent are in industries whose concentration exceeds 50 percent, 58 percent in industries where it exceeds 90 percent. For Mexico, the corresponding figures are 84 percent and 21 percent.

Several investigators probed the bases for this well-established correlation. Fishwick (1982) and Globerman (1979*b*) suggested that little or no correlation between concentration and foreign investment in the United Kingdom remains once other determinants of concentration are controlled. Rosenbluth (1970) showed that the prevalence of foreign subsidiaries in concentrated Canadian industries could be explained by the fact that subsidiaries tend to be big firms and the leading firms in concentrated industries are large. In the same vein, Steuer et al. (1973) and Fishwick (1982) noted that foreign investment is never prominent in unconcentrated industries, whereas it might or might not be in concentrated ones. (Concentrated industries can lack foreign investment when concentration rests on scale economies in production that national firms have fully exploited.)

### **Effects of Concentration on Foreign Investment**

Even if oligopoly and foreign investment share common structural causes, either one could still wield some causal influence on the other. But we must tread cautiously when specifying the causal mechanisms and testing them so as to control for their common causes. What causal links can be established theoretically and empirically?

Take first the effect of concentration on foreign investment. Knickerbocker (1973) argued that the extent of foreign investment depends on the form that oligopolistic interdependence takes in certain U.S. manufacturing industries. If an oligopoly is “tight-knit,” its members will share their plans and allocate resources within the industry approximately as would a single monopolist; investment abroad will take place only to maximize joint profits for the industry as a whole. In a loose-knit oligopoly, by contrast, firms recognize interdependence with their rivals but lack sufficient contractual consensus to coordinate their activities.<sup>7</sup> They might then adopt simple imitative behavior: A leading firm raises its price, and others follow; someone expands capacity, and the rivals imitate lest they be disadvantaged in some ensuing price war (or other strategic interaction). Knickerbocker argued that imitation can occur in foreign investments. Rival *A* establishes a subsidiary in France. Rivals *B* and *C* recognize that this investment might knock out their export business in France and give *A* a first-mover advantage

<sup>7</sup> A formal theoretical model that captures this concept is Cournot's: Each competitor sets its quantity (output, capacity) on the assumption that its rivals' quantities are given. Imitative behavior described in the text is consistent with Cournot behavior by followers but not by leaders.

if the investment should prove successful. Still worse, *A* might discover some competitive asset in France that it could repatriate to torment *B* and *C* on their native soil. These considerations dispose *B* and *C* to imitate *A* and found their own subsidiaries in France. Their combined expansions of capacity of course should cause excess capacity or depress prices in the French market – a deterrent. If the investments turn out badly for all parties, however, they do share *some* oligopolistic understanding and hence excess profits (worldwide) that will make the losses bearable.<sup>8</sup>

This pattern had been noted in surveys and descriptive studies (Hellmann, 1970, p. 244; Hu, 1973, pp. 105, 137–38), but Knickerbocker first tested it statistically. Using data on subsidiaries founded by U.S. MNEs in twenty-three countries between 1948 and 1967, he calculated “entry concentration indexes,” indicating the extent to which the MNEs in a particular manufacturing industry bunched their investments in particular host countries and periods of time. Of course, entry could be concentrated because of common responses to the same favorable development in France, and some bunching would occur on a random basis. However, such factors cannot account for the significant relationships that Knickerbocker found between the extent of entry concentration and seller concentration in the U.S. parent industries: Entry concentration increases with seller concentration up to a point (eight-firm concentration around 60–70 percent), then declines. His oligopolistic-reaction model indeed predicts that imitative behavior should occur in moderately concentrated industries, not unconcentrated ones (no interdependence recognized) or highly concentrated ones (tight-knit oligopoly). Bunching is also more evident in industries whose U.S. parent firms went abroad for the first time after World War II, so that stable patterns of mutually dependent behavior were less likely to have matured. Less bunching occurs in industries in which oligopolistic rivalry is blunted by advertising or diversified product lines. Finally, some evidence suggests that imitative behavior is discouraged in industries where scale economies in production are important;<sup>9</sup> imitation then entails either onerous excess capacity in the newly entered foreign market or facilities that are inefficiently small. Yamawaki (forthcoming, Chapter 6) applied Knickerbocker’s analysis to Japanese foreign-investment patterns, finding that entries via acquisition of local firms indeed increase with Japanese industries’ seller concentration.

<sup>8</sup> Leahy and Pavelin (2003) proposed a more abstract model that can yield Knickerbocker’s imitative behavior, with a cooperative equilibrium feasible when duopolistic rivals both invest abroad, but with equilibrium not sustainable when only one investor moves.

<sup>9</sup> Rather weak statistically; see Knickerbocker (1973, Chapter 6).

Green-field entries do not (they do bunch in relation to exchange-rate movements). This result suggests that capacity increases are a substantial deterrent to bunched entry.

Other studies have lent some statistical support for Knickerbocker's main hypothesis. For example, Caves et al. (1980, pp. 86–87) found that the extent of foreign investment in Canadian manufacturing industries (where U.S. companies account for about four-fifths of all foreign investment) is more closely associated with seller concentration in the corresponding U.S. industries than with concentration in the Canadian industries themselves; also, the relationship has the shape predicted and found by Knickerbocker – rising to a maximum at concentration levels that correspond to loose-knit oligopoly. Caves and Pugel (1980) found that in U.S. manufacturing industries the middle-size firms are more likely to be foreign investors in the more concentrated industries. Flowers's (1976) study of foreign MNEs found simply that entry concentration rises with seller concentration in the home industry at a rate that differs from one source country to another. And Caves (1991) applied Knickerbocker's methodology to the horizontal mergers that took place across national boundaries between 1978 and 1988; no link was detected between entry concentration and structure in a broad sample of industries, although imitative waves had apparently occurred in industries with selected common traits. These traits are such that the real options acquired in these mergers are adverse (when exercised) to the profits of competitors, who best respond by imitative mergers to acquire their own bundles of options.<sup>10</sup>

### **Effects of Foreign Investment on Concentration**

The relationship between entry-barrier sources and foreign investment indicates that foreign investment can affect concentration, but with the direction of effect unclear. On the one hand, MNEs are the most favored potential entrants into certain national markets: those likely to be highly concentrated and profitable. In equilibrium they will be less concentrated when MNEs are available to enter. On the other hand, the scale economies inherent in their proprietary assets and their cost or revenue-productivity advantages over single-nation competitors can raise concentration by driving the latter from the market (or into a fringe corner of it). The pro-concentration potential of

<sup>10</sup> Also see Yu and Ito (1988). We omit here a number of poorly specified studies that claim to test Knickerbocker's hypothesis without carefully conditioning it on market structure, as he did.

MNEs' operations can also be regarded as the outcome of random processes. Investments in developing proprietary assets have high-variance outcomes, which tend to increase concentration if the big winners greatly increase their market shares and are not systematically pulled back by subsequent reverses. These diverse possibilities make the specification of empirical tests and the interpretation of their results a delicate matter.

The most straightforward proposition to test is that MNEs can surmount entry barriers that block most other firms. Gorecki (1976) first showed, using Canadian data, that structural entry barriers significantly deter domestic entrants but do not affect the inflow of MNEs. D. M. Shapiro (1983) replicated Gorecki's study with better data, finding that MNE entrants tend to be deterred by scale-economy and capital-cost entry barriers but actually encouraged by barriers related to advertising and research and development (however, advertising and R&D also accelerate rates of market exit for MNEs). Geroski (1991) employed United Kingdom data to discriminate between the entry behavior of MNEs and domestic firms, concluding that the maximum profit that incumbents can take while forestalling entry by MNEs averages about one-tenth less than the maximum that precludes entry by domestic firms.

If MNEs enjoy some advantages in surmounting entry barriers, their arrival could still leave the entered market either less or more concentrated than before. Negative relationships between MNE entries and changes in concentration seem to be the rule. Knickerbocker (1976, pp. 77–78) found a significant negative correlation between numbers of entries into the U.S. market by non-U.S. MNEs and changes in concentration in U.S. manufacturing industries in the 1960s. The same pattern holds for industries in Italy, France, West Germany, and Canada.<sup>11</sup> Also, some studies (Steuer et al., 1973, p. 97; Fishwick, 1982, Chapter 2) found a negative relationship (significant for Fishwick) between the *level* of foreign investment and change in concentration for Britain. However, positive relationships between levels of both concentration and MNE activity persist for some countries (see S. Lall, 1979*a*, on Malaysia; Petrochilas, 1989, Chapter 8, on Greece) even after other determinants of concentration are controlled.

Relevant to these studies of concentration associated with foreign investment are articles that measure its effect on incumbent firms' markups. In a purely competitive market, we expect entry to cause equivalent exit of incumbents with no change in margins. Among others, Driffield and

<sup>11</sup> See Rosenbluth (1970) for the evidence on Canada. The available case studies generally lead to the same conclusion. See Dunning (1974*b*) on various British industries.

Munday (1998) for the United Kingdom and Chung (2001) for the United States found a significant decline in incumbents' markups in response to increased foreign investment. Neither conditioned the effect on the entered industry's level of concentration.<sup>12</sup>

The evidence thus tends to suggest that MNEs' prevalence and concentration remain positively correlated, but in industries prone to foreign investment, their roles as actual and potential entrants reduce the maximum price-cost distortions that concentrated participants can achieve. Other evidence amplifies this somewhat ambiguous conclusion. First, Knickerbocker (1976, pp. 38–59) and Vernon (1977, pp. 73–78) showed that the total number of MNEs increased greatly in the preceding half century, a growing population of both actual competitors in particular national industries and potential entrants to those industries. Knickerbocker (1976, pp. 64–74) also pointed out that the increasing extent of product-line diversification among MNEs' foreign subsidiaries implies that the potential MNE entrants into an industry are not restricted to foreign firms in that same industry. However, the industries with few diversifying MNE entrants are, as expected, those with high entry barriers due to product differentiation, research, or high capital costs and extensive scale economies.

The MNE's method of entry (green-field or the acquisition of an existing national firm) affects its competitive consequences, because green-field entry adds another seller to the market, whereas acquisition initially leaves concentration unchanged. The competitive significance of green-field entries should be greater, although entry by acquisition can have a pro-competitive significance if the MNE vitalizes a failing business or uses its proprietary assets to make the acquired company more effective (see Section 3.3). Entry occurs more often by acquisition when MNEs are hastening to match their oligopolistic rivals' foreign investments (Dubin, 1976, Chapters 10–12): Rates of entry through acquisition rose during the episodes of bunched entry into foreign investment that Knickerbocker (1973) uncovered. Green-field entry is more common when the industry entered abroad is the same industry in which it is based at home (where it should, in any case, be an effective competitor). MNEs do make acquisitions to avoid the alternative of adding capacity to a concentrated industry (Caves and Mehra, 1986; cf. Dubin, 1976, Chapters 6–8). However, acquisitions and other changes in corporate control occur more frequently in concentrated industries and industries in which MNEs are prevalent; they also have larger positive effects

<sup>12</sup> Compare the case of Portugal, in which entrant MNEs were largely export oriented (Barbosa, Guimarães, and Woodward, 2004).

on the productivity of the affected business units, regardless of whether MNEs are involved in the control changes as buyers, sellers, or not at all (Baldwin and Caves, 1991).

Important for weighing the economic performance of acquisitions and green-field foreign investments is their consequences for the productivity of a plant or firm once acquired. A large literature addresses this question for domestic mergers and acquisitions. The consensus conclusion is that productivity in the acquired unit on average improves substantially. However, the acquirer seldom gains and often loses from its investment: the acquiree's productivity gain, although large, does not outweigh the premium paid for control. The acquiree's productivity gain seems to occur for international acquisitions as well (e.g., Arnold and Javorcik, 2005), but international acquirers may do better than their domestic counterparts.

Overall, these conclusions follow: The substantial overlap between the sources of entry barriers and the sources of foreign investment implies that the two should be highly correlated across industrial markets, as indeed they are. These correlations do not themselves prove that any direct causal relationships exist between foreign investment and concentration. Some relationships have been found, however. Rivalrous behavior in loose-knit oligopolies tends to promote foreign investment via mergers and acquisitions, and the occurrence of new entry by MNEs tends, at least initially, to reduce the level of concentration, even though entry is often effected by acquiring a local firm.

#### 4.2. Market Behavior with MNEs Present

The conclusions of Section 4.1 leave us some distance to go with the relation between foreign investment and imperfect competition. The MNE's affiliate is a rival in an ongoing national market. The MNEs that compete in one national market might face each other in many markets and therefore recognize their mutual dependence more fully. If the *new* subsidiary tends to reduce seller concentration, the established subsidiary might elevate entry barriers. This section is concerned with such issues of ongoing behavior: Does the presence of MNEs increase, decrease, or simply alter patterns of oligopolistic interdependence in the world market? The question is difficult to answer, not just because of a scarcity of hard empirical evidence but also because the answer depends on what alternative we have in mind. Would markets be more rivalrous if all transnational ownership links existing among national companies were severed? The answer is almost an automatic yes, because many more companies would populate the world

market than before. Would markets be less oligopolistic if no MNE had ever founded or expanded a foreign subsidiary? The answer depends on how many non-MNE companies would have arisen in the absence of competitive pressures from MNEs – no easy matter to determine. Cutting across these issues is the problem of the geographical scope of “the market” in which oligopoly elements may or may not exist. We follow custom in thinking of the nation as the first approximation to the geographical market, consistent with tariffs, international transportation costs, and shared legal and cultural systems that make economic communication easier within nations than between them (Anderson and van Wincoop, 2004). Still, some products are clearly sold in international markets, others in markets localized within nations.

### **Mutual Dependence Among MNEs**

Do large MNEs collude with one another in individual national markets? Do they collude in recognition of their recurrent contacts in numerous national markets? Theoretical models of imperfect competition in single markets are numerous; they will not be reviewed here, except to note that they identify both the incentive of small numbers of rivals to collude for joint monopoly profits and the difficulty of sustaining cooperative contracts. The models specifically helpful here are those able to relate multilateral foreign direct investments to competitive environments in which they occur:

1. *Product differentiation* in a model of monopolistic competition suffices to explain why countries both export and import the same products (Helpman, 1981) and by extension why two-way foreign investment would occur (think of the foreign subsidiary as finishing and marketing its parent’s distinctive product variety). This model explains why MNEs would face each other in several markets, but it assumes that large numbers of them are present and that no strategic interactions take place (Brainard, 1993a).
2. *Intra-industry trade with Nash behavior* entails firms treating each national market as isolated from others and competing with local rivals in the manner of nonstrategic oligopolists. The specific outcome depends on the decision variable that firms employ: quantity-setting (Cournot) or price-setting (Bertrand) behavior (Brander and Krugman, 1983; Dei, 1990; Krugman, 1989, for a survey). As with the monopolistic competition models, extension of the model’s insights



from intra-industry trade to intra-industry foreign investment seems straightforward.<sup>13</sup>

3. *Strategic interactions* can affect both firms' decisions to operate in several national markets and the competitive consequences of their presence in multiple markets. Horstmann and Markusen (1992) and Rowthorn (1992) analyzed the two-stage game in which duopolists based in separate national markets determine whether each will sell in the other's market through exports, a foreign subsidiary, or not at all. Campa and Donnenfeld (1994) showed that the likelihood of foreign investment done to circumvent a protective tariff need not increase monotonically with the tariff, once domestic rivals' optimal reactions are considered. Given the numbers of MNEs operating in a set of national markets, Bernheim and Whinston (1990) demonstrated how their multimarket contacts could make a cooperative (effectively collusive) outcome feasible, even though it might be infeasible in single markets taken one at a time (see also Cowling and Sugden, 1987, pp. 36–53).

It was shown in Chapter 2 that a great deal of mutually penetrating foreign investment exists among the industrial countries (Norman and Dunning, 1984, and Erdilek, 1985, treated various aspects of the subject). The empirical evidence to be reviewed here bears on the occurrence of collusion and other strategic interactions among MNEs. By implication, if not directly, it addresses the scopes of strategic and nonstrategic interactions among MNEs.

Much of what we know about collusive and cooperative contacts among MNEs comes from the first half of the twentieth century. Perhaps collusion flourished because the significant multinational companies in many industries were fewer than today. No doubt, higher trade barriers contributed. One natural form of international collusion – an agreement that firms will not compete in each others' territories – actually implies the absence of foreign direct investment or its limitation to individual firms' allotted spheres of influence. Vernon (1974a, pp. 276–77) argued that agreements not to compete can explain the almost complete lack of foreign investments by certain U.S. industries in the period between World Wars I and II. Most of the evidence, however, bears on the interactions of MNEs following the occurrence of foreign investments. In the worst case, markets could wind

<sup>13</sup> Also see Venables (1990), who presented a model in which firms first determine their global production capacities, then compete in separate national markets.

up less competitive after the peace treaty is signed than they were before the initial aggressive move. An example is supplied by the British tobacco market after the entry of American Tobacco in 1901; induced by the British tariff, American Tobacco purchased a leading British producer. That event caused thirteen dismayed British rivals to merge into Imperial Tobacco. After a year of duopolistic rivalry, a peace treaty gave Imperial a monopoly of the British and Irish markets, and American got a guarantee that Imperial would not sell in the United States or its dependencies. British-American Tobacco was organized as a joint venture to handle business in the rest of the world.<sup>14</sup> Usually, however, it is unclear that the ensuing oligopolistic rapprochement sufficed to offset the competitive thrust of initiating foreign investments. Rivalry among foreign investors or exporters sometimes led to agreements not to compete, perhaps cemented by licensing agreements or other devices to neutralize competition among established subsidiaries.<sup>15</sup> Some agreements were forged by means of joint-venture subsidiaries or fractional shareholdings exchanged among the parent companies themselves.<sup>16</sup> International cartels were worked out to mitigate competition among established MNEs during recessions.<sup>17</sup> Jones's (1986a) analysis of the profitability of British MNEs attributed some successes to proprietary assets but others to membership in effective cartels.

International collusive arrangements among MNEs or potential MNEs evidently prevailed at some time before 1940 in a majority of industries where MNEs were active. Why does the record since World War II offer no such chronicle of successful collusive arrangements? We cannot rule out, of course, that such arrangements exist but remain successfully concealed. Examples do still turn up. Kudrle (1975, Chapter 10) documented parallel action of the farm-equipment MNEs to price-discriminate against the North American market for farm tractors (also see Newfarmer, 1980, Chapter 4). Ghemawat and Thomas (2005) analyzed the international cement industry, showing that the leading MNEs sought and obtained market power, raising prices rather than lowering costs. However, some old cartels clearly faltered or gave way to aggressive rivalry (Newfarmer, 1985, Chapters 3, 4). For

<sup>14</sup> Dunning (1958, pp. 30–31); Wilkins (1970, pp. 91–93). The explosives market during 1896–1914 provides a similar example (Wilkins, 1970, pp. 89–91), the metal-container industry a more recent one (Wagner, 1980). Also see Hu (1973, pp. 163–65) on the automobile industry.

<sup>15</sup> Wilkins (1974, pp. 79, 80, 82, 86–88, 151); Wilkins (1970, p. 87). See Dunning (1958, pp. 158–60) for more recent experience.

<sup>16</sup> Wilkins (1974, pp. 68, 78–79, 292–94); Franko (1976, Chapter 4).

<sup>17</sup> Wilkins (1974, pp. 173, 175).

several reasons, the extent of effective international collusion should have decreased markedly. Between 1945 and 1955, many U.S. MNEs were successfully prosecuted under U.S. antitrust laws for their earlier collusive behavior (Wilkins, 1974, Chapter 12). After World War II, many countries passed antitrust laws, and if these varied in toughness and degree of enforcement, they were still tougher than nothing at all. Partly responding to antitrust prosecutions, partly seizing the opportunity opened by the wartime destruction of their European competitors, U.S. MNEs shifted from cooperative behavior to aggressive actions between 1955 and 1965 and rapidly expanded the number of standardized product lines (i.e., not intensive in R&D) that they produced in Europe.<sup>18</sup> With the successful recovery of Europe and Japan, far more “significant” companies (actual and potential MNEs) came to operate worldwide in most industries than before World War II, and seller concentration measured at the *world* level probably declined in many of the more concentrated industries (Vernon, 1977, p. 81).<sup>19</sup> Finally, the mix of important industries has shifted from those producing homogeneous primary materials (wherein the gap between collusive and rivalrous profits is apt to be large) toward those producing differentiated or heterogeneous goods (in which the differentiation supplies natural insulation to the individual seller while complicating the maintenance of collusion).<sup>20</sup>

Whatever the roles of these changes, recent evidence suggests not so much successful collusion among MNEs as the sort of imitative rivalry that Knickerbocker (1973) associated with loose-knit oligopoly among American multinationals. This behavior can lead to the formation of subsidiaries to preempt rivals or to punish a rival for an aggressive move undertaken elsewhere. Although examples of such behavior go back many years,<sup>21</sup> it has been systematically documented only by Graham (1978) for the years between 1950 and 1970. He hypothesized that a large company in

<sup>18</sup> By contrast, the growth rate of these lines produced in Europe during the next decade (1965–75) was no more rapid than in the rest of the world (Vernon, 1977, pp. 63–65).

<sup>19</sup> Stopford and Baden-Fuller (1988) investigated the interesting case of the European major home appliance industry in the 1970s and 1980s, when the formation of the European Community should have caused an increase in Community-wide concentration (because of great scale economies) but did not. They hold that exchange-rate turbulence supplemented by political pressures against exit kept most of the European firms in the game and precluded the expected concentration.

<sup>20</sup> Evidence from the United States and the United Kingdom rather strongly associates price fixing and market-division agreements among domestic producers with homogeneous products. See Hay and Kelley (1974) and Swann et al. (1974, Chapter 4), as well as Vernon (1974b).

<sup>21</sup> Wilkins (1970, pp. 89–90); Wilkins (1974, pp. 78, 83); Franko (1976, Chapter 4). Arthur D. Little (1976, p. 103) discussed some other reasons for this type of behavior.

MNE-prone industries, finding its domestic market invaded by a new subsidiary of a foreign MNE, is likely to retaliate by invading the foreigner's home turf. The affronted firm's proprietary assets can aid the subsidiary to earn a normal profit, once its strategic value is counted. The strategic value arises if a subsidiary on the invader's turf establishes both a means of retaliation and a hostage that can be staked out in any subsequent understanding between the two parents. In a group of manufacturing industries, Graham determined the dates when European MNEs established subsidiaries in the United States and tested whether they were bunched in ways that significantly suggest a response to a previous bunching of American investments in Europe. He found this pattern for a number of industries, and the lagged response seems to be more clearly evident in those industries with high levels of seller concentration, high R&D outlays, and extensive product differentiation (which tends to set aside nonstrategic explanations).

Franko (1976, Chapter 6) reached conclusions similar to Graham's from reviewing the rapid proliferation of subsidiaries of European MNEs in other European countries after World War II.<sup>22</sup> Tariffs were then being eliminated within the European Community, a move that by itself should have promoted the concentration of production at the most efficient sites. However, it was also a time when the "negotiated environment" of soft competition under complaisant government supervision was giving way to more aggressive rivalry among European firms – both those based in the same and in different national markets. Of course, some of these proliferating subsidiaries might have served as hostages to the parent's cooperative behavior.<sup>23</sup>

### **MNEs and Other Market Rivals**

The concept of *strategic groups* helps us to understand the competitive role of MNEs and their subsidiaries. Firms can compete as active rivals without being identical as peas. They can differ in their participation in other markets: Some are vertically integrated or diversified, others not. They can differ in how they compete in the market at hand: Some produce a full product line, whereas others specialize; some advertise heavily, whereas others do not. Research on industrial organization has shown that, other things being equal, the more complex an industry's strategic-group structure, the more competitive is the market (Newman, 1978). This is because strategically

<sup>22</sup> Also see Tsurumi (1976, pp. 64–67, 121–23) on the experience of Japanese MNEs.

<sup>23</sup> Franko (1976, pp. 149–50) reported circumstantial evidence that a network of joint ventures in the plastics industry serves to give hostages against price cutting.

similar firms readily recognize their interdependence with one another, pursue similar proximate goals, and react alike to any given disturbance. Members of different groups lack these natural harmonies.

The strategic-group concept suggests the hypothesis that MNEs might take part in different strategic groups than their national competitors, or that MNEs domiciled in different source countries might coalesce into different strategic groups.<sup>24</sup> A few industry studies seem to confirm this hypothesis. Sciberras (1977), for example, divided the U.K. semiconductor industry into two groups that are largely congruent with MNEs and national firms. Statistical evidence has also supported the hypothesis. Studies of both Canadian and Spanish manufacturing industries found that the structural forces determining the profitability of national enterprises and MNEs' subsidiaries are quite different, the latter being much less fully explained by conditions in the local market.<sup>25</sup> The same two countries also supply evidence that the profits of domestic companies are lower the larger is the MNE group with which they compete.<sup>26</sup> That difference is of course implied by the proprietary-asset hypothesis about the basis of MNEs, and many studies have found MNE parents or subsidiaries to be more profitable than their domestic competitors. D. M. Shapiro (1980), for example, found U.S. (though not other MNEs') subsidiaries in Canada to be more profitable than Canadian firms after controlling for industry concentration and firms' sizes and financial structures.

The strategic-group concept might also apply to the rivalry between home-based and foreign MNEs in an industrial nation. Because of the national differences analyzed in Section 2.4, one would expect substantial variation among industries in the relative strengths of the home and foreign MNEs. Evidence from Sweden (Swedenborg, 1985, p. 232) and Britain (Hughes and Oughton, 1992) suggests a negative cross-industry correlation of their market shares and an adverse effect on each other's profits.

Anecdotal evidence confirms MNEs' distinctiveness as competitors. They compete in ways that use their proprietary assets to best advantage (Vernon, 1974*b*, 1977, Chapters 3–5). A MNE new to a national market likely proves a disturbing competitive force. Any entrant is likely to disturb an industry with few sellers, but the MNE, lacking familiarity with local folkways, is less likely to fall in with any prevailing pattern of cooperation, a prediction documented by the complaints of its national rivals (Behrman, 1970, pp. 43–52,

<sup>24</sup> These possibilities are discussed in more detail elsewhere (Caves, 1974*c*).

<sup>25</sup> Caves et al. (1980, Chapter 9); Donsimoni and Leoz-Arguelles (1980).

<sup>26</sup> Caves (1974*a*); Donsimoni and Leoz-Arguelles (1980).

provided examples). Domestic competitors' reactions will include attempts to emulate or offset the proprietary assets brought by the foreign investor; Dunning (1986, Chapter 8) chronicled U.K. firms' product competition and cost-cutting that followed the entry of Japanese competitors. As the subsidiary ages and "goes native," however, its competitive manners improve as its market conduct becomes less distinguishable from that of domestically controlled enterprises. A final point of distinctiveness was established by P. J. Williamson (1986), who investigated the effect of foreign subsidiaries' presence on the competition between imports and domestic output in Australian industries. The sensitivity of domestic producers' margins to import prices is lower where MNEs prevail (even with product differentiation controlled), but imports' market shares adjust more sensitively to gaps between domestic and import prices where MNEs are active (which suggests that they internalize sourcing decisions effectively).

### **Profitability and Market Performance**

Concentrated market structures and collusive conduct raise normative concerns about the allocative efficiency of markets. Those concerns have motivated research on the profits reported by MNEs (parents, subsidiaries) similar to those addressed to price-cost markups in general. Both overall and in its applications to MNEs, this research runs into problems of interpretation. That concentrated sellers as a group mark prices up above marginal costs has a clear normative interpretation – a deadweight loss of welfare is occurring. Whether some policy intervention can effectively retrieve the loss remains a separate question. What if particular sellers in a market (possibly MNEs) earn excess profits but others do not? There is no market-level problem of deadweight losses. However, a different normative question might arise about why the profitable sellers' proprietary advantages do not diffuse (so that other sellers can become equally cost-effective), and whether public policy should encourage that diffusion. Let us turn to selected evidence.

Connor (1977, Chapter 5) applied the standard research procedure to subsidiaries of U.S. MNEs operating in manufacturing industries of Mexico and Brazil. He expected their profits to depend on the concentration of all sellers in the host-country markets, the subsidiaries' own shares, and their local investments in proprietary assets (advertising, R&D). His findings were not robust and vary between the two host countries, but they do yield a few generalizations. For Brazil, a subsidiary's profits increase with both industry concentration and its own market share but are unrelated to the subsidiary's outlays on advertising or research. Lecraw (1983) studied

subsidiaries operating in light manufacturing industries in Southeast Asian developing countries. He similarly found each subsidiary's profits to increase with both its own share and market concentration (leading firms' shares). These results confirm the conventional wisdom about industry concentration and profits. They also reveal the rents to MNEs' proprietary assets, because the more productive the asset (something that cannot be observed directly), the higher are both the subsidiary's market share and its profit rate. The normative issue raised by the latter result is exactly the one mentioned in the preceding paragraph.

Lecraw reported other noteworthy results. Profits decline with the number of source countries represented by subsidiaries in the market – a direct test of the hypothesis that a market's strategic complexity is hostile to collusion and monopoly rents (Newman, 1978). Profits increase with tariff protection and decrease with capital intensity and the recent change in the subsidiary's share (suggesting that aggressive competition does not increase short-run profits). Unlike Connor, he found some significant influence of a subsidiary's R&D and advertising on its own profit rate; a nonsignificant result here, however, is no surprise, because the MNE's proprietary asset probably results mainly from current and past outlays of the parent and not its subsidiaries.

N. Kumar (1990) analyzed the determinants of price-cost margins of both foreign and domestic firms in India, where policy interventions likely have strong effects. Concentration and tariff protection are not significant influences, but foreign subsidiaries' margins increase with their reliance on nonproduction labor (presumably involved in deploying their proprietary assets), and their reliance on imported technology, and domestic competitors apparently do better where they are large and can employ labor-intensive production techniques.

Bergsten, Horst, and Moran (1978, Chapter 7) were concerned with the effects of foreign investments by U.S. companies on the profitabilities of their domestic operations. Assuming rational investments by these parties in their foreign subsidiaries, the parents' profitability could be augmented through their foreign investments, in three ways with quite different normative implications. First, proprietary assets discovered or developed at home and then used abroad can yield rents.<sup>27</sup> Second, the MNE's diversification allows it to undertake riskier activities than firms with fewer options for spreading their risks, and therefore might earn higher average worldwide profits. (Of course, with *enough* MNEs around, these rents will be

<sup>27</sup> Severn and Laurence (1974) concluded that the profits of U.S. MNEs were augmented by their ability to amortize the cost of their research activities over worldwide markets.

competed away.) Third, assets picked up in its overseas activities might allow the American MNE to blockade entry, intimidate rivals, or otherwise make the American market less competitive (see Horst, 1974a, Chapter 5). Bergsten et al. found that the domestic profits of firms in U.S. industries increase (i.e., with profits from abroad controlled) significantly with the extent of their overseas activities, as well as with their research and sales-promotion outlays. However, a company's absolute size (including overseas assets) is not a determinant of its profits. Bergsten et al. asserted that this statistical result points to the third link between MNE activity and profits, but it is unclear how the third is distinguishing from the first, in that the better proprietary asset yields both more domestic revenue and more profitable foreign investment.

In conclusion, MNEs tend to be large firms that typically operate in concentrated industries and earn both monopoly profits and rents to their proprietary assets. However, there is no decisive evidence that multinational status either does or does not feed back to make industries still more concentrated or less competitive.

### 4.3. Competition Policy and National Welfare

Because transnational ownership links can affect the competitiveness of markets, the MNE's competitive behavior raises issues of public policy. Every industrial country has some form of competition policy on its statute books – enforced with some degree of vigor and pursuing objectives that usually, but not always, are pro-competitive. Welfare economics affirms that competition policy can help to avert some market failures. The details are complex, and dilemmas commonly arise in which more competitive markets bring society closer to one normative goal while taking it further from another. Nonetheless, the case for the normative superiority of competitive versus noncompetitive markets is broad enough that we assume more competitive markets to be desirable for purposes of the following discussion.

In competition policy, we encounter for the first time, but not the last, the dilemma of conflicting national objectives in policy toward the MNE. Welfare economics usually assumes that the proper and expected goal of national economic policy is to maximize the national income – expected because the government is elected by those who receive the national income, proper because a maximized income can *potentially* be distributed so as to make everyone better off. If each nation acts to maximize its own national income, however, world income need not be maximized, because certain policies can potentially raise one country's income while lowering that of



another. Such redistributions naturally require some transmission belt that links market conditions in the two countries, and this the MNE can provide. If such links exist, the policies that will maximize national incomes taken separately are not globally efficient, and they also become bases for conflict when they redistribute welfare internationally.

In competition policy the core of the dilemma is quite clear. Within the national economy, optimal competition policy calls for competitive markets. To maximize national income in international transactions, however, the nation should extract the maximum monopoly rents from foreigners: charge the monopolist's profit-maximizing price on everything they sell and pay only the monopsonist's profit-maximizing price for anything they buy. The MNEs, along with the exporters and importers, are citizens whose activities invite interference in pursuit of these objectives. Of course, just as each nation rationally seeks to gain monopolistic advantage over others, it also seeks to repel their efforts to wrest the same types of rents from its own citizens. MNEs, especially because their incorporated subsidiaries are legally citizens of their countries of residence, are inevitably caught in the conflict. We summarize a few theoretical points concerning competition policy with MNEs present, then briefly explore the encounters that have taken place between MNEs and U.S. antitrust policy.

### **MNEs and the Theory of Competition Policy**

The normative criteria that welfare economics provides for competition policy in the open economy are a simple translation of those it provides for tariff policy. Domestic markets should be competitive, with the social marginal value (generally equal to market price) in each market set equal to social marginal cost. On foreign sales, however, the social marginal cost should be equated to the nation's marginal revenue. On purchases from foreigners, social marginal value should be equated to the extra revenue expended on the last unit bought. In the context of tariff policy, and with all markets assumed to be competitive, these prescriptions call for a series of taxes on imports and exports calculated to exploit any monopoly or monopsony power that the nation possesses. An alternative, equivalent under some circumstances, is simply to allow and encourage the nation's international sellers and buyers to do the monopolizing themselves. The two policies differ only in whether the revenues turn up in the public treasury or in private hands. This prescription of monopoly/monopsony applies to MNEs as well. MNEs that produce and sell abroad should be encouraged not to compete with one another in foreign markets. National MNEs acquiring

goods abroad for domestic sale should be discouraged from competing as buyers.

The plot thickens if the rival MNEs that invest and sell (or buy) abroad also do business in the domestic market. Conceivably, the government could allow them to behave as monopolists abroad but admonish them to behave like pure competitors at home. Indeed, most countries attempt just this strategy by allowing their exporters to collude on their foreign transactions in ways that would be illegal at home (Organization for Economic Cooperation and Development, 1974). How a given set of firms can cooperate to different degrees in different markets is unclear; Auquier and Caves (1979) showed what compromise competition policy should choose if the same price-cost markup must prevail in both international and domestic transactions. The more international an industry's business, the higher the degree of monopoly that should be allowed by competition policy. Indeed, under restrictive assumptions, the degree of monopoly should be set equal to the fraction of sales made abroad.

The nation that buys goods from a foreign monopolist, whether MNE or exporter can deploy policies to improve its national welfare. If the monopolist profitably supplies the country's market through imports, imposing a tariff can improve the home country's welfare. The welfare gain does not depend on the monopolist producing under increasing cost, as it does when the foreign industry is competitive, although it does depend on the shape of the demand curve (Corden, 1967; Katrak, 1977). However, that optimal tariff could induce the monopolist to switch over to serving the home market through a local subsidiary. Svedberg (1977, Chapter 3; 1979) showed that this switch can leave the home country better off, because it can then tax the subsidiary's profits. But the home welfare level associated with a taxed subsidiary can fall short of that attained when a tariff captures part of the monopolist's profits from selling imports. If so, the home country should ban the foreign investment. Bardhan (1982) developed a similar comparison of cases.

Competition policy as well as tariffs can be used with monopolistic foreign sellers. Indeed, a policy of enforcing competition successfully applied to foreign subsidiaries by a host government has a greater welfare payout than an application to an otherwise identical domestic firm (or industry). That is because foreign producers' surplus is shifted to domestic pockets. If competition policy cannot force prices into equality with marginal costs, national welfare can be raised by shifting business (and producers' surplus) to foreign subsidiaries' domestic competitors – even if the latter's costs are higher.

Competition policy might also address the normatively significant entry-deterrence games that were studied by Horstmann and Markusen (1987b, 1989) and A. Smith (1987). First, a MNE might invest strategically in a small market to preempt a potential local competitor; such preemption can be profitable because the MNE incurs a transport cost serving the host market with exports, and it gains a cost advantage over the local rival from recycling its proprietary asset. The host nation's welfare might be impaired by this preemption: In such a setting, the host is better off with foreign investment if competition suffices to drive prices down to average costs, or if the local firm would not enter in any case; but it might lose if the host market can support a local firm only with no foreign competition (cannot support one engaged in Cournot competition with a foreign subsidiary).

"Profit-shifting" policies have been studied extensively in the setting of international competition in third-country markets between duopolists based in different countries, and the conclusions apply as well to production by foreign subsidiaries as by exporting (see the survey by Krugman, 1989, pp. 1201–7). Suppose that the two duopolists compete as either Cournot or Bertrand sellers. If one government can commit itself to subsidize (in the Cournot case) or tax (Bertrand) its national duopolist, the national firm adjusts its decision variable in light of the subsidy or tax, and the other duopolist responds. The net effect is that profits are shifted from the foreign to the home seller. In some cases, a country might want to subsidize a foreign enterprise if the resultant expansion of its output brought a sufficiently favorable change in the nation's terms of trade (Barros, 1994). Such models of strategic trade policy attracted much attention during the 1980s. However, their shortcomings make them poor guidance for policy-makers: the indeterminacy of whether tax or subsidy should be used (unless the primacy of price or quantity competition can be observed empirically), the possibility of retaliation by the foreign government, and the obscurity of why a government could effect a commitment to boost its firm into a Stackelberg leadership position (which is what the tax or subsidy is supposed to do).

Suppose that national authorities eschew all these nationalistic policies and turn a blind eye to the parentage of firms in the national market. MNEs still raise problems for optimal competition policy. One national firm acquires a company selling the same product line in another country. If the two nations' officials detect monopolistic tendencies by watching the concentration of domestic *producers*, the usual practice, neither authority sees anything amiss. That is because producer concentration remains unchanged (at least initially). But the merger leaves one less independent firm in the world market, and so international *seller* concentration has

necessarily increased. Seller concentration rises in one or both of the countries if either of the now-combined firms formerly exported to the other nation. The world's interest in competitive markets is therefore not automatically served by national authorities, even if they forswear taking monopolistic advantage of each other. Having each national competition-policy authority promote effective competition among whatever firms operate in its own national market is still not worldwide first best.

### **Competition Policy in Practice**

A thorough survey of national competition policy toward MNEs is beyond the scope of this volume, but a brief sketch will illustrate the relationship between theory and policy.<sup>28</sup> Perhaps because of its large and relatively closed economy, the United States traditionally applied antitrust policy more vigorously than did other industrial nations with smaller and more open economies. U.S. policy has allowed its domestic producers less freedom to collude when selling abroad, fearing that foreign-market collusion is likely to spill onto the domestic market. Several threads of U.S. policy tend to maximize world rather than domestic welfare. International mergers have come under fire several times because the foreign firm acquired by a U.S. enterprise was a significant potential (if not actual) competitor in the U.S. market, or even when the probably anticompetitive effect lay partly or even wholly outside the United States. A series of cases after World War II attacked joint ventures that U.S. MNEs had formed with their overseas competitors. Some of these ventures implemented agreements to divide markets and exclude foreign competitors from the United States, in which case domestic economic welfare was the main issue. Other joint ventures, however, had bolstered U.S. MNEs' ability to extract rents from foreign markets. The courts specifically rejected the contention that laws allowing U.S. producers to collude on export sales justified joint or collusive behavior in establishing subsidiaries overseas. It is not clear that the world-welfare perspective would survive if antitrust were an active policy area today, as the U.S. government has cast about for ways to weaken the proprietary assets of foreign firms competing with U.S. MNEs.<sup>29</sup>

<sup>28</sup> Brewster (1958) undertook the classic study of international aspects of U.S. antitrust policy; Wilkins (1974, pp. 291–300) offered a convenient summary of the major cases and some of their consequences. Organization for Economic Cooperation and Development (1977, pp. 17–34) summarized recent cases in other countries.

<sup>29</sup> "U.S. Sues British in Antitrust Case," *New York Times*, May 27, 1994, pp. A1, D2. Issues of national courts' jurisdictional reach over MNEs are always present; see Hymowitz (1986) and Williams (1987).

In an international context the focus has recently fallen on “international mergers and acquisitions” – MNEs formed or extended through combinations of going businesses. A heavy volume of such transactions in the late 1990s raised their priorities in governmental agendas (Evenett, 2003). That wave has broad and easily discernible causes such as deregulation, privatization, increased pressure on managers to maximize value for shareholders, and in some countries, the decline of anti-takeover coalitions. It is difficult to find new ideas about either theory of policy in the ensuing discussion. However, much attention has gone to procedural issues, notably the potential conflict that arises when two or more countries’ competition-policy authorities get involved.

With an independent seller removed, anti-competitive effects could be felt in that country’s national home, in acquirer’s home market (if the acquired firm was active there), or in third countries if the merging firms competed there (Evenett, 2003).<sup>30</sup> Some cooperation takes place among competition-policy authorities in major industrial countries. However, one may wonder whether enough occurs to deal with (e.g.) instances in which expected loss to one country is less than the expected gains to others and no side payments take place (Head and Ries, 1997). Merger reviews appear to be a substantial deterrent, likely because of the long delays that may be imposed.

#### **4.4. Vertically Integrated MNEs and Competition for Resource Rents**

The other major issue of competition policy for MNEs is their interaction with host-country governments over rents to the host nations’ natural resources. Issues of expropriation and confiscatory taxation have, we shall see, revolved largely around the division of natural-resource rents. These interactions evolved in a complex process over much of the twentieth century, but only recently have game-theory models surfaced that are appropriate to explicate them. Nonetheless, we start with the models.

##### **Models of Natural-Resource Extraction with Sunk Costs**

Assume that the host government holds sovereign rights to subsurface deposits of some nonrenewable natural resource. The government’s

<sup>30</sup> Evenett (2003) reported a statistical investigation of the effects of international bank mergers. It gives puzzling results, notably sharp differences between the findings for mergers within the European Union and those outside of it.

objective is to maximize welfare for its citizens. To realize the value of the resource, a mine must first be dug, the (large) cost of which is sunk and irretrievable. A foreign MNE is the economic agent most efficient at constructing and operating the facility. Suppose that the MNE and the government were to reach some agreement that the MNE would build and operate the mine, making fixed and/or contingent payments to the government that divides the rents between them. Once the MNE sinks the investment, the government maximizes national welfare by expropriating the property without compensation and capturing all of the rents. The government cannot credibly commit itself in advance not to expropriate because of its sovereignty. The firm understands this second-stage outcome of the game and hence refuses to make the investment in the first place.

This simple case and variations on it were explored by Eaton and Gersovitz (1984) and others, mainly to seek mechanisms that could resolve the dilemma exposed by the simple model. Eaton and Gersovitz assumed that managerial services are a necessary input, along with the (sunk) capital and natural resource. Managerial services are a flow input neither sunk nor capable of expropriation. Then a feasible agreement is for the sovereign host government to incur the sunk cost of the mine while the MNE provides the managerial services. If the capital-supply role remains with the MNE and the government can make limited credible commitments not to usurp the project's cash flow, Bond and Samuelson (1989) showed that the project might be feasible but suboptimally capitalized. Raff (1992) injected the possibility that the host government is uninformed about the MNEs' cost structure and might therefore settle for taxation (making investment feasible) rather than expropriation. Cole and English (1991) and Veugelers (1993) addressed in different ways multiple stages to the game, such that expropriation is deterred by the host's opportunity to lure in more capital and exploit at a later time, or by the threat that no other MNE will come along to serve its needs. Thomas and Worrall (1994) showed the value of organizing the deal so that the MNE takes its cash flows at the outset while the government waits; the government's terminal cash flow is itself a deterrent to expropriation, and this contract form matches the tax holidays in widespread use between MNEs and some host governments (Section 9.1). Schnitzler (1999) shifted the treatment of sunkness for the investor. The government knows the firm's profit from the project and sets a tax on the MNE in a repeated game. The firm has an outside option, such as mines in other countries that are viable but less productive than the one at hand. A contract between firm and government can be viable if the outside option is good enough to be credible (the firm sinks its investment). If the outside

option is too good, though, the government does not expect to benefit much from future revenues (it expropriates immediately). Choi and Esfahani (1998) also based their analysis on an outside option of varying quality in relation to the project at hand. Finally, Bond and Gresik (1996) introduced a second national government dealing with the downstream unit of a vertical MNE. The presence of a domestic rival to the MNE can complicate the process (Mohtadi, 1990).

### **Rents and the Extractive MNE**

Consider a series of competitively organized production stages—one extracting a nonrenewable natural resource, then selling it to the first refining or processing stage, which then passes it along to the next. With each of these stages organized competitively, the equilibrium price paid by the final buyer yields only a normal rate of return to each of the processing stages. At the initial extractive stage, however, the owners of the natural resource might collect scarcity rents over and above the costs of inputs to the extractive process. These rents result from the recognition by all market participants that the ultimate physical scarcity of the resource will cause its net price to be bid up over time. The owner therefore does not extract any unit of the resource if extracting it later is expected to command a price with a higher present discounted value. This action is individually rational; no collusion among resource owners is involved. In addition to these scarcity rents, some resource owners might earn differential or “Ricardian” rents because their resources are of better quality, cheaper to extract, or more conveniently located than other deposits in use.

Now let one or more of these vertically related stages become monopolized. Under certain assumptions (precluding substitutability between the resource and other inputs), one maximum lump of monopoly profits can be extracted from the whole set of vertically related processes. A monopoly operating at any stage can claim it. If a monopolistic tourniquet has been tightened at one stage, monopoly emerging at another stage in the chain cannot generate any larger lump of total monopoly profits, but the two (or more) monopolized stages can misallocate resources worse than does a monopoly at just one stage. Although the single-stage monopolist can grab the maximum profit lump at any stage, the natural-resource owners are in a peculiar position for monopolizing the resource. This is because they hold a stock of the resource, rather than dealing in a flow of output. If they raise price today and reduce demand, units of the resource must have a lower opportunity cost in some future time period. The monopolistic owner of

a fixed-stock natural resource plans a different profile of output over time from a competitive industry and might well choose a slower extraction rate, but the chosen profile depends on complex factors of time horizons and the shape of the demand curve (its elasticity at various prices). Clearly, though, a successful resource cartel such as the Organization of Petroleum Exporting Countries (OPEC) in the 1970s can wallow in short-run monopoly rents when it surprises its customers with an unexpected price rise, and their short-run elasticity of demand is lower than in the long run, when they can substitute other materials for the monopolized resource.<sup>31</sup>

Vertically integrated MNEs enter into this tale of vertically related markets at two points. First, they deal with the ultimate governmental (or other) owners of the natural resources, striking bargains to incur sunk and avoidable input costs. Second, vertical MNEs compete with each other in small-numbers situations. They can be rivals for rights to extract particular natural resources, a factor that should affect the bargain struck with the resource owners. And their rivalry or cooperation can affect the behavior of markets at other stages in the sequence.

### **The Division of Resource Rents**

The bargains struck by vertical MNEs with host governments over the shares of rents attributable to natural resources have changed dramatically over time. The story originates in the history of colonialism and political interference by the metropolitan countries with the independence of undeveloped areas. An issue quite central to the vast, ideologically charged debate over the nature and purpose of colonial expansion is whether or not economic objectives related to resource rents were central in the pursuit of colonies. The economic behavior of MNEs, however, became an important issue only in the postcolonial years, when these companies found themselves bargaining with sovereign host governments concerned with the maximum welfare of their own citizens. Surveys of this experience (Vernon, 1971, Chapter 2; Smith and Wells, 1975, Chapter 2; Bergsten et al., 1978, Chapter 5) revealed the changing outcomes of these bargains. The changes affect both the deal struck when the MNE enters and its revision once the resource development is under way.

Deals on initial investments changed with the growing independence and sophistication of developing countries' governments and, in many markets, the increased numbers of MNEs competing for resource projects. Formerly

<sup>31</sup> See Pindyck (1978) on the monopolization of stock resources.



MNEs got long-term contracts (“concessions”) giving them extensive rights in return for fixed and modest royalty payments. The royalty payment (an inefficient device, because it raises the MNE’s marginal cost and restricts output) gave way (roughly in the 1950s) to taxation arrangements for sharing the rents, which removed that inefficiency and also shifted some risk to the host government. The hosts also sharply raised their shares of the rents, often taking their gains partly in the form of policy commitments to development objectives (local processing of materials, training nationals, etc.). Host governments increasingly demanded an equity share in the project, which is really no different from taxing the MNE’s profits and need not transfer to the host government more of the rents than would a profits tax (Smith and Wells, 1975, Chapter 2; Garnaut and Clunies Ross, 1975; Gillis et al., 1980).

Other changes involve the “obsolescing bargain,” a direct empirical counterpart of the strategic interaction with sunk costs outlined previously. The host government with sufficient credibility commits to a deal, and the MNE begins to sink a heavy investment in resource extraction. Apart from any uncertainty about the government’s future behavior, there exists great economic and technical uncertainty about the project’s future returns, causing the MNE to hold out for high expected returns in the *ex ante* contract. If the project equals or exceeds the MNE’s expectations, the MNE earns economic profits that might be quite visible to host-country citizens. In that event, the host nation is likely to grow dissatisfied with its terms (Kindleberger, 1969). Even if the government that signed the original agreement stands by it, the process of political competition (whether electoral or revolutionary) brings onto the scene government officials who demand renegotiation of an agreement seen to yield “excessive” profits to the foreigner.<sup>32</sup> In the 1950s and 1960s this pressure usually led to the expropriation of the subsidiary by the host government, with the MNE paid off at negotiated terms. The payoff often was at book value, which in principle lets the MNE recoup its investment but not capitalize the stream of rents that it has been enjoying. Surveys indicated that extractive MNEs were far more concerned about the hazard of expropriation than were other MNEs (Barlow and Wender, 1955, p. 128). Kobrin (1982) observed that natural-resource MNEs are more likely to incur the fixed cost of a staff charged with political risk assignment. And

<sup>32</sup> Picht and Stüven (1991) tested the factors determining whether countries undertook significant expropriations during 1974–75, getting no support for a model resting on national income maximization but substantial support for a behavioral model treating expropriation as a scapegoat strategy. They did find that countries seem to recognize the negative effects of expropriation on good credit ratings.

M. L. Williams's data (1975) (also see Truitt, 1974, and Sigmund, 1980) on the extent of nationalization of foreign investments by developing countries showed the heaviest incidences in agriculture and mining and smelting, along with public utilities.

As host-country governments gained sophistication, they came to recognize that nationalization does not necessarily maximize their national benefits from MNEs' extractive projects. Expropriation, a highly aggressive action, can provoke the victimized MNE to bring its source government to its aid. The host government might be unable to run the operation as effectively as did the MNE, so that the rent stream shrivels appreciably. And the expropriating government could well need the downstream refining and marketing arms of the MNE to process and distribute the output of the nationalized plant.<sup>33</sup> Taxation is a less confrontational and possibly more effective method for the host government to seize the rents. Therefore, the conflicts with MNEs shifted from expropriation to the obsolescing bargain. The MNE enters under agreed terms for the tax and royalty payments it makes to the host government. If the project yields excess profits, political competition forces the government to demand higher payments in some form. The company curtails its commitment of new funds in response to its revised expectation. However, if the project remains viable, the host government need allow the MNE only the minimum cash flow to cover its variable costs. The host country thus appropriates not just any rents obtained by the MNE but its quasi rents as well – the “normal” profit and depreciation flows from its investment in facilities. In this case the host country can gain more by taxation than by expropriation if nationalization is compensated at book value.<sup>34</sup>

One can charge firms caught in the obsolescing bargain with shortsightedness, but the stylized description does indicate how intendedly rational parties, incompletely informed but without misrepresentation, could fall into such sequences. Government behavior also appears rational *ex post*.<sup>35</sup>

<sup>33</sup> M. L. Williams's (1975) data provide some evidence on this point in the differences among sectors in the extent to which the expropriated companies were compensated for the book value of their investments. Presumably, a government that has undertaken to nationalize will compensate the victim only to the extent necessary to maintain some optimal goodwill. The strongest case for compensation comes when the government expects that it will indeed need to maintain future transactions with the MNE. Therefore, the highest proportion of nationalized assets compensated should be in the vertically integrated sectors. Indeed, M. L. Williams (1975, Table 6) found the highest proportions in oil production and refining and in mining and smelting; however, the proportion in agriculture was very low.

<sup>34</sup> These taxation practices will be considered further in Chapter 8.

<sup>35</sup> Of course, if the MNE had few rivals when it negotiated its initial contract with the host government, it presumably won more surplus that could “obsolesce” once its fixed capital

In the aluminum industry, the aggressiveness of various host countries with bauxite deposits varied with the rents and quasi rents potentially available to them. Countries close to the major consuming countries levied higher charges than those some distance away, to collect Ricardian rents due to lower costs of transport to consuming countries. Also, countries with recently developed deposits, where the MNE may be willing to consider additional investments, exercise more restraint (Mikesell, 1975). McKern (1976, pp. 189–93) attempted a comparative analysis of the bargaining outcomes in Australian extractive sectors by calculating approximate ratios of their rates of return to foreign-supplied and domestic capital. The calculation did not impute a rent to the resource itself. He found Australia's profit share lower in sectors that are highly technology-intensive at their downstream processing stages, so that barriers to entry protect the foreign investor from competing bidders. Australia's share increases with the size (relative to world reserves) and quality of the Australian resources, confirming the nation's ultimate access to the rents.

Ultimately other organizational forms replaced the MNE in activities with heavy sunk costs, as the theoretical model predicts. Descriptions of recent practice (UNCTC, 1982, 1983a) emphasize two changes. First, the *ex ante* contracting process has gained a great deal more sophistication, so that the sharing of risks and rents and the handling of contingencies is more fully anticipated, and the *ex post* haggling and "obsolescing" processes are substantially reduced. The efficiency of specific contract terms is better judged: for example, output-sharing arrangements induce the managing MNE to produce suboptimal output, but they could still improve on a profit-sharing arrangement that requires monitoring of the MNE's transfer pricing. Second, a variety of ways have been found to avoid the sunk-cost problem. The MNE commonly now supplies not the physical capital but the mobile assets on which its proprietary advantages actually rest: management inputs and downstream processing and/or marketing of the extractive output. The host government organizes a parallel national corporation to provide the physical investment and infrastructure for the project and also to serve as a monitor of the terms of the contract. Consistent with the spread of incentive-consistent contracts is the great reduction of acts of expropriation (Minor, 1994; Ramamurti, 2001).

Dealings between MNEs and host governments were strongly affected by competition among MNEs. The multinational petroleum companies varied

had been given over as hostage; Diaz Alejandro (1979) surveyed some of the evidence. The effect of MNE competition on the initial bargain will be discussed subsequently.

in their rates and patterns of expansion into the international industry, and one can observe repeated strategic moves by each company designed to keep its capacity at the crude and refining stages in balance (Wilkins, 1974). The companies clearly believed their positions highly risky and sought to limit that risk by maintaining an administratively controlled series of production stages reaching from crude extraction to retail distribution.<sup>36</sup> A vitally important development after World War II was the entry of new firms, which had a profound effect on the terms of bargaining for concessions with the oil-producing countries. The triumphant monopolization of the industry by OPEC in 1973 was clearly set on its course by the success of certain countries in wringing better terms from crude-short companies newly entering into the international market, and with nothing to lose from any renegotiation of contracts signed in the past. OPEC's first major across-the-board price increase was traced to the effects of competition for concessions in certain North African countries in the 1960s (Vernon, 1976a, pp. 159–78). Even before that, the majors had been willing to go along with tax increases by the producing countries because these taxes were calculated in a way that made them a deterrent to price cutting by the companies in their sales of petroleum (Penrose, 1968, pp. 200–210).

Some features of the international aluminum industry also illustrate defensive strategies and the effects of competition. Stuckey (1983, Chapter 2) observed a slight downward trend in the extent of vertical integration of the leading companies between 1955 and 1977, but newcomers still proceed toward full vertical integration as expeditiously as possible. He expressed some surprise at this trend because the industry's total output has grown faster than the efficient scale of facilities in refining, so that one might otherwise expect less integration as well as more competition in the emerging structure. International joint ventures in aluminum grew explosively in the 1960s and 1970s, so that by 1977 they accounted for 36.2 percent of bauxite production, 44.7 percent of alumina, and 38.0 percent of primary aluminum. Stuckey's (1983, Chapter 4) explanations included several transaction-cost factors noted previously (Section 3.4), but he also judged that joint ventures help to restrain competition. After World War II, many new entrants came into the aluminum industry, including Japanese firms and state-owned

<sup>36</sup> The reasons for vertical integration in petroleum have been discussed by Penrose (1968, pp. 46–50, 253–9), Greening (1976), and Teece (1976), among others. Adelman (1972, pp. 94–97) (also see Greening, 1976, Chapter 2) also stressed the role of forward integration into distribution in stabilizing market shares and maintaining points of contact among the majors for evaluating each others' plans. Litvak and Maule (1977) discussed this pattern in another industry.

enterprises in countries that were not traditional aluminum refiners. Not only did their entry make the industry more competitive per se, but also their “strangeness” fragmented its strategic-group structure, rendering mutual understandings difficult. Stuckey suggested that the established firms welcomed the newcomers into joint ventures partly to socialize them and to ease communication within the industry.<sup>37</sup>

#### 4.5. Summary

The transaction-cost model of the MNE predicts that it will not appear in purely competitive markets. The same features of a market's structure that explain the coming of MNEs also can give rise to barriers to the entry of new firms. Because of these common causes, we expect, and find, high correlations between industries' levels of seller concentration and the prevalence of MNEs. Correlation is not causation, however, and the question of causal relationships between MNEs and concentration is intricate. Knickerbocker (1973) showed that foreign investment in some moderately concentrated industries behaves like other forms of nonprice competition: It is inflated in oligopolies whose leading firms recognize their rivalry but imitate each other defensively rather than cooperating. As a result, an industry's foreign-investment decisions become bunched. The possible effects of MNEs on seller concentration are various, but one is clearly the MNE's role as a favored potential entrant. Influxes of MNEs at least initially reduce the concentration of the national markets that they enter. This pro-competitive role is weakened by MNEs' blossoming taste for entering markets by acquiring established local firms.

Several theoretical models explain why MNEs should interpenetrate each other's national markets for both nonstrategic and strategic reasons, and also why parallel contacts among multimarket firms can increase the feasibility of inter-firm cooperation or collusion. Empirical evidence on the aftermath of MNEs' market entries documents collusive outcomes before World War II. Since the war, however, many more MNEs have populated most industries than before, and more countries seriously apply competition policy. MNEs fragment the strategic-group structures of markets, a pro-competitive development. Statistical analyses of MNEs' profits do not effectively test their

<sup>37</sup> By a contrary policy of freezing them out of joint ventures, the established firms might have weakened them or deterred their entry. Stuckey suggested that this strategy was not used because entry barriers were in any case no longer sufficient to keep out certain major potential entrants (large copper and oil companies).

competitive behavior, because those profits include rents to the MNEs' proprietary assets as well as any monopoly profits.

MNEs pose a dilemma for competition policy insofar as national policy seeks to maximize national welfare, not that of the trading world as a whole. Maximum national welfare calls for competition in home markets but seizure of any opportunity for the nation's MNEs (and other citizens) to lift monopoly rents from foreign pockets. In domestic markets, competition-policy authorities should discriminate against foreign monopolists if and only if policy resources are insufficient to go around. Various national policies are identified that might shift profits from foreign to domestic pockets. United States antitrust policy has, for whatever reason, been rather sensitive to international linkages and foreign national welfare in cases dealing with MNEs, apparently closer to maximizing world than national welfare. In recent years, industrial nations have made some efforts to coordinate their competition policies out of concern for the number of foreign investments taking the form of large-scale international mergers and acquisitions.

Vertically integrated MNEs compete for nonrenewable natural resources, a process that brings them into bargaining with host-country governments seeking to maximize the contributions of resource rents to their national incomes. Given large sunk costs of extracting natural resources, a host government's power to expropriate theoretically precludes foreign investment unless a repeated game or a transfer of the sunk-cost obligation to the government averts the problem. The spread of more complete and incentive-compatible contracts has reduced the conflicts between firms and host governments and coincides with a great reduction in expropriations.

## Income Distribution and Labor Relations

The multinational enterprise's relationship to wages and income distribution raises questions at two levels of analysis. In general equilibrium, the MNE reallocates capital between nations. That transfer can alter the income distribution within the source and host countries. In the individual industry (partial-equilibrium analysis), the MNE can affect the labor-management bargain. We shall take up these two levels of analysis in turn; the concluding section will suggest some propositions about the relationship between them.

### 5.1. Income Distribution in General Equilibrium

In the early 1970s, U.S. labor unions campaigned strenuously to restrict foreign investment by U.S. corporations, in the name of saving American jobs. Nearly two decades later Glickman and Woodward (1989) argued that, while U.S. investment abroad destroys American jobs, foreign MNEs' investments in the United States do not create very many. Similar issues arise periodically in other countries, as in Japan's concern in the 1980s that foreign investment was "hollowing out" its manufacturing sector. Economic analysis does not accept the popular view that foreign investment permanently changes the level of unemployment, but it does affirm that short-run changes in unemployment and permanent changes in real wages can result. Exactly what changes are predicted depends sensitively on assumptions about the nature of direct investment and the structure of the economy. We start with the long-run effects on income distribution and wages and then treat employment effects as their short-run counterparts.

### Theoretical Models

International-trade theory offers several models that relate international factor movements to the distribution of income. Each abstracts from a great deal, as do all tractable general-equilibrium models. They give very different answers.

Assume we have two countries, Home and Foreign, each with a fixed factor endowment of (homogeneous) capital and labor. Each country produces a single good, and no commodity trade takes place between them. Suppose that (initially) the real return to capital is higher abroad, inducing some domestic capital to migrate to Foreign. In Home, each worker now is assisted by less capital in the production process; the marginal product of capital therefore rises, and that of labor falls. If all markets are competitive, including markets for factors of production, the wage falls. Home's national income rises because the capital that went abroad earns more for its owners than before. The returns to all units of Home's capital rise. Factor rewards go the opposite way in Foreign; the inflow of capital bids up the real wage and erodes the return to Foreign's native capital. Thus, self-interested labor opposes the emigration of domestic capital abroad but welcomes an influx of foreign MNEs.

This theoretical conclusion persists after we allow for commodity trade, so long as each country produces but a single commodity for domestic consumption and export, or all the commodities that each produces use capital and labor in the same proportions at any given set of factor prices.

The results do change substantially, however, if each nation produces more than one good, and their production functions differ in factor intensities (proportions of capital to labor used at any given factor-price ratio). Then we are into the framework of the Heckscher-Ohlin model, reviewed in Section 2.3. The structure of the nation's trade does part of the adjusting to any international reallocation of factors – an important new element in the model. Suppose that Home possesses more capital per worker than Foreign, so that Home is well suited to produce capital-intensive goods. It tends to export capital-intensive goods, therefore, and import labor-intensive commodities; unless Home's citizens' tastes in consumption lean disproportionately toward capital-intensive goods, these will be cheap in Home in the absence of trade. Now suppose that as an exogenous occurrence some Home capital migrates to Foreign, leaving Home with less capital per worker and Foreign with more than before. This shift in their factor endowments cuts into the international comparative advantage of Home and Foreign and generally predicts a reduced flow of international trade between



them.<sup>1</sup> Within each country, the change in factor endowments induces a shift of factor services away from the industry supplying exportables and into import-competing activities.

However, that shift itself mitigates the negative effect of capital's emigration on the wage of Home's labor because, in both of Home's industries, the decline in the capital-labor ratio is smaller than for the country as a whole. That seeming impossibility results because the transfer of factors from Home's export-competing industry releases a lot of capital, and only a little labor, relative to the proportions absorbed when Home's import-competing industry expands. The shift of factors of production between industries thereby does part of the job of adjusting to the economy's overall lower capital-labor ratio. Because the capital-labor ratio in each sector falls less, the wage falls less than it otherwise would.

At the limit, the adjustment of Home's output pattern and international trade could account for the system's whole response to an outflow of capital, so that wages (and returns to capital) at Home would be unaffected by the capital outflow. This outcome is possible if Home is a small country whose exportable and import goods' prices are set competitively in a larger international market. Home's terms of trade then are unaffected by the capital outflow. The outflow tends to cheapen Home labor and raise the return to Home capital, as before, but any such tendency generates profits for Home's import-competing industry (which uses relatively much labor) and makes Home's exportables industry (using more costly capital) run losses. Factors are shunted to the import-competing industry, as before. Indeed, because the terms of trade are given, this factor reallocation continues until the capital-labor proportions in all industries are back to their levels before the disturbing capital outflow. Then the former wage and capital-rental levels are consistent once more with equilibrium: Home's markets for labor and capital are cleared, and each of Home's commodity sectors earns normal profits.<sup>2</sup>

<sup>1</sup> See Section 2.3. In different conditions, trade and international factors movements are complementary rather than substitutes. Purvis (1972) showed that a flow of capital from Home to Foreign can expand the trade between them if production functions differ in the two countries so that Foreign's import-competing industry has a relative productivity advantage (even though it has been "disadvantaged" by Foreign's small endowment of capital). Also see Markusen (1983) and the discussion in Section 7.3.

<sup>2</sup> Chipman (1971) generalized this situation to the world economy. He provided conditions under which, with labor immobile but capital freely mobile internationally, the terms of trade in the world economy are unaffected by shifts in demand among products. Capital rentals are also unaffected, as is the distribution of income. The transformation curve for the world economy as a whole (transformation curves for individual countries were represented in Figures 2.2–2.4 in Chapter 2) must have a "flat spot" on it – meaning that

This adjustment through the shifting of factors between industrial sectors will break down, of course, if Home's exportable industry is actually wiped out before the *ex ante* factor rewards are restored. Should that occur, Home would be in the situation of the one-commodity model described earlier, and the direct relationship between the economy's capital-labor endowment and the returns to its factors of production would prevail.

The preceding paragraph shows that real wages and capital rentals can be left quite undisturbed by exogenous international movements of capital or by other "quantity" disturbances such as shifts of demand between products, although factor rewards in a country depend on its terms of trade (the Stolper-Samuelson theorem). A corollary of the Heckscher-Ohlin model is that a country's tariff policy affects international capital movements (Mundell, 1957). Suppose that Foreign imposes a tariff on imports of capital-intensive goods, raising their domestic price and therefore tending to raise capital rentals. If Foreign is a small country, its tariff and the resulting rise in capital rentals attract unlimited capital inflows from abroad that persist so long as the local reward to capital lies above the world level. The increase in its capitalists' income that Foreign's tariff produces is therefore transitory, because the capital inflows from the rest of the world continue until its return is pushed back down to the world level. Foreign winds up with a larger capital stock in residence, but no permanent change in either capital rentals or wages.

In Section 2.3, we reviewed several modern contributions to international-trade theory that have their own implications about capital movements and income distribution. A central generalization of Heckscher-Ohlin holds that, even with factors of production immobile between countries, factor prices (e.g., wages in the two trading countries) can be equalized. Alternatively, given the stocks of capital and labor in a two-country world, they can be arbitrarily allocated between the countries in a wide variety of ways consistent with factor-price equalization. Within those zones of equalization, international capital flows have no effect on income distribution. This proposition yields several extensions:

1. Regard MNEs as producers of proprietary assets usable either at home or abroad. Helpman (1984) showed that their activity widens the range of allocations of the world factor endowment in which factor-price equalization holds, compared with the simple Heckscher-Ohlin model.

various quantities of food and clothing can be obtained from the world's factor endowment at given terms of trade. However, shifts in world demand from one of these combinations to another may require the reallocation of capital between countries, as described in the text.

If the production of proprietary assets is a capital-intensive activity, in some situations direct investment abroad will raise rewards to Home's capital and lower labor's wage.

2. Models of production differentiation and trade with monopolistic competition need not change any of the preceding conclusions about factor flows and income distribution, but they explain intra-industry trade that is not naturally related to factor-price differentials. In general, they lower the likelihood that international capital transfers are linked strongly to factor prices.
3. The "specific factors" variant of the Heckscher-Ohlin model (capital is mobile between countries although not between sectors) has been applied to MNEs' distinctive, sector-specific assets. The qualitative implications of that model for income distribution and real wages differ only in some respects from those of the simpler Heckscher-Ohlin model. An outflow of either type of capital from Home will lower Home's real wage, unless factor rewards are locked in to the terms of trade as described previously. An exogenous rise in the price of Home's import-competing good (i.e., a deterioration in Home's terms of trade) causes capital rentals to rise in Home's import-competing sector and fall in Home's export-oriented sector. But now we cannot tell whether Home's real wage will rise or fall.<sup>3</sup> Somewhat in the same spirit is Hartman's (1980) model, in which MNE capital and Foreign's capital are complements in foreign subsidiaries production. Expansion of MNE capital in Foreign then raises the demand for Foreign capital and could lower Foreign wages.

### **Empirical Evidence**

Empirical estimates of the effect of foreign investment on U.S. income and its distribution have used the one-commodity model described previously, which makes no allowance for the important role of international trade in curbing the redistributive effects of international capital movements. Musgrave (1975, Chapter 9) simulated the consequences of repatriating to the United States the stock of direct investments that it held abroad in 1968. Her results depend on the measure of capital used and the assumption made about the elasticity of substitution between capital and labor in U.S.

<sup>3</sup> The marginal product of Home's labor falls in terms of the export good but rises in terms of the other good. Whether labor is better off in real terms therefore depends on workers' tastes.

production (the lower it is, the more the repatriated capital drives down capital's share and raise labor's), but the basic story is simple: Although the repatriation does not change U.S. total income much,<sup>4</sup> it substantially increases labor's income (and share) and lowers the income flowing to capital. A study by Thurow (1976), using a similar model, came to the same qualitative conclusion. It is unfortunate that these studies neglected the influence of international trade on income distribution, because, as we have seen, their conclusions would be greatly altered if the Heckscher-Ohlin relationship between the terms of trade and the distribution of income holds empirically (Bergsten et al., 1978, pp. 104–10).

Frank and Freeman (1978, Chapter 8) rested their estimates on a more complex model, although they directed their efforts to account for saving behavior rather than international trade. In their model, Home is a single-product economy using labor and capital, but Foreign contains two sectors – one using only imported (MNE) capital, the other using only domestic capital, both employing domestic labor. Productivity may differ between Home's economy and Foreign's MNE sector: The higher Foreign's relative productivity, the greater the incentive for Home's capital to go abroad. Similarly, MNE capital in Foreign may enjoy a capital-specific productivity advantage over domestic capital. At this stage, the model yields the same conclusion as that of Musgrave and Thurow: Repatriating all of Home's exported capital will raise the real wage in Home, lowering the return to capital.<sup>5</sup> Home's saving rate is next made endogenous, which changes the results strongly. The chance to place capital abroad in high-productivity activities now increases Home's rate of saving. Conversely, requiring the repatriation of Home's MNE capital restricts saving in Home and cuts the capital stock, rather than providing more capital to work with Home's labor. Therefore, the action lowers Home's wages and national income. Thus, Frank and Freeman identified a second significant theoretical omission from those simulated predictions that MNEs' exports of capital lower the domestic wage: the adaptive adjustment of saving, as well as of international trade (also see Koizumi and Kopecky, 1980). The distributional consequences of foreign investment in the long run remain a strictly unsettled issue.

<sup>4</sup> The repatriation is actually estimated to increase the nation's total income because of consequences of taxation discussed in Chapter 8.

<sup>5</sup> As in Musgrave's analysis, Home's national income actually expands when all foreign investment is repatriated, because of the effect of the corporation income tax. None of these models considers the loss of rents to MNEs' proprietary assets.

## 5.2. Employment and Wages: Short Run and Long Run

The controversies over foreign investments' effect on employment and the balance of payments can be analyzed in a short-run as well as a long-run context. Here we continue to focus the analysis on income distribution and employment, leaving the balance-of-payments question for Chapter 6.

Under certain assumptions, the effect of foreign investment on employment is the short-run counterpart of its ultimate effect on real wages. If foreign investment reduces Home's real wage in the long run, then, in the short run, Home's export of capital brings labor into excess supply – increases unemployment – at the going wage rate. Some interesting analyses, however, deal with the short run directly, rather than borrowing from the long-run context. They lack standard names in the literature; we shall call them the *investment-substitution* and *export-substitution* questions.

1. When a unit of capital is transferred from Home to Foreign, does it add exactly an extra unit to Foreign's capital stock and subtract one from Home's? This is the investment-substitution question.
2. When a unit of capital is transferred from Home to Foreign *and* changes the two countries' capital stocks unit for unit, does it reduce the scope for commodity trade as the Heckscher-Ohlin model predicts? This is the export-substitution question.

Both questions turn on the behavior of variables other than employment and real wages, but they certainly affect those variables, and so they are usefully considered here. Although both are concerned with aggregate economic adjustments, they draw on the microeconomic analysis of the MNE built up in the preceding chapters.

### Investment Substitution

What makes these short-run models differ from the long-run analysis of Section 5.1 is their recognition of a direct administrative link between international capital movements and commodity-output decisions. This link, the essence of the MNE, is missing from most long-run general-equilibrium models. The standard long-run model is internally consistent, because in perfectly competitive markets, the manufacturing firm plays no role as an owner or exporter of capital; capital exports affect firms' production decisions only by altering the prices of their factor inputs. If a competitive firm ran a foreign subsidiary, it would not coordinate its decisions to place capital

abroad and its decisions about what goods to produce at home or abroad; each decision should depend solely on market prices.

The investment-substitution question arises from two properties of the firm as a microeconomic organization. First, MNEs and other firms compete directly in particular product markets. If a MNE spots an investment opportunity, it transfers the capital needed to establish a new subsidiary.<sup>6</sup> This action preempts the investment opportunity for any local firms or other MNEs that might have seized it, and they might not make alternative investment plans immediately. Of course, in a neoclassical competitive model, we expect the addition of some capital to a nation's stock to drive down capital's marginal product; the investment-substitution problem arises because large, lumpy investments might be involved, and the adversary relationship appears in particular product markets. The second property concerns the firm's ability to finance projects. The competitive model assumes that each firm can borrow (or lend) unlimited amounts of funds at "the" market rate of interest – a property preserved in sophisticated modern models of competitive capital markets. However, there are also good reasons why the individual firm faces a rising marginal cost of borrowed funds; the more it borrows, the higher its opportunity cost (see Section 6.1). This constraint puts alternative uses of the firm's funds in competition with one another in a way not recognized in the purely competitive model. Internally generated funds might be adequate to support an investment in a foreign subsidiary or an expansion of domestic capacity, but not both. If the less profitable opportunity cannot be justified at the higher interest rate demanded for funds borrowed on the capital market, another firm might grab the project.

If a dollar of capital transferred from Home to Foreign need not correspond to the actual change in the two countries' capital stocks, how do we classify the outcomes of the investment-substitution problem? Hufbauer and Adler (1968) described as *classical* the assumption that the amount of capital moved internationally equals the decline in Home's and the increase in Foreign's capital stock. The first alternative that they posed, the *reverse-classical* assumption, rests on product-market competition between the MNE and other firms. The MNE invests one dollar in Foreign. It preempts an investment opportunity that would otherwise have been taken by a domestic firm, which now cancels its investment plans. As a result, total investment in Foreign does not increase. When the MNE invests abroad, the strain on its

<sup>6</sup> We neglect until Chapter 6 the possibility that the firm borrows most of its investment in the country where the project is installed.

investment capacity is assumed to make it withdraw from some investment project in Home. However, this abandoned project leaves an opening for some other Home firm, so total investment in Home does not fall. In the reverse-classical case the world's capital stock stays unchanged, as in the classical case; unlike the classical case, each country's own capital stock remains unchanged. The reverse-classical case has an affinity for purchases of existing corporate assets that now make up the major portion of foreign-investment transactions. The liquid assets coming into the seller's hands ultimately exert some effect on real capital formation, but the classical impact of the transfer on wages is surely blunted.<sup>7</sup>

To provide microeconomic underpinning for Hufbauer and Adler's third assumption, suppose that the MNE produces distinctive goods with no close substitutes either at home or abroad. It makes a foreign investment, but without reducing its capital expenditure in Home. No other firm in Foreign finds its market shriveled, and so no offsetting decline in expenditure occurs there. And no other Home firm perceives an investment opportunity left unclaimed, so Home's capital formation is not further affected. In this, the *anticlassical* case, Foreign's capital stock expands, but Home's remains unchanged.

These three alternative assumptions about international investments and capital stocks rest on conflicting views about the market context of foreign-investment decisions. Each follows from stated assumptions, and each can be spun into a consistent story about general-equilibrium adjustments in the economy.<sup>8</sup> They have quite different implications for employment in the short run and real wages in the long run. In the reverse-classical version, foreign investment brings no change in nations' capital stocks, only in their ownership, so a capital transfer does not affect real wages. The classical

<sup>7</sup> Lipsey (1994) invoked the reverse-classical case, arguing that U.S. foreign direct investments preclude foreign firms from stealing business that would in any case be lost to U.S. exporters. The U.S. MNE replaces what would otherwise have been some foreign firm's investment abroad, while no U.S. investment opportunity gets passed up.

<sup>8</sup> The chief problem concerns the behavior of saving, if saving and investment decisions are to be in equilibrium. The reverse-classical case requires that supplies of saving in each country be highly elastic in response to expected rates of return. Otherwise, when Home's MNE borrows to invest abroad and its rival borrows to finance the domestic investment that the MNE passes up, the rate of return in Home's capital market will be driven up, and some other firm will abandon its plans. Similarly, the depressed profit expectations in Foreign must reduce saving there, or otherwise the rate of return will fall and tempt some Foreign firm to make an investment. The anticlassical case requires the same assumption about an elastic supply of saving in Home (or wherever the MNE funds its project), but in Foreign either the available investment opportunities (the marginal efficiency of investment) must be quite elastic or the supply of saving must be inelastic.

assumption about transfers implies the real-wage effects outlined in Section 5.1. The anticlassical version entails an increase in Foreign's capital stock but no reduction in Home's; its implications for real wages seem to lie between those of the classical and reverse-classical cases.

### **Export Substitution**

The export-substitution question stands forth most clearly if we make the classical assumption about capital transfers: Home's capital stock falls and Foreign's rises by the amount of the transfer. What happens to Home's equilibrium level of exports?<sup>9</sup> What does the effect on exports in turn imply for real wages and employment? In the long-run, Heckscher-Ohlin model of Section 5.1, capital transfers, on certain assumptions, substitute for exports, reducing Home's equilibrium level of international trade (exports and imports) overall. The capital transfer also lowers Home's real wage under most assumptions. However, the shriveling of trade and the reduction of real wages are not inevitably connected, and indeed a capital transfer can lower wages without affecting trade, or vice versa (see Section 2.3 and Markusen, 1983).

Most discussion of export substitution, however, has taken place in a more microeconomic and political context such as the dispute over formation of the North American Free Trade Agreement: Are American MNEs "running away" from American labor to serve their foreign markets through plants abroad rather than by exports from the United States? Are foreign MNEs' investments in the United States really replacing imports? The standard Heckscher-Ohlin model implies that export substitution need not always occur. However, as with the investment-substitution question, standard theory ignores the MNE as an organization and the product-market setting in which it operates. One response to the runaway charge is that capital transfers from the United States are purely defensive, intended to preserve the U.S. company's stake in a market that it can no longer serve profitably via U.S. exports (Kravis and Lipsey, 1992). This case is essentially Hufbauer and Adler's reverse-classical assumption: Somebody puts capital in place abroad to serve the foreign market and oust U.S. exports, and the only question is

<sup>9</sup> The qualification for "equilibrium level" puts aside a problem of short-run adjustment associated with the capital transfer itself. When Home transfers capital to Foreign, the financial consequence is an increase of total spending in Foreign and a decrease in Home. That change by itself raises Foreign's imports and reduces Home's. But the change in trade is merely transitional, and it dies away once the capital transfer ceases. This "transfer process" is discussed in Section 6.4.



whether that export-displacing plant is owned by a U.S. MNE or some other firm. This counter to the runaway charge also follows from a congenial set of assumptions. Assume that the U.S. exporter and potential MNE holds a goodwill asset resting on its past exporting to and sales promotion in the foreign market. However, the asset will depreciate if product-market rivals increase their local capacity to supply competing goods. Let some disturbance shift production or transportation costs so as to favor serving the foreign market from a plant abroad. It then follows that the foreign market is lost to U.S. exports in any case, and the only question is whether the U.S. firm invests abroad in order to defend the cash flow from its goodwill asset.

Another counter to the runaway case focuses not on whether exports fall without the foreign investment but rather on whether they rise after it occurs. In the extreme, exports and foreign investments can be complementary rather than substitutes, as was noted in Chapters 1 and 2. Suppose that high costs of information about foreign markets can be reduced if the MNE opens a plant in the foreign market. Suppose that the plant's presence increases the firm's credibility as a reliable source of supply or reduces the cost of selling locally its full line of goods, including exports from the home base. A foreign investment that initially displaces some of the firm's exports could ultimately raise them to a higher equilibrium level than before. We saw that this outcome is possible and supported by some empirical evidence.<sup>10</sup> That does not make it inevitable, however, and the complementary relationship between exports and foreign investments runs into constraints in general equilibrium that were noted in context of investment substitution. Firm *A* may profitably lay hands on the capital required both to start a plant abroad and to expand its export capacity at home, but the country's capital stock is ultimately limited by its savers' responsiveness to higher expected rates of return. Export complementarity has a close affinity for Hufbauer and Adler's anticlassical case in which foreign investment actually raises the capital stock abroad without reducing it at home.<sup>11</sup>

<sup>10</sup> This discussion follows the literature in assuming that the MNE under study is horizontal, producing the same line of goods abroad as at home. Other types give different results. Forward vertical integration in the foreign investment can prove complementary with exports if the subsidiary secures inputs from its parent for further processing. However, integration backward to secure an input from abroad can expand imports and reduce the demand for labor at home. Finally, a diversified foreign investment is unlikely to affect the investing firm's trade activities directly.

<sup>11</sup> For critical surveys of literature on the export-substitution question, see Bergsten et al. (1978, Chapters 3 and 4) and Frank and Freeman (1978, Chapter 2). For a more recent example, consider Graham and Krugman's (1991) deploring of the aversive effect on U.S. terms of trade of foreign MNEs' propensity to import more inputs than do U.S. domestic

In summary, the short-run and partial-equilibrium approaches to the effects of MNEs on real wages and income distribution lead into a complex array of considerations that can be grouped around the questions of investment substitution and export substitution. These questions substantially overlap each other and lead to a series of models that one by one sound partial and arbitrary, but together help to array possible outcomes. And they show how the transaction-cost underpinnings of the MNE can be related to general-equilibrium models that emphasize the constraints on the economy's overall stock of resources and its influence on resource allocation and factor rewards.

### Empirical Evidence

Empirical evidence relevant to these models takes several forms. One is simulated calculations that illustrate the consequences of these various models but do not help us to determine which is more nearly correct. Other approaches employ either case studies or statistical analysis to test the predictions directly. The former are omitted because of their focus on events of the past. Statistical approaches have led to diverse results, but they leave useful conclusions about mechanisms at work. One way or another, they seek to determine whether exports and foreign investments of the United States are substitutes or complements for one another. Several studies note that exports and imports undertaken by U.S. MNEs are growing faster than other U.S. trade, or that U.S. domestic output and employment grow faster in industries with more foreign investment. But neither finding really bears on what will happen to exports or employment if the industries making foreign investments undertake more or fewer of them. Several cross-sectional statistical studies described in Chapter 2 conclude that elevated tariffs around a national market promote an increased inflow of foreign investment and reduce imports. That result suggests that exports and foreign investments are substitutes, but it does not preclude the possibility that the foreign subsidiaries, having taken root, can *later* draw in enough complementary imports to offset the initial substitution.<sup>12</sup>

firms. The position assumes that the choice is between U.S. and foreign management of U.S. production of these goods, although the alternative (with the opposite implication for U.S. terms of trade) could be importing the same final goods from abroad (see Kudrle, 1991).

<sup>12</sup> Adler and Stevens (1974) tried to estimate cross-elasticities of demand between American exports and the output of foreign subsidiaries that would directly reveal complementarity or substitution by their signs, but no significant results emerged pointing in either direction.

The most revealing statistical analyses are those that examine the net relationship between exports of U.S. companies and the sales of their foreign subsidiaries after controlling for as many as possible of the variables that should affect both (such as the advertising and research activities of the U.S. industry, scale economies in production, and various other factors related to U.S. comparative advantage in international trade). Bergsten et al. (1978, pp. 73–96) concluded that investment abroad is complementary with U.S. exports up to a point: U.S. exports increase with net local sales of U.S. subsidiaries until the latter reach a certain level, but the further overseas capacity starts to displace exports.<sup>13</sup> This conclusion accords well with the organizational model of the MNE: Foreign subsidiaries' role in promoting exports should depend on the subsidiaries' existence, but not especially on their own scales of operation.

Lipsey and Weiss (1981) concurred with Bergsten et al. (1978) about the general complementarity between U.S. exports and the net sales of overseas affiliates. The complementarity relationship holds for most major commodity groups and for both developed and developing countries. J. Orr (1991) found that foreign investment inflows to the United States significantly raise U.S. imports (with a two-year lag), but they raise U.S. exports by almost as much. Blomström, Lipsey, and Kulchycky (1988) got similar results for Sweden; their findings for U.S. manufacturing industries were more mixed but showed that any substitution involves subsidiaries' sales to the local market and not subsidiaries' sales to third markets (for which complementarity prevails) (see also Blomström, Fors, and Lipsey, 1996). Lipsey and Weiss (1981) found that the sales of U.S. subsidiaries abroad are substitutes for exports to their local markets coming from industrial countries other than the United States, and there also is weak evidence (Glejser, 1976) that the subsidiaries of foreign MNEs have a negative effect on U.S. exports. A particularly apt investigation by Brainard and Riker (2001) deals with employment by U.S. MNEs in their domestic and foreign establishments. The substitution between their employment levels is very weak. However, it is strong between host countries in which U.S. MNEs' affiliates operate. It is strongest between hosts of similar levels of development, and of these highest among developing countries. This project's notably rich database allows these relationships to be estimated within MNEs (not confounded by differences between firms or industries). The evidence suggests that the

<sup>13</sup> This conclusion holds both for exports of U.S. multinationals to their own foreign affiliates (where the complementary relationship is especially likely) and for the total exports of U.S. manufacturing industries, whether sold to affiliates or sold at arm's length.

complementary export and subsidiary sales by U.S. MNEs are both in a competitive relationship with sales by other exporting countries and their MNEs. And exports can exhibit a substitution relationship in response to other disturbances, such as altered tariffs and goods transport costs.

None of these statistical inquiries into export substitution addressed the general-equilibrium problem, and thus they cannot be generalized to the overall effect of foreign investment on real wages. For example, if foreign investments and exports are complementary up to a point, that could merely mean that the U.S. capital stock is diverted toward industries that undertake foreign investments (which place capital partly at home, partly abroad) and away from those uninvolved in foreign investment. Whether real wages rise or fall will then depend in part on the relative capital intensities of the two sectors, a question with no obvious empirical answer.

Feldstein (1994a) addressed the investment-substitution issue in a macroeconomic context. The analysis is based on his earlier finding that the level of capital formation in a country is closely tied to its domestic rate of saving: National capital markets may allocate savings well among domestic investment opportunities, but apparently they falter in arbitrage across national boundaries. That led him to expect that foreign direct investment provides a macroeconomically significant form of arbitrage, reducing capital expenditure in the source country (given its saving) and increasing it abroad – Hufbauer-Adler’s classical assumption. Feldstein’s estimates indicate that direct investment from and into the United States both correspond roughly to dollar-for-dollar investment substitutions for current direct-investment flows, although one dollar of U.S. foreign investment funded by MNEs’ retained earnings depresses U.S. capital expenditure by at most 25 cents. Previous macroeconomic studies using Canadian data (Lubitz, 1971a; Van Loo, 1977) agree with Feldstein’s results, finding that capital formation in Canada expands by at least one dollar when a dollar inflow of foreign investment is received.<sup>14</sup> Although aggregate domestic capital formation and foreign direct investment (or capital spending in the host country) prove almost inevitably to be substitutes, disaggregated patterns are quite different. Desai, Foley, and Hines (2005) studied the relationship between the growth of U.S. firms’ foreign investment and their domestic activity (various measures

<sup>14</sup> Lucas (1993) used a more neoclassical approach to model the time series of U.S. foreign investment to seven newly industrialized countries. Treating MNEs’ capital as an input into host-country production along with local labor and capital, he found that host wages normalized by export prices exert a significant negative influence on inflows of direct investment, but the effects of returns to both foreign and domestic capital (in both source and host) are mixed at best.

thereof). The correlations of these growth rates across firms turned out to be positive – the anti-classical pattern. This is consistent with the aggregate results because of the turnover of firms (Chapter 3), with some firms growing both at home and abroad, others shrinking. Hejazi and Pauly (2003) sought to explain some of this heterogeneity for Canadian investment inflows and domestic capital spending (see also De Backer and Sleuwaegen, 2003, on Belgium). Bayoumi and Lipworth (1998) studied such relationships in a different context: Japan, where foreign direct investment mainly serves the needs of vertical MNEs. This status renders foreign investment an endogenous variable, depending on the capacity-investment decisions made by the Japanese firms' domestic cores.

### **MNEs and the Fate of Low-Skilled Labor**

Recent research on wages and foreign direct investment has turned to a quite different question: What role do MNEs play in a substantial decline in wages of unskilled (relative to skilled) workers? Although research on this phenomenon focuses on the United States, it is evident in some other countries as well. Of the candidate causes, one is technological: a complementarity between technical progress and skilled-labor inputs, so that the ongoing flow of technical progress continually augments the demand for skilled relative to unskilled labor. Quite independent of technical change are several candidates involving international commerce. The industrialization of the developing countries brings onto the market large quantities of simple goods produced by low-skilled labor.<sup>15</sup> The most obvious cause is immigration of low-skilled labor to the United States, augmenting the resident stock of low-skilled labor and depressing its wage. Finally, MNEs may contribute through “outsourcing” of inputs intensive in low-skilled labor. Outsourcing can pertain to foreign direct investment as well as to arm's-length purchases by domestic business units that might or might not be MNEs.

A central finding by Feenstra and Hanson (1996a) is that the change in nonproduction workers' share of a U.S. industry's wage bill is negatively related to the change in imported inputs as a share of the industry's total purchased inputs. The blame falls on MNEs insofar as vertical MNEs (Section 1.2) facilitate outsourcing that would not have occurred through arm's-length transactions.

<sup>15</sup> Feenstra and Hanson (1996b) concluded that one-sixth to one-third of the shift in U.S. wage income toward high-skilled workers between 1979 and 1985 was due to imports. The technical-change explanation has been found to account for 40 percent.

MNEs have been linked theoretically to the wage gap by Markusen and Venables (1997). They employed a Heckscher-Ohlin framework involving two factors of production, skilled and unskilled labor; two countries (one with a larger proportion of skilled labor), and two products ( $X$  produced under constant returns with unskilled labor,  $Y$  differentiated and needing both labor inputs).  $Y$ 's production requires skilled labor for the firm's fixed cost (its proprietary asset), both skilled and unskilled for plant fixed costs, and only unskilled labor for plant variable costs. The fixed costs provide them with a link between the two countries' relative sizes and the use of skilled labor to cover fixed costs. Make the two countries more similar in size and in factor endowments, and the wage gap increases.

Slaughter (2000) directly approached the effect on relative wages of U.S. MNEs' shifting of activities abroad. His regression (estimated in changes in logs) relates skilled labor's share of an industry's wages bill to a measure of the relocation abroad of U.S. MNEs' activities and various controls (including skilled relative to unskilled unit wages). A significant positive relationship between skilled labor's share of the wages bill and MNEs' shift abroad would assign some blame to the MNE for the fate of low-skilled labor; the estimated relationship, however, was negative and statistically insignificant. Blonigen and Slaughter (2001) applied a parallel analysis to U.S. affiliates of foreign MNEs. Do foreign MNEs arriving on U.S. shores seek skilled employees and depress the relative wages of unskilled labor? Or do they spin off low-tech activities to their U.S. subsidiaries, supporting the demand for unskilled labor? As did Slaughter (2000), they found no relationship whatever between skilled labor's compensation share and foreign affiliates' activities in the United States.<sup>16</sup> Bruno and Falzoni (2003) proposed, however, that because of adjustment costs short- and long-run patterns might differ and yield more definite results when the analysis is adapted to that possibility.

### 5.3. Labor-Management Relations and Collective Bargaining

We now shift from economy-wide issues concerning MNEs and wages (general equilibrium) to the effects of MNEs' presence in particular settings of

<sup>16</sup> It would be desirable to pursue the skill wage differential and its correlates into other countries. For Mexico Feenstra and Hanson (1997; also 1996b) found that an influx of foreign direct investment was associated with an increase in the skill differential. Although activities outsourced to developing countries employ low-skill labor in the United States, the labor recruited for these activities may count as high-skill in countries with smaller stocks of human capital.

wage determination. After a glance at the organization of MNEs for their dealings with labor, we turn to theory and evidence.

### Organization of Labor Relations within the MNE

How far the MNE decentralizes its labor-relations activities provides useful background to the analysis. The large differences among countries' legal and cultural environments of labor relations suggest a high degree of decentralization. Evidence indicates that MNEs' willingness to enter a country is substantially influenced by the intensity and character of its labor-market regulations. The organization structures typically found in MNEs, described in Chapter 3, respond to this heterogeneity. Because labor markets are, at the outside, national in scope, and because the firm's labor-market decisions are largely, if not entirely, tactical and short run, most decision-making responsibility should devolve to the national subsidiary or even to the plant. The empirical evidence clearly supports this prediction. A Conference Board survey (Hershfield, 1975) of both U.S. MNEs and foreign companies operating in the United States found that subsidiary managers in nearly three-fourths of the companies could conclude formal labor agreements without seeking parental approval.<sup>17</sup> Their independence increases with the physical and cultural distance of the subsidiary from its parent: Only the labor relations of U.S. MNEs' Canadian subsidiaries are closely integrated with those of their nearby parents. Most large British MNEs similarly stay out of actual collective bargaining by their subsidiaries (Roberts and May, 1974). The more countries in which the MNE operates, the more likely is a hands-off policy. But 63 percent of the U.K. firms occasionally advise subsidiaries on labor-relations matters, and four-fifths are at least sometimes involved with subsidiaries' changes in pensions and other investment-type decisions.<sup>18</sup>

This evidence of decentralization need not imply that the MNE's labor relations are indistinguishable from those of a neighboring national enterprise. Rather, the pattern simply accords with the evidence that labor markets are nationally distinctive and independent of one another, so that

<sup>17</sup> Jedel and Kujawa (1976, pp. 32–41) reported similar conclusions for foreign subsidiaries in the United States. For a description of the decentralized system of a major U.S. MNE, see Kujawa (1975, Chapter 6).

<sup>18</sup> Apparently, there is not much evidence on why some companies decentralize more than do others (see Roberts, 1972). Kassalow (1978) pointed out a key trade-off at issue: the company can sustain either the communications costs of a centralized system or the employee costs of staffing the subsidiaries with high-quality labor-relations personnel. As a point of perspective, Enderwick (1985, pp. 113–14) found more decentralization in foreign subsidiaries in the United Kingdom than in affiliates of domestic multiplant firms.

MNEs typically see little advantage in the transnational coordination of their collective-bargaining activities. But bargainers on labor's side are expected to recognize the MNE's international affiliations and exploit them if possible. Furthermore, labor relations are a "latently transnational" issue (Kujawa, 1975, Chapter 7), because they may involve investment-type commitments that significantly affect the expected future cash flow of the subsidiary and thereby trespass on the MNE's centralized financial functions.

### **Wage Bargain: Theory**

Some theoretical models predict that MNEs will enjoy bargaining advantages that allow their affiliate to pay lower wages than an otherwise identical domestic firm. Cowling and Sugden (1987, pp. 61–79) proposed that the MNE can make credible threats to remove production activities to a location abroad and thereby exploit its labor force in settings where a single-nation firm could not. Notice that the foreign options available to the MNE might be either short run (ability to "take a strike") or long run (ability to relocate activities). Zhao (1998) added the possibility that MNEs operating in the same industry could gain bargaining power against national trade unions through collusion. Skaksen and Sorenson (2001) pointed out that the firm's gain in bargaining power from transnational linkages depends on whether the mobile activities are substitutes or complements to those that remain. A complementary activity (such as a vertical MNE) would provide more leverage for use by a trade union. Chau and Kanbar (2003) explored differences in bargaining associated with the completeness or incompleteness of the union's information. Information issues may be important, because of the MNE's access to transfer pricing to obfuscate the size and location of its rents.

Different predictions come from theoretical models that focus on the proprietary assets that support foreign investments and (if the union's bargaining power suffices) allow the capture of some of its rents (Pugel, 1980a). The entrant MNE may find its labor relations problematic because of its unfamiliarity with local practice. A rent conveyed in above-market wages may avert conflict arising out of misinformation or misjudgment.

One article merits an extended summary for its integration of several of these theoretical issues. Carmichael (1992) proposed that foreign subsidiaries might be more strike prone than comparable domestic competitors because of the possible presence of rents coupled with the firm's lack of transparency to a trade union. In general, we do not expect strikes to occur when both union and management are well informed about each other's



reservation prices and costs of enduring strikes. If the union is uncertain about whether the subsidiary is “weak” (willing to sacrifice some rents rather than incur the cost of taking a strike) or “strong,” in a multiperiod interaction between the union and the firm the weak subsidiary might choose to resist in the hope of convincing the union that it is strong. Carmichael showed that if the probability that the MNE is strong is not too high, and not all MNE-union bargaining games that we observe are in their early stages, some unions will choose to strike, and both weak (probably) and strong firms (with certainty) will resist. MNEs will take more strikes than other firms. The model is consistent with MNEs’ rates of pay being either the same as or higher than those of national firms.

Theoretical analyses of MNEs’ labor relations tend to run out of relevance rather quickly because of the large institutional differences between countries. Is bargaining over wages undertaken within the firm or at the industry or even national level? Have union representatives gained a say in the business decisions of the firm (as in Germany) or do they avoid involvement with managerial decision making.

### Wage Bargaining in Practice

The preceding discussion points to one empirical question of central importance: Do MNE affiliates pay higher, lower, or the same wages as comparable domestic firms? The early studies of MNEs’ wages and working conditions merit a brief review, although they controlled for too few extraneous influences to shed much light on these hypotheses.<sup>19</sup> Whichard (1978) showed that U.S. affiliates of foreign companies pay compensation per employee 7 percent higher than that for all U.S. companies. However, nearly all the difference can be explained by differences in the industrial and regional distributions of the subsidiaries; with these controlled, no clear difference remains. Leonard and McCulloch (1991) and Graham and Krugman (1991, pp. 70–71) confirmed this finding. Outside the United States, the U.S. Tariff Commission (1973, Chapter 7) analyzed data (from diverse sources and not necessarily comparable) on the wages of U.S. MNEs and national enterprises in the United States and in six other countries. The MNEs’ wages exceed those of indigenous firms in the United States and Canada, are about the same in Belgium-Luxembourg, France, and (West) Germany and are a little lower in the United Kingdom. These comparisons did not control for

<sup>19</sup> Numerous fragmentary studies of wages were summarized by the International Labour Organization (1976b).

industry mix, region, or other variables. Without control for industry or other compositional factors, Blanchflower (1984) found blue-collar wages in foreign subsidiaries in Britain no different but compensation higher for managerial and clerical employees. Dunning and Morgan (1980) found that control for industry mix halves the excess of MNE parents' wages in the United States but still leaves them significantly above national firms; the same holds for Canada. In the European countries, however, control for industry mix pushes the U.S. MNEs' wages significantly below those of national firms. Company size differences could explain the pattern. United States MNEs are the largest firms (and often operate the largest plants) in the United States and Canada, whereas on average they are smaller than the leading national firms in the European countries. Much evidence suggests that wages increase with size of plant and company within national labor markets. Unfortunately, only one Canadian study (Globerman, Ries, and Vertinsky, 1994) controlled for both industry mix and plant size (also capital intensity), and so we know little about the size or sign of any residual difference that could be attributed to MNE status per se.<sup>20</sup>

Driffield (1996; also see Girma, Greenaway, and Wakelin, 2001) set up his analysis of wages in Britain so as to distinguish between a uniform proportional wage differential and a fixed (intercept-shift) differential. His data accept the latter and reject the former, indicating that the MNE differential is in the nature of a fixed (per worker) cost. A noteworthy feature of Driffield's (1996, Chapter 3) analysis is the inclusion and endogenization of labor productivity, which includes the rent imputed to the MNE's proprietary asset. Driffield found that productivity affects a MNE unit's wage in a fairly regular way for productivity levels around the middle of the distribution; but not those with high productivity levels. This pattern suggests that MNEs give up some but not all of their revenue-productivity advantages as wages. None of these wage-productivity relationships hold for domestic U.K. firms. The diversion of rents is also affected by the degree of localization in collective bargaining. Unions' access to firms' rents is much reduced when bargaining is at the national level (Driffield, 1986, Chapter 5). Among the control variables used by Driffield is plant size, control for which reduces the MNE wage differential to marginal statistical significance.

<sup>20</sup> Dunning and Morgan (1980) employed a crude test of association between the wages paid by U.S. multinationals and their profitability. A positive association would confirm the hypothesis that unions intercept some of the rents accruing to MNEs. No association was found – which may mean either there is no association or the data are inadequate.

Another study bearing on MNEs' rents was reported by Budd, Konings, and Slaughter (2005). Using European data they established that wages of subsidiaries increase significantly with the profit per employee earned by the parent MNE. With the parent's profit controlled, the profit of the individual affiliate is also a significant positive influence.

The studies of MNEs' wage payments have focused on foreign subsidiaries relative to domestic firms. It is desirable to draw MNE parents into the comparison, to test whether premia in MNE units' pay packets reflect the firm's foreign status or its susceptibility to passing rents along to the workforce. With extensive controls for interfering variables, Doms and Jensen (1998) concluded that U.S. MNE parents pay higher wages than large or small domestic firms, but also higher than foreign MNEs' affiliates in the United States for production workers (for nonproduction workers, the differentials are quite small).

Labor relations is a promising area to search for concrete evidence on the foreign enterprise's disadvantage operating in an alien economy. We saw in Chapter 1 that this assumption is central to the standard theory of MNEs; yet, it is difficult to give it empirical content. Mezas (2002) proposed that a firm's disadvantage in labor relations is indicated by how frequently it faces charges in labor-relations lawsuits. His sample of British, German, and Japanese firms operating in the United States confirmed this disadvantage. These affiliates were, however, able to mitigate their problem if they employed an American top officer. They also benefited from the presence of corporate siblings operating in the United States.

For developing countries casual evidence that MNEs pay higher wages than national firms is fairly abundant. The pattern held for Mexico in the U.S. Tariff Commission study, for example, and Reuber et al. (1973, pp. 175–76) found quite a strong effect on wages of skilled and semiskilled labor. This difference in the setting of developing countries' labor markets suggests another feature that is not often controlled in comparisons between MNEs and other firms. One reason suggested why large plants and companies pay higher wages is to secure "better" workers, meaning those more readily accepting responsibility or direction and thus cooperating harmoniously in a large and complex organization. In developing countries' labor markets there is probably great variance in individuals' experience with the discipline of a complex organization. This would increase the differential advantageously paid by large companies, especially those with alien management, to buy improved supervision at the plant level. They might also benefit by buying lower turnover of labor (Enderwick, 1985, p. 61). Taira and Standing (1973) tested this hypothesis by inquiring whether the wage differentials paid by

MNEs are proportionally greater in developing countries where quality differentials in the worker population (as defined earlier) are greater – indicated by low literacy rates and average income per capita. The hypothesis was confirmed. Aitken, Harrison, and Lipsey (1996) analyzed panel data for Mexico and Venezuela, inferring the foreign subsidiaries' premium from the total industry wage bill and the subsidiaries' share of industry employment. The subsidiaries' unskilled and skilled labor both enjoyed premia on the order of 30 percent – typical of the large rates found in developing countries. Similar results for Indonesia were reported by Lipsey and Sjöholm (2004).<sup>21</sup>

The incidence of labor disputes in MNEs has been studied, particularly in the United Kingdom. The United Kingdom's experience hardly generalizes, but it is interesting on its own. Steuer and Gennard (1971) found the MNEs to experience fewer strikes than their industrial competitors in Britain. The distribution of strikes by duration indicated that in particular the MNEs incur fewer of the short, unpredictable strikes that then seemed so costly to industrial productivity in Britain. However, Forsyth (1972, Chapter 7, 1973) failed to confirm that pattern for U.S. MNEs in Scotland over the decade of the 1960s, and subsequent studies tended to concur (Enderwick, 1985, pp. 120–21). The different result might be due to different size distributions of foreign-controlled and domestic plants, or to regional differences. Creigh and Makeham (1978) controlled for two relevant variables – the labor intensity of the industry and the average size of its plants (both positively associated with the incidence of strikes) – and found no relationship between proneness to strikes and foreign ownership. Carmichael's (1992) test of his model controlled for union coverage and several variables related to bargaining power. He confirmed his hypothesis that MNEs take more strikes, and foreign subsidiaries more than U.K.-based MNEs. Although his measures of bargaining power behaved somewhat erratically, Carmichael's core finding seems more credible than previous results. An analysis by Enderwick and Buckley (1983) previously concluded that strikes taken by U.S. MNEs' subsidiaries in Britain increase with the firm's size and profitability and with vulnerability revealed by its trade interdependence with its parent.<sup>22</sup>

<sup>21</sup> The role of export processing zones in foreign subsidiaries' compensation of employees in developing countries is treated by International Labour Office (1998).

<sup>22</sup> Little comparable evidence is available for the United States, but Greer and Shearer's (1981) survey found no major difference in labor practices between domestic firms and foreign subsidiaries, and Sanyal (1990) concluded that U.S. unions win a proportion of representation elections that is no different for foreign subsidiaries than for domestic establishments. Cousineau, Lacroix, and Vachon (1989) estimated a model of strike determinants in Canada that, although differently motivated, resembles that of Carmichael. After controlling for

Evidence indicates that MNEs make some innovations in labor relations as one aspect of the international arbitrage of skills and proprietary assets.<sup>23</sup> An example is the introduction into British labor relations of productivity bargaining – negotiations to remove work rules that drain productivity in exchange for higher wages. In Europe, the presence of MNEs accelerated a trend toward more labor bargaining at the plant level rather than at industry and national levels (Gunter, 1975, pp. 150–51; Enderwick, 1985, pp. 109–10).<sup>24</sup> Foreign subsidiaries in the United States seem generally to have integrated themselves successfully into the American labor-relations system (Jedel and Kujawa, 1976, pp. 49–56; Beechler and Yang, 1994), and Japanese MNEs evidently had a major effect. In developing countries the foreign subsidiaries sometimes prove more adept at dealing with trade unions than do inexperienced domestic companies (Kassalow, 1978).<sup>25</sup>

#### 5.4. Summary

The effects of MNEs on real wages and income distribution can be examined in both general equilibrium and the partial-equilibrium context of the individual industry. In the simplest model of general equilibrium, capital export by MNEs reduces the real wage, and capital import increases it. In the Heckscher-Ohlin model, however, international trade does part of the adjusting to an international capital flow. In the limit, it can do all the adjusting and insulate the real rewards to factors of production from any effect of capital flows. Simulation studies that have neglected this trade-adjustment effect show, not surprisingly, that repatriation of the stock of capital invested abroad by U.S. MNEs will redistribute income substantially toward labor.

various uncertainties surrounding the bargaining process and for seller and buyer concentration in the market, they obtained a significant negative influence for foreign ownership. This result might depend on the control for concentration, which itself takes a positive coefficient that exceeds its standard error.

<sup>23</sup> For evidence, see Steuer and Gennard (1971), Gunter (1975). International Labour Organization (1976*b*, especially p. 50), Enderwick (1985, pp. 116–19), and Stopford and Turner (1985, pp. 145–47).

<sup>24</sup> Another effect of the MNE is to complicate the legal arrangements for worker participation in management that prevail in a number of European countries, because the centralization in the parent of certain important decisions on finance, investment, and employment puts them outside the reach of workers' representatives in the subsidiary. Still, the overall judgment holds that MNEs have not worked any transforming effects on national systems of labor relations (Banks and Stieber, 1977, pp. 6–9, 120–34).

<sup>25</sup> A section on international union activities and their relation to MNEs was contained in the second edition of this book.

These general-equilibrium models can be given a short-run content by supposing that any change that lowers real wages in the long run lowers employment in the short run. However, empirical controversies over the effects of foreign investment on employment and the balance of payments have flushed out some additional theoretical considerations. The investment-substitution question addresses the possibility that a transfer of capital does not actually lower the sending country's stock or raise the recipient's by the full amount. If it does not reduce the domestic capital stock, then wages should not be adversely affected. The export-substitution question asks whether, in the MNE's own sourcing decisions, its foreign investment necessarily substitutes for export sales. The nature of the MNE's activities suggests that a complementary relationship might prevail – up to a point, and in some settings. The statistical evidence gives appreciable support to the complementary relationship (with its “up to a point” qualification attached), and that weakens the prediction that investing abroad will depress real wages in the source country or raise them in the host. In the aggregate, nonetheless, classical investment substitution seems to prevail.

The effect of MNEs on wages can also be analyzed in the partial-equilibrium context of the MNE's bargaining with its own employees. MNEs decentralize their wage and employee-relations decisions, reflecting the local and highly institutional character of labor markets. MNEs' access to alternative production sites overseas should make their demand for labor more elastic than other companies' and thus more resistant to unions' wage demands. The MNE's rents themselves tempt capture by labor. Studies of wages paid by MNEs have suggested that once other factors are controlled, they may pay higher wages than comparable local firms. The MNE is likely to pay higher wages to acquire better “quality” labor. MNEs' foreignness is a disadvantage and might be expected to render MNEs' employee relations less harmonious than those of local firms, and their rents attract bargaining efforts; on the other hand, they can arbitrage innovations in labor relations across national boundaries.

## Investment Behavior and Financial Flows

Previous chapters investigated why multinational enterprises (MNEs) invest resources in facilities abroad at all. The focus now shifts to why they undertake capital expenditures abroad at the rates they do, and what explains their choice of methods of financing these expenditures. Their investment and financing behavior might differ from domestic firms for several reasons. Demands giving rise to their investments are geographically dispersed, based in imperfectly competitive markets, and raise important questions of option values. Their financing decisions are made in imperfect international capital markets that may be balkanized by variable exchange rates. In the long run, does the MNE enjoy an opportunity to arbitrage between national capital markets that are cleaved by transaction costs? In the short run, how do its money-management decisions respond to variations of exchange rates and short-term credit conditions?

The firm's balance-sheet identity and its changes over time provide a helpful framework for the analysis that follows (Stevens, 1972). A growing foreign subsidiary chooses to expand its assets – fixed (plant and equipment) or liquid (receivables, working capital). This expansion must be financed from some increase in its liabilities: retained earnings from its previous profits, new equity or loans from its parent, and borrowing from external sources (call it local borrowing). Similarly, the subsidiary's parent can expand its fixed or liquid assets in its home base, but also its investment in or claims on its subsidiaries. This expansion of the parent's assets can be financed by retained earnings (either its own earnings or those of its subsidiaries) or by securing new debt or equity funds outside the firm. These balance-sheet identities serve to organize several issues that recur through the following discussion. In empirical research, a good deal of emphasis has been placed on explaining subsidiaries' acquisitions of fixed assets and parents' investments in increased net worth of their subsidiaries. The latter – the increase

in foreign direct investment – is an increase in the subsidiary's liabilities and is not necessarily identical to the subsidiary's increase in fixed (or even total) assets. That is because local borrowing can also change. When the subsidiary expands its plant and equipment, or when the parent raises its investment in the subsidiary, some increase generally occurs in the liabilities on one or both balance sheets. How closely tied are these changes? Does the firm make its investment decision simply by comparing its expected yield to some uniform opportunity cost of capital? Or do the changes in fixed-asset holdings depend on the firm's particular structure of liabilities? They might, because existing liabilities influence the firm's ability to raise new funds. Finally, does the balance sheet of the subsidiary have a life of its own? Does anyone care about the relationship between its various assets and liabilities? Or does only the parent's fully consolidated balance sheet matter, with shareholders, lenders, and other onlookers watching the global structure of its assets and liabilities but attaching no importance to the composition of assets and liabilities lodged in a particular subsidiary or country?

In the first section, we summarize empirical research on subsidiaries' fixed investments and parents' changing financial interests in their subsidiaries. Then we proceed to the theoretical and empirical questions raised by the (nonfinancial) MNE's liability structure in relation to the international capital market. The chapter then continues with an analysis of the MNE's management of short-term financial assets and certain public-policy issues that surround its international financial transactions.

### **6.1. Capital Formation and Foreign Direct Investment Flows**

We expect the MNE, like any other business, to plan its investment outlays by selecting from the stock of available projects those whose expected internal rates of return exceed the firm's cost of capital. This rule applies to the MNE that maximizes global profits; although other hypotheses about the firm's motives clamor for attention, profit maximization seems to explain most of the action.<sup>1</sup> Although we assume that the MNE maximizes its long-run profits (specifically, its stock-market value to its ultimate owners), we must deal with the MNE's relation to risk. As a complex organization, it can benefit its various stakeholders by mitigating their risks for others – notably its suppliers of equity and debt capital.

<sup>1</sup> Horst (1974b) reviewed the candidates in the context of multinational activity. He pointed out that the alternatives do supply some specific and potentially testable predictions about MNEs' investment behavior.



## Determinants of Foreign Investment and Capital Formation Abroad

The assumption that profit guides MNEs' investment decisions merely indicates how the MNE reckons, using its information about capital costs and investment projects' expected cash flows. The outsider must search for observable variables that are correlated with the variables governing the firm's expectations and thus driving its investment decisions. Several models of investment behavior have been applied to flows of direct investments or capital-formation rates by overseas subsidiaries.<sup>2</sup> One approach is Jorgenson's (1963) neoclassical model, which identifies investment as adjustment to or toward the capital stock that will be optimal for a competitive firm or industry. That stock depends on the desired or expected output level, the capital-output relationship, and the price of output relative to the user cost of capital (interest and depreciation rates).

Although the neoclassical model has proved popular in statistical studies of MNEs' investment decisions, its foundation in purely competitive markets is limiting. It does not apply to discrete projects – the foreign-investment opportunity in which the MNE finds itself facing a downward-sloping demand curve for the project's output. The outside observer might assume that the firm applies an efficient project-selection rule but is ill-positioned to explain or second guess the firm's actual decision or test the decision rule against some alternative. Researchers can dredge up only such coarse indicators as the level of GDP or sectoral output in the intended foreign market or some measure of the growth rate of output formulated.

Several time-series statistical investigations proceeded along this line, aiming to explain flows of foreign direct investments by U.S. MNEs or plant and equipment spending by their subsidiaries. They tested various predictors, although usually not in a directly comparative way; the studies differ in how they dealt with the lag between a firm's decision to make an outlay and the expenditure of the funds. Stevens (1969) analyzed the investment behavior of seventy-one individual well-established foreign subsidiaries, using a modified version of Jorgenson's model. He found (pp. 174–76) that investment outlays increase significantly with the subsidiary's sales (as an indicator of its desired capital stock), the subsidiary's profits (indicating the marginal profit of additional investment), and its depreciation allowances (indicating the erosion of its existing capital stock). Kwack (1972) employed aggregate data for changes in overseas assets of U.S. companies. He also found support for a Jorgenson-type formulation, using a weighted average

<sup>2</sup> For early surveys and discussion, see Richardson (1971) and Stevens (1974).

of the gross national products of principal host countries of U.S. MNEs to proxy the movements of the subsidiaries' desired output levels.

Stevens (1972) similarly addressed the aggregate data on plant and equipment expenditures of U.S. MNEs' overseas affiliates, getting somewhat unsatisfactory results with the Jorgenson model and better ones with a simple flexible accelerator (investment depends on past sales, their rate of growth, and past capital stock). Lunn's (1980) methods and results resemble those of Stevens. Severn (1972), working with data on individual firms, found overseas gross fixed capital formation to be related to the lagged change in overseas sales – the accelerator relationship. Rather weak evidence supported two other indicators of investment opportunities – the firm's overseas income and the price of the parent's equity shares (a high price embodies the stock market's rosy forecast of future profits to be realized by investment either at home or abroad). Boatwright and Renton (1975) analyzed changes in the stock of MNE capital moving both into and out of the United Kingdom. For both inflows and outflows, a neoclassical formulation of the desired capital stock proved statistically significant.

Goldsbrough (1979) took up a different aspect of the MNE's investment demand – one congenial to the transaction-cost model of the MNE. He included not only measures of activity in foreign markets but also international shifts in unit labor costs as affected by exchange-rate changes. He confirmed that MNEs' allocations of funds among four major industrial countries have apparently sought to place production facilities in the lowest-cost location.<sup>3</sup> Barrell and Pain (1996) analyzed data on aggregate U.S. quarterly outflows, confirming the influence of relative user costs of capital as well as unit labor costs.

Consistent with this evidence is the finding of several studies (Rowthorn and Hymer, 1971; Buckley, Dunning, and Pearce, 1978) that the growth rates of large MNEs are correlated with the growth rates of their home national economies and their chief industrial bases within those economies (the relationship's tightness decreases with the size of the source economy; see Caves, 1990). For large firms, this is hardly a surprise. Buckley et al. (1978) found that their firms' growth between 1962 and 1972 was at least weakly correlated with the extent of their multinational operations in 1972. Again no surprise, because increasing overseas assets is one way for the firm to grow. Buckley et al. (1984) found the growth of large multinationals between 1972

<sup>3</sup> In this context, recall the studies described in Chapter 2 that associate shifts in MNEs' investment decisions with major changes in tariffs, such as the formation of the European Community. See Hufbauer (1975, pp. 278–80).

and 1977 was related to their industry and country of origin but not their size or multinationality. Aliber (1993) argued the broad importance of national growth patterns for major long-run variations in foreign investment.

Reflecting a surge of foreign direct investment effected through large international mergers and acquisitions (M&A), recent studies have focused on the link between them. Portes and Rey (2001) employed a gravity model as a framework for explaining gross flows of equity capital among fourteen countries. The “distance” term in the gravity model shows much explanatory power, attributed to information costs. Countries’ sizes matter, best proxied by market capitalization values; major financial centers (Japan, United Kingdom, United States) remain outliers. Di Giovanni (2005) also employed the gravity model to explain volumes of international M&A directly. Besides affirming the conclusions of Portes and Rey, he found significant influences of a common language between source and host country, the existence of an investment treaty between the countries, and the corporate tax rate in the host country (a deterrent).

An important new development in the analysis of MNEs’ investment opportunities is application of the theory of real options. It can explain the occurrence of foreign investments, for example, to obtain alternative production sites and to profit by switching production between them in response to shifts in local costs (Aizenman, 1994; also see the discussion by Kogut, 1983). It can also explain the deferral of investments subject to volatile underlying returns (Campa, 1994). Caves (1991) sought to test (not very successfully) the role of international horizontal mergers as acquisitions of bundles of real options that are strategic complements among rival international firms. Campa (1994) undertook an elaborate study of investment decisions by MNEs in the chemical-processing industry. Controlling for the levels of variables determining the steady-state profitability of investments (exchange rates, capacity utilization, oil prices) he found that investment is deterred by the volatility of demand (although not that of exchange rates or oil prices). Comparing MNEs to domestic firms in the industry, he concluded that MNEs do not postpone investments in response to country-specific volatility, but their domestic rivals do.

### Finance and Capital Costs

We turn from the demand-side influences on the MNE’s desired capital stock to the financing of MNEs’ investments. Boatwright and Renton (1975) incorporated international capital arbitrage by the MNE, making the adjustment of overseas capital stocks depend on international differences in interest rates

(long-term government bonds). The statistical significance of this term is somewhat erratic. Cushman (1985), in an article discussed subsequently, found U.S. direct investment appropriately sensitive to U.S. and foreign real costs of capital as well as investment-demand variables. Most research on the financing of MNEs' investments, however, has not relied on a simple capital-arbitrage hypothesis. It has instead traveled two other avenues. One, the adaptation of financing practices to the variability of real and nominal exchange rates, will be considered in Section 6.2. The second is the hypothesis that the MNE operates as if it faces a rising marginal supply price of funds in the short run, with the upward slope due at least partly to the firm's imputing to internally generated funds (retained earnings) a lower opportunity cost than does newly issued debt or equity. This hypothesis has major implications for the MNE's behavior, so we weigh the evidence on it before turning to issues concerning the international capital markets themselves.

Stevens (1969, 1972) and Severn (1972) both treated the MNE's overseas capital-formation outlays as determined jointly with its domestic capital-formation and global financing decisions, as the funding-hierarchy hypothesis implies. Severn supposed that the firm's internal funds (depreciation allowances and retained earnings) represent a preferred form of financing, and that its access to borrowed funds deteriorates as it becomes more highly leveraged (i.e., as its debt-equity ratio increases). Accordingly, he expected the MNE's rate of capital formation abroad to decline with the parent's debt-equity ratio (confirmed statistically) and its capital formation at home to increase with the income it has recently earned abroad (also confirmed). Severn's results are roughly consistent with the assumption that the MNE makes its investment decisions around the globe as a package, taking into account the funds it has generated in all of its current operations. Stevens (1969) tested the hypotheses that plant and equipment outlays of subsidiaries are decreased by the parent's global alternative investments and increased by its global supply of liquidity. Both hypotheses were, in general, confirmed. Ladenson (1972), starting from the flow-of-funds identity for the firm, built a model that reveals a good deal of interdependence among financial flows and changes in assets in the form of systematic processes of lagged adjustment of one variable to another. Kwack (1972) allowed the adjustment of overseas assets of U.S. companies to depend on their retained earnings and depreciation allowances in the recent past as a source of liquid funds; this influence was confirmed statistically. And McClain (1974, Chapter 7) found that changes in British MNEs' assets are related positively to their foreign subsidiaries' cash flows but negatively to investment opportunities in British

domestic manufacturing; their domestic (U.K.) cash flows do not wield a significant influence. Symmetrically, McClain found that capital stock in U.K. manufacturing expands less rapidly, the better are the investment opportunities of British MNEs' subsidiaries in the United States. Stevens and Lipsey (1972) reconfirmed these findings, showing that foreign and domestic investments of a sample of large MNEs are limited by the firm's debt-asset ratio and exhibit the expected interdependence with each other. Barrell and Pain (1996) showed that aggregate U.S. foreign direct investment increases with real aggregate corporate profits a half-year previously, presumably a cash-flow effect. Belderbos (1992) demonstrated that MNEs arbitrage capital between countries on the basis of their relative growth rates of local production and rates of return on investment. Foley (2002, Chapter 1) took the direct approach of relating changes in affiliates' (national) market shares of host countries to infusions of funds by their U.S. corporate parents.<sup>4</sup>

This analysis of sources and uses of funds within the MNE can be related to recent research on free cash flow and mispricing on the stock market. The MNE parent may function as the rational central allocator of funds, but its allocations may sometimes be driven by distortions such as the managerial temptation to use the firm's cash for investments with low payouts but rich empire-building value. An analysis of gross flows of foreign direct investment from the United States to nineteen other countries (1974–2001) found no evidence that they served to purchase underpriced assets but much evidence that these flows increased with the overvaluation of the parent's own shares (Baker, Foley, and J. Wurgler, 2004). The same sort of behavior could reflect a "wealth effect" of corporate liquidity on managerial investment choices (discussed subsequently in connection with exchange-rate variations' effect on foreign direct investment).

An indirect test of the funding-hierarchy hypothesis can be based on the liquidity levels of MNEs relative to their domestic competitors. Reuber and Roseman (1972), analyzing takeovers of Canadian companies by foreign enterprises, found this financial-investment decision to depend on corporate liquidity. Low liquidity in Canada puts more enterprise units on the market and also reduces the bids tendered for them by other Canadian firms, thus increasing foreign takeovers. They also found that U.S. liquidity is positively related to these takeovers. Reuber et al. (1973, Chapter 4) reported that MNEs' internal cash flows strongly affect their investments in ongoing subsidiaries, but the parent's liquidity has little influence on the

<sup>4</sup> Affiliates' shares similarly benefit from infusions of personnel from the parent firm and of proprietary assets (measured by royalties and fees paid to the parent).

decision to start a subsidiary. This adversary relation has implications for the effects of exchange-rate changes that are developed in Section 6.2.

These conclusions from analyses of MNEs' behavior can be checked against evidence on the internal decision processes.<sup>5</sup> Kelly (1981) surveyed the practices of large U.S. MNEs, finding that most of them follow discounted cash-flow procedures to evaluate individual projects and then apply a hurdle rate of return, although a few select projects in descending order of expected rates of return until a constrained supply of funds is exhausted. Half the respondents use the parent's worldwide cost of capital as a hurdle, but 23 percent distinguish a local cost of capital; some employ a payback-period analysis, especially as an informal risk premium for investments in developing countries. Oblak and Helm (1980) reported a similar prevalence in use of the weighted-average cost of capital as a hurdle rate but did find that 52 percent of respondents use different hurdle rates for foreign projects.

Kelly concluded that most adjusting for the riskiness of individual projects is done informally. Oblak and Helm (1980) reported that 72 percent of respondent companies consider risk specifically in evaluating projects (the same fraction reported experiencing greater actual variation in the returns to foreign than domestic projects). Methods used to deal with foreign projects' risks are adjusting the required rate of return (19 percent) or payback period (13 percent) and borrowing funds locally to deal with the specific risk of exchange-rate fluctuations (22 percent).

The preceding analysis implies that, when the wholly owned subsidiary receives funds from its corporate affiliates, their delineation as debt and equity is economically arbitrary.<sup>6</sup> Tax and regulatory factors govern the choice. Where the host country's rate of corporate tax exceeds the source country's, the MNE should denominate the maximum proportion of its subsidiary's liabilities to the parent as debt to siphon revenues past the host country's tax collector as tax-deductible interest (Shapiro, 1978). Also, should the host country restrict payments made abroad by residents, interest payable abroad by subsidiaries might claim a higher priority than profit

<sup>5</sup> Giddy (1981) provided a convenient summary of the decision rules that would be applied by a value-maximizing multinational.

<sup>6</sup> This assertion assumes, it should be noted, that the MNE guarantees the debt of its subsidiaries, so that a subsidiary cannot go bankrupt independent of the MNE as a worldwide legal entity. Although such a guarantee is not a legal necessity of the MNE's operation, empirical research has suggested that it is close to universal practice. Stobaugh (1970) reported that not one of twenty medium-size and large U.S. MNEs would let a subsidiary default on its debt (even if it were not formally guaranteed), and only one of seventeen small MNEs would contemplate this event.

remittance. Although these motives will not apply to every set of bilateral relationships between host and source country, data on U.S. MNEs suggest that they do prevail in the aggregate (Brooke and Remmers, 1970, pp. 194–9). The leverage of all majority-owned foreign affiliates of U.S. MNEs in 1966, measured by the ratio of assets to net worth, was 2.15, versus 1.69 for their U.S. parents. In 1970, these figures for a smaller sample of respondents were 2.41 and 1.88 (Leftwich, 1974).<sup>7</sup>

A preliminary assessment of this statistical research on MNEs' investment and financing suggests the following conclusions: Subsidiaries' plant and equipment outlays depend on expected cash flows, as extrapolated from both general market trends and indirect indicators of future profitability (earnings, exchange-rate changes, etc.). However, researchers have not sorted out exactly what variables are the best predictors. It appears, consistent with evidence presented in Chapter 3, that the MNE coordinates its long-run capacity decisions centrally; subsidiaries do not function as separate investment-decision centers, as has sometimes been suggested, even if subsidiaries' financial transactions with their parents on average are quite a small part of the subsidiaries' overall finance (U.S. Tariff Commission, 1973, p. 424). This coordination is consistent with the extensive evidence that MNEs behave as if a hierarchy of funds sources links all of their short-run financing and investment decisions. The parent's global capital-formation decisions are influenced by its global capacity to generate internal funds for reinvestment, and the allocation of capital expenditures among countries depends on relative, and not just absolute, expected payouts. This financial constraint on the growth of the firm is notably consistent with the analysis of real constraints on the MNE's growth process (Section 3.1).

### MNEs' Financing Practices in Market Context

If the MNE's global investment and funding decisions are fully interdependent, they also appear highly flexible in response to constraints and disturbances. This is illustrated by the responses of U.S. MNEs to the U.S. Foreign Direct Investment Program (1968–74), which sought to restrict outflows of direct investment in the absence of offsetting borrowing abroad. Scaperlanda (1992; also earlier studies cited therein) documented a large swing from U.S. domestic to foreign and equity to debt funding of U.S. MNEs'

<sup>7</sup> Parallel to the denomination of inter-affiliate debt and equity is the decision on currency of invoicing in inter-affiliate transactions. Mirus and Yeung (1987) showed how this otherwise indifferent decision can be driven by effects on taxes and ad valorem tariffs.

foreign subsidiaries. Beenstock (1982) reported similar conclusions from experience in the United Kingdom.

This internalization of financing among large MNEs assumed a new importance in recent years as a result of major financial crises occurring in some of the developing countries. These were accompanied by sharp reductions in inflows of portfolio capital and short-term funds. The large MNE's global optimization and self-supply of finance stabilized its real investment outlays, just as domestic firms were forced to retrench (Lipsey, 2001). The largely inalienable character of the foreign affiliate's proprietary assets tends to insulate it from the default premium that gets attached to funds borrowed in crisis periods by domestic firms. Inflows of foreign investment similarly were found proportionally larger (relative to portfolio capital) in countries with low sovereign credit ratings and risk ratings generally (Albuquerque, 2003). Aghion, Bacchetta, and Banerjee (2004) developed the theoretical implications of MNEs' investment financing in the context of the development of the nation's financial system.

If MNEs can avoid being whipsawed in a financial crisis, they would logically also be better positioned to seize a crisis-created opportunity, such as a large depreciation of a host country's currency. Desai, Foley, and Forbes (2004) used data on firms (domestic, U.S. affiliates) in twenty-five emerging markets, fifteen of which had large depreciations during the 1990s. The differences in their postdepreciation activities strongly supported the hypothesis. For example, local firms' capital expenditures on average fell significantly after the depreciation, while the subsidiaries' capital expenditures rose significantly.

MNEs' effects in host countries with developing financial systems may also have their drawbacks. Foreign investors borrow heavily from host-national banks. Offsetting exchange-rate risks provides an obvious explanation, although a suspect one that has not been closely considered in the research literature. If the developing financial system can provide only a limited supply of funds, local borrowers may be inefficiently excluded (Harrison and McMillan, 2003).

## **6.2. Long-Term Financing Decisions and Financial-Asset Markets**

Although this evidence marks the MNE as a global coordinator of its financing activities, it does not locate the MNE's practice within the world's capital markets. The capital-arbitrage hypothesis (Chapter 2) implies that the firm simply borrows in the world's cheapest capital market, without regard to the location of its own physical assets. A fundamental qualification arises when



risk-avoidance is admitted as a goal of the MNE. Averting risks has many implications; for example, the risk of exchange-rate changes implies that the currency of denomination of its liabilities is related to the location of its physical assets. We observe some theoretical properties of international markets for financial assets to determine the options open to the MNE in making its global financing decisions. Then we consider theoretically and empirically aspects of the MNE's financial decisions that interact with international capital-market imperfections.

### **Theory of International Capital Markets**

In Section 1.3, an important proposition was developed concerning the capital market's valuation of a MNE's income stream. Relative to a typical single-nation firm it might trade at a discount because it faces a large variance of expected disturbances. Or it might trade at a premium because its cash flow has a low correlation with the single-nation firm's. These propositions rest on the standard Capital Asset Pricing Model, which explains how shareholders compose their portfolios of risky securities and the (assumed) risk-free asset (such as a short-term government bond). Their actions in the aggregate set a financial rate of return on any given investment equal to the risk-free rate of return plus a risk premium that depends on the correlation or covariance between the asset at hand and the "market portfolio." How well a given security comes off in the riskiness ratings thus depends not just on the uncertainty of its income stream but also on how closely its fluctuations coincide with those of other financial-asset income streams in the economy. These are the components of beta.

The CAPM emphasizes the behavior of financial-asset holders in the market for outstanding securities, not that of the nonfinancial companies that issue new assets, but the model has many corollaries for the borrowing firm's behavior. The value-maximizing firm does not please its shareholders by acting in a risk-averse fashion, because they can themselves diversify away any nonsystemic risk to which the firm is exposed. If the projects open to the firm offer a choice between those expected to prove profitable but risky and the less profitable but safe projects, its choice should make marginal trade-off between risk and return equal to the price that the financial-asset market places on risk.

The model's conditions for the pricing of financial assets define a hypothetical world capital market in which MNEs would enjoy no opportunities for profitable arbitrage. Conversely, such opportunities arise from imperfections that open the way to arbitrage between different securities or classes

of securities, or even the same security trading at different prices in different submarkets. Consider these possible violations of a perfectly integrated global capital market:

1. *Risk-free asset.* A formal problem troublesome for the asset-pricing model is the variability of exchange rates and deviations of national price levels from an equilibrium purchasing power parity relation (Adler and Dumas, 1983; Stulz, 1984). Investors residing in different countries then have different yardsticks for measuring real returns and their risks (so that a given security could have different betas in different markets), and the standard theorems of portfolio theory at the least require modification. If different national financial markets are assumed to reach asset-pricing equilibria in isolation, then the price that investors will pay for a given MNE security can evidently vary from one market to the next.
2. *Barriers to trade in securities.* International transactions in some or all securities might be subject to high taxes, transactions costs, or (at the limit) outright prohibitions. It then becomes possible (although not necessary) that the MNE can undertake profitable arbitrage simply by selling to Home's shareholders claims on productive assets located wholly or partly in Foreign. This arbitrage need not be welfare-maximizing for Home's investors if Home's MNEs have monopoly power in Home's capital market, but that problem goes away if borrowers (MNE and other) are numerous enough to make the capital market competitive (Adler, 1974; Adler and Dumas, 1975, 1983; Lee and Sachdeva, 1977).

Theoretical research has modeled the effects of particular constraints that might be imposed on the full global optimization of portfolios. Errunza and Losq (1985) addressed the case in which Home's securities can be held by any investor, but Foreign securities are excluded from Home portfolios. They found that Home securities are then priced as in an unrestricted model, but Foreign securities command a risk premium that firms constrained to issue Foreign securities must pay. This premium increases with the risk aversion of Foreign's investors. Eun and Janakiramanan (1986) instead constrained the maximum proportion of any Foreign company's shares that may be held by Home investors. Foreign securities now sell at different prices in the two countries (higher in Home, lower in Foreign relative to the unconstrained equilibrium), with the Home premium increasing with Home investors' aggregate risk aversion.

### MNEs' Financial Decisions

These imperfections of international capital markets identify arbitrage possibilities for multinational enterprises (Naumann-Etienne, 1974). We consider briefly some models that focus on these choices by the firm and then turn to some relevant empirical evidence.

Taxes and transaction costs limit international financial arbitrage, and it is useful to see how they affect the activities of the MNE relative to individual investors. Hodder and Senbet (1990) employed a two-country model with a locked-in exchange rate but different rates of taxation levied by Home and Foreign on both corporate profits (not subsequently taxed at the personal level) and personal income (applicable to investors' income from corporate debt). Taxation apart, individuals can freely invest in either debt or equity in either country, so that their after-tax returns from investing in debt or equity of either Home or Foreign are equalized. The resulting asset prices give the MNE an incentive to do its borrowing in the country with the higher rate of taxation on corporate profits and lend the proceeds as equity to affiliates in the other country. This incentive is independent of the MNE's country of legal domicile.

Another model of the arbitrage process deals with the variability of the exchange rate and its effect on the risk-averse MNE's choice of how much output to produce abroad (Siegel, 1983, Chapter 4; Calderon-Rossell, 1985; Broll, 1992). The MNE commits to production levels in the countries before it knows the random realization of the uncertain exchange rate. Its net foreign revenue position is thus risk-exposed, and it has no access to a forward market for hedging the risk. In each market, its unit costs of production are constant in local currency, and it faces a downward-sloping demand curve for its product. If unit production costs were the same in each country at the mean expected exchange rate, the MNE would follow a perfect hedging strategy of producing abroad enough output to serve demand in the foreign market and remit the profits in kind. If production costs (in this expected sense) are not equal and traded goods incur zero transport costs, some output (net of remitted profits) will be exported from the low-cost to the high-cost country. Compared with a risk-neutral MNE, the international allocation of production will be less sensitive to production-cost differences. The MNE's incentive to undertake demand-shifting expenditures such as advertising is also affected (Broll and Zilcha, 1992). Implications of the exchange-rate regime and source of macro-disturbances for the production-arbitraging MNE were developed by Aizenman (1992).

The MNE's risk-bearing strategy can also be related to its borrowing decisions. Consider the case in which Home's risk-averse investors are unable to diversify their wealth directly against fluctuations in the foreign-exchange rate. The MNE might find that Home investors will pay more for its securities if the real assets bound up in its Foreign subsidiary are hedged by borrowing some of its funds in Foreign's currency. If lenders can diversify costlessly, they will pay no more for the firm's securities once this hedge is accomplished.<sup>8</sup> Hartman (1979) showed how a MNE serving risk-averse home-country investors determines its optimal foreign borrowing (given its foreign assets, and assuming foreign and domestic interest rates are the same). The best amount to borrow depends on how the home-currency rate of return on foreign assets varies with the exchange rate. If it is unaffected by exchange-rate changes, no borrowing need be done abroad. If it changes proportionally with the exchange rate, foreign borrowing should finance all foreign assets. A. C. Shapiro (1975) considered somewhat similar issues. Siegel's (1983, Chapter 5) related model shows clearly that factors that induce the shifting of production abroad also tend to induce borrowing abroad (important for the empirical evidence reviewed subsequently on MNEs' alignment of their foreign-currency assets and liabilities).

Even if MNEs in some circumstances optimally tie local borrowing by their subsidiaries to the stock of assets at risk in a given currency, that does not mean each subsidiary should do its own financing. Value maximization still requires that the MNE coordinate its financing activities worldwide (Adler, 1974; Shapiro, 1978).<sup>9</sup> The capital market is expected to heed the risk exposure of the MNE's assets and liabilities worldwide. Both in making its financing decisions and in determining its cost of capital (to guide its

<sup>8</sup> If the constraint on international diversification is the transaction cost for the diversifying party, the question then becomes whether asset holders can diversify more economically by themselves or by buying securities of MNEs that have done the job for them. Several authors addressed this issue. Soenen (1979) explored the MNE's trade-off between exchange risk and hedging costs. Adler and Dumas (1975) distinguished between imperfections in the international money market (avoidable by an efficient forward-exchange market) and imperfections in international securities markets (due to more intractable forces). Gilman (1981) argued at length that the MNE fails to maximize global profits by treating its home currency as safe and foreign-currency net assets as risk exposed; however, if shareholders' portfolios are undiversified internationally and their consumption streams include domestic nontraded goods, that policy can represent optimizing behavior by the MNE on behalf of its owners.

<sup>9</sup> Adler (1974) presented a model in which financial decisions can be decentralized efficiently to the MNE's subsidiaries, but it requires that the MNE be able continuously to adjust its ownership shares in the foreign subsidiaries, including taking short positions. This practice is hardly consistent with the MNE's central role as an administrative coordinating device.

capital-formation decisions), the MNE should make best use of all specific capital markets available to it.

### **Empirical Evidence: MNEs and Financial Diversification**

These theoretical aspects of international capital markets raise questions about the MNE's financial behavior that reach beyond the evidence surveyed in Section 6.1. They lead to evidence on the MNE's contribution to investors' financial diversification, its role in the market for corporate control, and its investment and funding behavior in the face of varying and uncertain exchange rates.

We first consider the MNE's role in supplying diversification gains to the holders of its liabilities and thereby integrating international capital markets. Holding shares in an internationally diversified MNE offers the shareholder an alternative to holding an internationally diversified portfolio of national securities.<sup>10</sup> Statistical research of this question was launched by Agmon and Lessard (1977) (also see Hughes et al., 1975). The diversification value that a company's shares offer to investors in its national capital market depends, according to CAPM, on the covariance of its returns with the market factor – the general, undiversifiable risk attached to all income streams originating within that nation. The shares of a MNE, to an extent that increases with the fraction of its assets placed abroad, should exhibit a lower covariance with the domestic market factor. By the same token, its income stream should exhibit some covariance with the market factors of the foreign nations in which it operates. Agmon and Lessard confirmed this hypothesis statistically, their results implying that MNEs' securities do offer a special diversification value to shareholders.

A number of articles followed Agmon and Lessard, testing the relationship between a firm's multinationality and its beta, price/earnings ratio, or both (Errunza and Senbet, 1984; Aggarwal and Soenen, 1987; and references cited therein). Credit ratings are positively related to firms' international activities (Reeb, Mansi, and Allee, 2001). The results have not been entirely consistent, although they lean toward the conclusion that MNEs' shares provide their holders with both lower risks and lower rates of return (Fatemi, 1984).<sup>11</sup> The

<sup>10</sup> We note Aliber's (1970) argument in a very different vein that MNEs arise not to supply international diversification but because investors in the securities of their nation's MNEs myopically fail to notice the exchange-rate risks to which their overseas assets are exposed – risks they would not welcome should they add foreign securities to their personal portfolios.

<sup>11</sup> For evidence that the MNE can maximize firm value by exploiting restrictions-based differences in the demands of domestic and foreign investors for its securities, see Stulz and Wasserfallen (1992).

findings also suggest that the empirical relationships might not be stable over time. An analytical problem recognized in the literature is that whether the risk-adjusted price of a MNE's shares includes a premium depends on supply as well as demand factors: any cost advantage that the MNE has in providing diversification services over the investor adding foreign stocks to a portfolio; but also the number of home-based MNEs whose shares offer this diversification service. Errunza and Senbet (1984) regressed a measure of excess valuation of a U.S. firm's security (essentially a market-to-book ratio) on its systemic risk (beta), firm size, and any of several measures of the extent of its involvement abroad. Excess value indeed proved positively related to multinationality, although to a degree that declined over their sample period (1971–8). When they substituted the security's price/earnings ratio for the excess-returns measure, no relation was found. Taking this study and others together, one conjectures that increasing supplies of MNE securities and decreasing costs of direct international diversification by investors might have eroded a once-extant premium.<sup>12</sup>

Market-to-book ratios have been used to test shareholders' valuations of geographic diversification by the MNE. For a large sample of U.S. firms, Bodnar et al. (1997) identified both geographic and product diversification from the presence or absence of multiple business segments reported by the firm. Firm size was controlled, and several versions of the dependent variable were employed. Geographic diversification exerted a significant positive influence on a firm's market value, product diversification a significant negative one.<sup>13</sup> Morck and Yeung (1991) analyzed a large sample of U.S. companies to determine whether their market valuations (Tobin's  $q$ ) increase with their multinationality. They found that multinationality has a significant positive influence only in the presence of proprietary assets,

<sup>12</sup> Also relevant to this question is the general substitutability between foreign equity and portfolio investments for domestic investors. The macroeconomic study of Ruffin and Rassekh (1986) found a close dollar-for-dollar substitution. The expansion of Japanese foreign investment during the 1980s in particular illustrates these portfolio considerations. It was strongly influenced by the removal of regulations that had kept large financial intermediaries from diversifying their portfolios internationally. That diversification amounted to a gigantic stock adjustment of Japanese portfolios that included large purchases of controlling interests in U.S. real estate, but these direct investments involved no element of the MNE based on transaction-cost considerations (Makin, 1989; Glick, 1990).

<sup>13</sup> Negative market valuations of both geographic and product diversification were reported by Denis, Denis, and Yost (2002). Specifically, they compared market returns on diversified firms with portfolios of undiversified, publicly traded U.S. firms. That control group lacks diversification, but such firms are also likely to enjoy high marginal returns in their sale activity, an important factor not controlled. See Section 3.1 and Caves et al. (1980, Chapter 12).

thus tending to rule out diversification (except in the presence of these assets) and also tax advantages as primary bases for MNEs. Christophe's (1997) results are similarly indecisive. A complementary approach by Bodnar and Weintrop (1997) compares the extent of capitalization of foreign and domestic income changes for U.S. public companies. They found that foreign increases are associated with a larger "bump" of capitalization. It was associated with firms whose foreign growth opportunities exceed their opportunities at home. It was not associated with greater variance coming from exchange-rate movements.

Diversification value created by MNEs can be inferred from the MNE's own decision variables as well as from market valuations. The MNE's role in diversification and risk bearing should influence its chosen capital structure: less (more) debt than domestic firms indicating greater risk exposure (effective diversification). Earlier studies generally found MNEs to select lower leverage and debt of shorter term. Burgman (1996) reported that the MNEs in his sample of large U.S. firms averaged 17 percent less leveraged than the domestic firms. He found the MNEs to have higher foreign-exchange volatility but lower business risk (standard deviation of earnings). A regression relating leverage to measures of several types of risk produced puzzling results. In any case, MNEs get few points for effective risk spreading.<sup>14</sup>

In principle, one could fortify this analysis by direct measurements of the riskiness of international transactions relative to their intra-national counterparts. This approach has not attracted much attention. However, for a U.S. company that has made a large international merger or acquisition, the absolute value of its unpredicted profit component for the next five years increases significantly (Lee and Caves, 1998). Bartov, Bodnar, and Kaul (1996) demonstrated the connection between exchange rates' volatility and the variability of the stock prices of MNEs. Although exchange-rate variations may be capable of hedging and diversification, the collapse of the Bretton Woods system of fixed exchange rates was a global change likely to have large and unavoidable effects. A portfolio of MNEs was matched to a portfolio of domestic companies in the same industries, and another portfolio of similar-size domestic companies not matched by industry. Volatility increased in all three portfolios but significantly more for the MNEs. Furthermore, the MNEs' betas increased significantly.

<sup>14</sup> A firm's capital structure depends on its cost of capital, which could also reflect its exposure to international risks. Mansi and Reeb (2002) concluded that the cost of debt (and hence leverage) bears a nonmonotonic relation to a firm's internationalization. Reeb et al. (2001) found a positive relation between firms' credit ratings and the extent of their international operations.

Researchers' interest turned from investors' valuations of the shares of ongoing U.S. multinationals to their valuations of organizational changes in the form of foreign acquisitions (Fatemi and Furtado, 1988; Doukas and Travlos, 1988). This research line was noted in Section 1.3 in a context that immediately shows its key limitation: An international merger or acquisition presumably implements a plan to make valuable use of the acquirer's proprietary assets (or perhaps to acquire complementary proprietary assets held by the acquired firm). The stock market's valuation of the merger (its "excess return" upon announcement) embodies a judgment on the value created by the deal in relation to what the acquirer pays (Markides and Ittner, 1994). If competition in the market for corporate control is sufficiently vigorous, the rent expected to stem from the deal goes entirely to the acquired firm's shareholders. If, furthermore, the acquirer's managers gain personal utility from the foreign acquisition, the market's valuation could be negative (as has been the case with many U.S. domestic acquisitions by large firms). Seth, Song, and Pettit (2000, 2002) investigated the role of managerial motives in U.S. firms' international mergers, concluding that acquirer and target together increase their combined value by 7.5 percent in the average transaction, but the whole gain on average goes to the target's shareholders. Some acquirers, however, hold proprietary assets strong enough to yield rents after the acquirer pays the premium to obtain control. Doukas (1995) showed that these winners could be identified by the acquirer's high market-to-book value ratio ( $q$ ). Markides and Ittner obtained similar conclusions using structural attributes of the acquirer's market that should be good predictors of  $q$ . Evidence is also available on the market's valuation of foreign acquirers' willingness to pay for U.S. target firms. Both Harris and Ravenscraft (1991) and Swenson (1993) found that foreign acquirers' bids for U.S. firms value them significantly higher than do the bids by domestic acquirers. The differential is at least partly due to foreign MNEs' propensity to acquire in research-intensive industries. Foreign MNEs are less likely to compete with other bidders for these targets, suggesting that they pursue specific synergies. There is evidence that the differential foreign premium has declined over time.<sup>15</sup> Nonetheless, Cakici, Hessel, and Tandon (1996)

<sup>15</sup> Jorion (1990) investigated the degree to which the market returns to U.S. companies' stocks are sensitive to changes in the dollar's foreign-exchange value. Dollar depreciation should directly increase the valuation of foreign monetary assets, although its effect on real assets abroad depends on the firm's configuration of activities. Empirically he found that stock returns increase with dollar depreciation in proportion to the MNE's foreign activity. The size of this effect, however, plummeted between 1971 and 1975 and 1981 and 1987, consistent with a shift from predominantly monetary to predominantly real shocks



found that foreign acquirers of U.S. firms were rewarded with a positive mean excess return, 2 percent.

The MNE plays a two-sided role in dealing with risk: as a supplier of diversification services to risk-averse creditors and as itself a risk-averse actor in a risky international setting. Lee and Kwok (1988) sought to untangle these two roles by analyzing the leverage chosen by MNEs relative to U.S. domestic companies. They controlled for company size the importance of outlays on intangibles (research and advertising, which increase the agency cost of debt and deter leverage), and the intertemporal variance of cash flows (which increases the likelihood that bankruptcy costs will be incurred and thereby deters leverage). MNEs choose lower leverage than the control sample of domestic companies (also see Shaked, 1986), suggesting that risk-aversion within the firm prevails over the higher debt levels expected of risk-neutral firms engaged in risk-diversifying groups of activities.

### Empirical Evidence: Exchange-Rate Risks

Harris and Ravenscraft (1991) and Swenson (1993) both addressed a hypothesis put forth by Froot and Stein (1991). Assume the correctness of the financial-hierarchy hypothesis, explained (and supported for large MNEs) in Section 6.1. Exchange-rate movements then cause a wealth effect on the willingness of firms to pay for acquisitions abroad. When the U.S. dollar depreciates, the liquidity of foreign MNEs (held mostly in foreign-currency assets) increases relative to the reservation prices of current owners of U.S. corporate assets. The foreigners bring more funds with low perceived opportunity cost to compete in the U.S. market for corporate control and should pay higher premia or win more auctions. Each study confirmed the effect, with Harris and Ravenscraft reporting that a 10 percent dollar depreciation begets a 2.7 percent gain to the U.S. target's shareholders. Further support is offered by Klein and Rosengren (1992, 1994) and especially by Blonigen (1997), who focused on the foreign firm's position as a bidder for home firms that possess proprietary assets, following a depreciation of the home currency. The foreign firm's reservation price necessarily increases, because the intangible proprietary asset's value is not locked into the depreciated home currency. (A tangible home asset's expected return may be realized wholly or partly in currencies other than the depreciated

between the two periods. Luehrman (1990) explored the degrees to which a MNE's value is affected by its exposure to competition from rivals based in different countries and thereby affecting the MNE's exchange-rate exposure.

home money, but then it may not.) The intangible asset is firm-specific but location-free.

Other empirical evidence bears on MNEs' investment-type decisions in general as they relate to variable exchange rates. First, do firms investing abroad behave as if averse to the risk of exchange-rate fluctuations? Both survey and statistical evidence have long suggested that they do. Behrman (in Mikesell, 1962, pp. 95–98) found that the vast majority of the U.S. MNEs interviewed seek to minimize the dollar equity invested abroad, and many try to borrow as much as possible in the host country. This motive and decision rule also appear in the survey evidence of Brooke and Remmers (1970, pp. 182, 195) and Robbins and Stobaugh (1973, Chapter 4) – a study dealing with investments in developing countries. A study of the expansion of large foreign subsidiaries in India over twenty years found that only 5.3 percent of their acquisitions of assets were financed from foreign sources (Martinussen, 1988, p. 147). Finally, MNEs may use local borrowing as a form of off-balance-sheet financing to make the parent's leverage look less than a full enumeration of its worldwide debt would indicate – a procedure that may be deceptive if the parent does in fact guarantee the local currency debt of its subsidiaries. Robbins and Stobaugh (1973, p. 127) noted that subsidiaries show higher aggregate ratios of current liabilities to current assets than do their parents' domestic operations, consistent with a risk-induced reliance on local-currency financing.

Stevens (1972) tested the hypothesis that MNEs relate their borrowing abroad to the assets and earnings of subsidiaries that are exposed to depreciation of the host country's exchange rate. He found a quite stable relationship between changes in assets overseas and changes in foreign borrowing, but the relationship is not dollar-for-dollar at the margin, and his test does not seem finely honed to support this particular hypothesis about foreign-exchange risk. Goldsbrough (1979) addressed this question more directly, devising a formal model that shows how the proportion of a MNE's borrowing done abroad will depend on international interest-rate differentials, the distribution of its capital investments between countries, and the covariation of cash flows from those investments with exchange-rate changes. Goldsbrough's model is consistent with a constant proportional relation between assets and liabilities denominated in foreign currency. Gilman (1981), similarly concerned with foreign-exchange risk and the liability structures of subsidiaries' balance sheets, found that foreign-currency financing is more closely related to changes in subsidiaries' total assets than to their current assets, implying that all assets abroad are viewed as subject to the risk of exchange-rate changes.

Variable exchange rates raise the issue of the financing of foreign investment, but also the quantitative response of MNEs' decisions on capital expenditures abroad to changes in current and expected exchange rates. Kohlhagen (1977) and Cushman (1985) showed that any predictions must be highly conditional. Responses to changes in real and nominal exchange rates by the value-maximizing firm depend on whether change responds to some disequilibrium or embodies a new shock, and responses also depend on how the current (recent) change affects expectations of future exchange rates. Even with these questions settled, the MNE's response depends on the configuration of its activities in the host country. A permanent real depreciation of its currency makes the host country more attractive as a site for production to serve the world (or source-country) market but less attractive as a site for assembling products for host-market sale that contain substantial source-country components.

Kohlhagen's analysis covered investment spending abroad by U.S. MNEs during the 1960s, when fixed exchange rates were subject to occasional devaluations or revaluations, typically to cure large and widely recognized disequilibria. The MNEs' responses (both anticipatory and reactive) confirmed a preference to undertake capital expenditures abroad after a currency is cheapened, or before its price rises. Cushman (1985) covered the period 1963–78, embracing both fixed and flexible exchange rates, and used foreign investment rather than foreign capital expenditures as the dependent variable. Again, the results indicate that foreign investment is attracted to a host country whose currency has depreciated but also takes account of expected future exchange rates (in his result extrapolative expectations, consistent with the pegged exchange rates that prevailed over half of his period).<sup>16</sup> Given the exchange rate's level, Cushman concluded that an increase in exchange-rate risk actually increases foreign investment; that outcome is consistent with the displacement of source-country exports by production facilities in the host, and also a real-options model.

Campa (1993), analyzing foreign direct investments in U.S. wholesale distribution, focused on how a risk-neutral foreign firm can regard such an investment as a real option. The greater the variance of the U.S. dollar exchange rate, the more likely does the firm gain by waiting for a still more favorable rate (and the larger is the investment it makes when it does exercise the option). Campa confirmed not only that exchange-rate variance deters

<sup>16</sup> Barrell and Pain (1996), who analyzed aggregate quarterly outflows of U.S. foreign direct investment, found that current appreciation of the dollar causes a speedup to complete foreign investments, while expected appreciation in the next quarter postpones it.

direct investments in distribution but also that the deterrent effect is greater, the larger is the sunk cost that the investment entails.

Earlier studies also addressed inflows of foreign direct investment to the United States (Cushman, 1988) or gross acquisitions of foreign-controlled assets in the United States (Caves, 1989). Cushman's results closely parallel those for U.S. outflows in Cushman (1985), including the influences of exchange-rate levels and variability. Caves (1989) also found that depreciation of the dollar attracts foreign investment, but no hypothesis about exchange-rate expectations was supported. Also, given the exchange rate, foreign investment is attracted by lower prices of equity shares, the vehicle for acquiring control of existing business assets.<sup>17</sup>

Goldberg and Kolstad (1995) analyzed risky investment decisions in a sophisticated framework. The MNE that can serve Foreign customers from either Home or Foreign plants faces two sources of short-run risk: the real exchange rate and the level of Foreign's demand. If demand and the Home prices of Foreign currency are positively correlated, the risks of serving Foreign's market from the Home plant are amplified. They tested aggregate bilateral direct investment flows between the United States and other countries taking account both of exchange-rate variability and its correlation with domestic demand shocks. Exchange-rate variability promotes locating production abroad (as risk-aversion implies), but the covariance of exchange rates and domestic demand has no significant influence. Their result on exchange-rate variability has not been supported in some other studies. Kiyota and Urata (2004) in particular obtained a significant negative effect of exchange-rate variability in a study that subdivided manufacturing industries into major blocs.

Dewenter (1995) studied foreign acquisitions of U.S. firms, concluding that depreciation of the dollar increases takeovers in most industries by acquirers in most source regions. Depreciation of the dollar by 10 percent leads (within a year) to a 7 percent increase in takeover premia. Blonigen (1997) analyzed Japanese investments in the United States. They commonly were aimed at acquiring technology and other firm-specific assets, so Blonigen's model indicates they should be highly sensitive to exchange-rate changes. He related the number of Japanese acquisitions in each U.S. industry and year to a sector-specific real exchange rate. This variable proved

<sup>17</sup> See also McClain (1983). This result has the flavor of the Froot-Stein hypothesis about corporate wealth effects, as does the conclusion that acquisitions of assets in the United States show a strong positive relation to the growth of the source country's real income and thus to corporate funds.

significant for manufacturing industries, although not in nonmanufacturing (services, for which the bases for multinational operations are not easily generalized). The relationship holds for new plants as well as acquisitions of going U.S. units, although Blonigen's model applies to the latter.

Subsidiaries' practices in remitting dividends to their parents (versus retaining the funds locally) also call for scrutiny. One probably dominant influence, minimizing the company's global tax bill, will be considered in Chapter 8 (see Hines and Hubbard, 1990). Other influences reflect the general interdependence of MNEs' financial decisions, discussed earlier. For example, subsidiaries remit less of their earnings if their desired capital stocks are growing rapidly (Kopits, 1972) or high rates of profits are earned (Mauer and Scaperlanda, 1972). Zenoff's (1966) survey of thirty large U.S. MNEs confirmed the influence of taxes and reinvestment opportunities but also flagged some factors not consistent with profit maximization. For example, parent MNEs that traditionally pay out a fixed proportion of net earnings as dividends tend to require subsidiaries to remit a comparable percentage. The findings of Brooke and Remmers (1970, Chapter 6) are similar. Because the U.S. tax system penalizes the payment of dividends by corporate parents, economists wonder why dividends are paid at all,<sup>18</sup> and that goes for a decision rule imposing the same practice on subsidiaries. A MNE not consolidating its subsidiaries' finances fully into the parent's financial statements might vary dividend remittances so as to "dress up" the financial position that the parent reports to the public, Zenoff suggested. This practice leaves the public partly in the dark about the MNE's global activities and implies some advantage to the company from painting a picture less than completely truthful. Overall, Zenoff distinguished between mature companies with extensive networks of subsidiaries that manage dividend remittance through rules of thumb and MNEs with less experience or less far-flung empires that attune their remittance practices to the needs of the hour.

### 6.3. Foreign-Exchange Rates and Short-Term Transactions

The preceding sections have shown how the MNE and investors in its liabilities respond to major long-term risks of international transactions. In this section, we consider how MNEs react to exchange-rate variability in handling their short-term transactions.

<sup>18</sup> Dividends paid are subject to taxation as personal income for the shareholder. If they are plowed back into the enterprise, they become capital gains on the shareholder's equities, taxed only when the shares are sold and then at the lower rate pertaining to capital gains.

### **Responses to Expected Exchange-Rate Changes**

To isolate the behavior at issue, suppose that the MNE's decisions about committing resources can be divided cleanly into two groups: Long-run commitments cannot be soon reversed, but short-run commitments can be altered within periods for which the MNE can hedge (or possibly forecast) exchange-rate movements. Long-run decisions by the risk-averse firm might rest on an expectation about how variations in the price of foreign exchange will be correlated with variations in the subsidiary's foreign-currency earnings, but by assumption the MNE cannot anticipate the specific ups and downs. However, exchange-rate exposures three months hence can be covered in the forward market or speculated on. Various sources describe the many strategies open to MNEs to obtain gains or avoid losses from exchange-rate changes.<sup>19</sup> Some maneuvers involve transactions between branches of the MNE and other parties. The transaction opportunities here are, in general, the same for the MNE as for any other agent; the qualification "in general" allows for the MNE's advantage in holding information acquired in other dealings that may help it to take expeditious action in the foreign-exchange market. Other transactions are internal to the MNE and take place between its various national branches. In internal transactions, the MNE has a clear-cut advantage. Consider speeding up payments due in a currency expected to appreciate and delaying payments denominated in a currency expected to depreciate. In transactions between independent parties, the payment is affected by a precontracted due date and other terms and rearranging on short notice to take mutual advantage of an expected change in exchange rates might be difficult (Jilling, 1978, pp. 150–52).

Surveys reveal companies' practices for dealing with fluctuations in the foreign-exchange rate.<sup>20</sup> R. M. Rodriguez (1980, Chapter 2) found the exploitation of leads and lags in inter-affiliate payments to be the method most commonly used. Next come money-market transactions: Borrow in a currency expected to depreciate; lend in one expected to appreciate. There is the classic maneuver of covering long or short positions in a foreign currency

<sup>19</sup> Rutenberg (1970); Robbins and Stobaugh (1973, Chapters 1, 4, and 5); Jilling (1978, Chapters 2 and 3). Itagaki's model (1981) develops several aspects of the MNE's reaction to exchange-market conditions. The long-short distinction made here ignores the emergence of long-term swap agreements that provide a partial substitute for forward markets.

<sup>20</sup> Jilling's survey, taken in 1975, found that the management of foreign-exchange risk, like other financial functions, is highly centralized for most MNEs. Resources committed to the task had been increasing, in reflection of the increasing variability of exchange rates during the early 1970s. This expertise is subject to scale economies and so increases significantly with size of company. See Jilling (1978, pp. 89–90, 95–6, 113, 314).

by a sale or purchase in the forward-exchange market or by negotiated swaps. Finally, the MNE can change the currency in which its payables or receivables are denominated. Shifting the terms of a transaction to snatch a short-term gain is costly to negotiate with an arm's-length trading partner and so this instrument is an unwieldy one. Jilling's results (1978, pp. 146–57) generally agree with the priorities found by Rodriguez, as do the findings of Robbins and Stobaugh (1973, Chapter 7).

If the MNE actively pursues expected profits by all possible routes, it will consider taking speculative positions. A good deal of commentary suggests that the nonfinancial company is keener to avoid losses in the foreign-exchange markets than to pursue speculative profits. The majority of Jilling's respondents preferred to make neither gains nor losses; many emphasized minimizing losses, and this attitude was more prevalent among smaller U.S. companies outside the largest 500 (Jilling, 1978, pp. 144, 274, 327). Similarly, R. M. Rodriguez (1980, Chapter 2) devised an interview strategy to reveal whether managers hold asymmetrical attitudes toward foreign-exchange gains and losses; they displayed a strong allergy to losses. Defensive postures can extend to taking an open position in the short-term forward-exchange market so as to hedge a long-term fixed investment exposed to exchange risk, but this hedge is not self-liquidating and leads to reported short-term gains or losses (Jilling, 1978, p. 64).

That MNEs and other nonfinancial companies should limit their exchange-market activities to defensive maneuvers seems a bit puzzling. If a company is to form the administrative apparatus needed to deal defensively in the foreign-exchange market, why not deal aggressively? The answer probably lies in economies of specializing in the activity of foreign-exchange speculation as well as in nonfinancial companies' attitudes toward risk (Aliber, 1978, Chapter 11). There might be yet another reason MNEs avoid committing resources to activities in the foreign-exchange market – a reason that harks back to the analysis of Section 6.2. If the MNE finds that the forward market for foreign exchange is already populated by competitive, well-informed speculators, then it cannot hope to “beat the market” with any regularity by speculating outright or entering the forward market only selectively to hedge its exposed foreign-exchange assets and liabilities.<sup>21</sup> True,

<sup>21</sup> Economists have devoted a great deal of effort to testing the efficiency of forward markets. After the event, it often turns out that a speculator could have made profits over a period of time by applying some simple decision rule to forward-exchange transactions (see, e.g., R. M. Rodriguez, 1980, Chapter 3). But hindsight beats foresight, and there is no way to show whether market participants efficiently used all information and opportunities available to them before the event.

it can choose to hedge its exposed positions regularly, up to whatever future maturities are available in the foreign-exchange market and through swaps. But the transactions costs cut into its long-run expected profits as the price of avoiding risk. Therefore, the risk-neutral company will avoid hedging if it thinks that the market is efficient (although it might arrange transactions in hope of exchange profits when it thinks it can beat the market).

R. M. Rodriguez (1980, Chapter 4) drew on data on the foreign-currency positions of thirty-six companies, to test hypotheses about their motives and practices in the foreign-exchange market. Nearly all of them had experienced substantial changes in exposure to exchange risks, so they could not have followed the “risk-paranoid” pattern of avoiding open positions entirely. Rodriguez also ruled out the possibility that managers think markets are efficient and can never be beaten. The most consistent position, she found, is that managers sometimes think they can beat the market; in fact, between 1967 and 1974, they moved funds toward strong currencies and away from weak ones.<sup>22</sup> The statistical pattern suggests that they acted as if they had noticed that the forward-exchange markets were systematically underpredicting the movements of those currencies. She also found actions to counter foreign-exchange exposures that might lead to losses more common than actions to enlarge those showing promise of gains.

Some researchers focused on the behavior of MNEs at times of major changes in exchange rates, such as the devaluations of the U.S. dollar in 1971 and 1973. R. M. Rodriguez’s data (1980, Chapter 5) suggest a strong tendency in both crises for companies to move internally generated funds toward strong currencies, but little evidence of borrowing in weak currencies and lending in strong ones. Klein (1974) and a U.S. Senate study (1975), based on different sets of data, agree in general. Both of these inquiries found that the outflows of foreign direct investment itself were abnormally high during the crisis periods, indicating that U.S. MNEs chose those times to acquire additional long-term foreign assets. And the U.S. Senate study (1975) found that the foreign subsidiaries of U.S. companies increased the share of their payments to third parties denominated in dollars, thereby reducing their dollar balances. Klein (1974) concluded that the MNEs’ aggregate

<sup>22</sup> These patterns of intermittent, successful speculation emerged in Rodriguez’s data only after she separated the operating accounts from the financial accounts of her companies. The operating accounts reflect marketing considerations, and their foreign-exchange components cannot easily be manipulated in the short run. The financial accounts reflect the firm’s opportunities to manage its own liquid assets. Evans and Folks (1979, pp. 19–20) similarly found a strong preference for managing foreign-exchange risk through financial rather than operating transactions.



contribution to the speculative outflow of funds was proportionally not very large in either 1971 or 1973, but it does appear that MNEs were active in anticipating the exchange-rate changes.<sup>23</sup>

Géczy, Minton, and Schrand (1997) found that 74 percent of the largest 500 U.S. nonfinancial firms have significant international exposure, and 41 percent of these use currency swaps, forwards, futures, options, or combinations of these. The traits that mark firms using these derivatives include possession of good growth opportunities (heavy R&D spending), substantial income derived from abroad, and a base in an industry that faces extensive import competition. Users are large (scale economies in managing such transactions) and relatively illiquid (derivatives substitute for liquidity). The results of Géczy et al. were confirmed by Allayannis and Ofek (2001), who also pursued (unsuccessfully) the determinants of firms' foreign debt.<sup>24</sup> There is also evidence on the extent to which the firm's use of derivatives curtails its exposure (measured by correlation between the firm's value and the dollar exchange rate) (Shin and Soenen, 1999). U.S. MNEs classified to nine of twelve broad industries show positive exposure to the U.S. dollar (see also Fraser and Pantzalis, 2004).

MNEs face a problem of reporting the effect of exchange-rate changes on their accounts. This problem involves forecasting what assets' and liabilities' home-currency values will be affected, and to what extent, by exchange rate movements over the accounting period. The previous edition of this book contains a section describing prevailing practices and the controversies over them.

#### 6.4. Summary

The MNE's financial behavior raises questions about both the macroeconomic and microeconomic environments in which it manages its assets and liabilities. Studies of flows of new investments from parents to subsidiaries and capital-expenditure rates of subsidiaries have sought macroeconomic predictors of these flows. Appreciable support turns up for the neoclassical model of capital formation. However, statistical investigations, of MNEs'

<sup>23</sup> Similar evidence has appeared for other currency crises. Brooke and Remmers (1970, pp. 189–90, 199–203) noted that U.S. subsidiaries in Britain, anticipating a devaluation of sterling, in 1964–66 undertook heavy borrowing in sterling and remitted larger-than-average dividends to their parents.

<sup>24</sup> Miller and Reuer (1998) related exchange-rate exposure significantly to firms' involvement with foreign direct investment, but found no connection to other measures of international activity.

financial decisions support the conclusion that internally generated funds hold a lower opportunity cost for the MNE than do funds borrowed externally. In any case, the evidence confirms that the MNE makes its investment and financial decisions on a global basis, so that its rate of capital expenditure in one country tends to fall when expected profits rise for investment somewhere else. The theory of real options contributes to explaining its choices. The mature MNE's practice of internal allocation of funds gains an advantage in the face of financial crises in nations with developing financial sectors.

The capital-arbitrage hypothesis suggests that the MNE borrows wherever in the world funds are cheapest and invests them wherever expected returns are highest. A more subtle view of the MNE's financial decisions must take account of risk and of the degree to which international capital markets are fully integrated without any arbitraging done by MNEs. If this perfection were to be achieved, where the MNE would borrow and how it would structure the riskiness of its liabilities could be indeterminate. But there are grounds for thinking that exchange-rate movements as well as government restrictions and transactions costs leave arbitrage possibilities open to the MNE. The firm will then rationally relate the scale of its borrowing in each country to the amount of capital assets it places there, as well as relative borrowing costs and expected behavior of exchange rates.

Empirical evidence on balance indicates that MNEs do provide diversification valued by the market. The correlation of their returns with the market factor is lower than for domestic firms. Market-to-book ratios increase with geographic diversification in MNEs, as do credit ratings, even though the equities market places a negative valuation on product diversification. Although MNEs supply diversification services to the market, these firms show their own forms of risk-aversion, notably heavy borrowing in the host country's currency. Also, the MNE chooses lower leverage than do domestic counterparts. The major conclusion about exchange-rate fluctuations and foreign direct investment is that international mergers are quite sensitive to depreciation of the (prospective) host country's currency. Equally strong theoretical reasons back this evidence.

The MNE also makes short-run decisions about the composition of its liquid assets in light of expected exchange-rate changes. Although all agents are expected to seek profits or avoid losses from exchange-rate changes, the MNE enjoys advantages in pursuing the goal from cheaper access to information and greater flexibility in manipulating transactions that are internal to it but that would be at arm's length for national companies. Survey evidence confirms that MNEs' hedging efforts center on these internal transactions. It

also suggests that corporate risk aversion influences the extent and character of the MNE's exchange-market transactions and that MNEs generally do not embrace the role of pure speculator. But neither do they assume that they can never "beat the market" in anticipating exchange-rate changes. MNEs that use currency derivatives (swaps, forward, futures, etc.) show some regular traits: large size, heavy R&D spending (good growth opportunities, income from abroad).

## Technology and Productivity

The MNE's rationale, according to the transaction-cost model, lies in the administered international deployment of its proprietary assets so as to evade the failures of arm's-length markets. Premier among those assets is the knowledge embodied in new products, processes, proprietary technology, and business organization. Therefore, the multinational enterprise (MNE) plays a role in the production and dissemination of new productive knowledge that is central if not exclusive. Although arm's-length markets for technology are failure prone, they do exist. Many companies that produce new knowledge are not multinational, and many proprietary intangibles are sold or rented between unrelated parties, or simply copied. The determinants of the trade-off between arm's-length transfers and transfers within MNEs are emphasized because of its role in the necessary conditions for MNEs' operation (Chapter 1).

This chapter starts with empirical evidence on how the MNE makes its decisions about producing and disseminating technology. It proceeds to a treatment of the consequences of this activity for economic change and economic policy. The policy issues are particularly urgent in this case. Not only does the market for knowledge bristle with potential failings but also international trade in technical knowledge runs into the familiar conflict between the interests of source and host countries.

### 7.1. The MNE as Producer of Technical Knowledge

Research on the production and distribution of industrial knowledge customarily distinguishes three phases of the process. Invention covers the generation of a new idea and its development to the point where the inventor can show that "it works." Innovation takes the invention to the point of being placed on the market; this phase includes building and proving out any

needed production facilities as well as testing and refining the invention itself. Diffusion is the process by which potential users of the innovation actually come to make efficient decisions to adopt it. To expose the MNE's role in these stages of technological development, we can collapse the invention and innovation phases but must focus closely on the process of diffusion.

### **Foreign Investment and R&D Outlays**

The affinities between research and development (R&D) and the MNE are numerous. We know that the extent of R&D spending is an excellent predictor of MNE activity in an industry (Chapter 1). Most formal R&D is undertaken by firms of at least moderate size; similarly, scale-economy considerations allot foreign investments to the larger firms. Hence, in those industries where most R&D takes place, both the R&D and the foreign investments are likely to be concentrated among the larger firms. Just as R&D promotes foreign investment, foreign investment likely promotes R&D. The established MNE has knowledge that points out paths to profitable innovations in diverse national markets, not just the home market. This advantage from the MNE's information network yields it both a higher and more certain mean expected return from investments in innovation than a similarly placed single-nation company. Therefore, the causation should run both ways between MNE activity and R&D spending.<sup>1</sup> Thus, foreign subsidiaries in host countries commonly undertake more research and product development than their domestic competitors, in addition to deploying their parents' dowries of established innovations (Braga and Willmore, 1991).

Mansfield, Romeo, and Wagner (1979) investigated the effects of overseas sales opportunities on R&D, finding that the sampled large U.S. companies expect to draw 29 to 34 percent of the profits from their R&D projects from overseas markets via all transmission channels – foreign subsidiaries, licensing, and export of innovative goods.<sup>2</sup> The more research intensive the company, the larger the share of its R&D returns that comes from outside the United States. The foreign share is greater for research projects in pursuit of basic discoveries than for development projects, which tend to adapt innovations to a particular market's needs. The authors also asked the respondent

<sup>1</sup> Similarly, product-market diversification has been held to favor R&D, and the statistical evidence shows a positive association with causation running both ways (e.g., Caves et al., 1980, Chapters 7 and 8).

<sup>2</sup> The firms included in their sample were not necessarily all MNEs, although the MNE percentage must have been quite high. The statistical results of Severn and Laurence (1974) are consistent with the importance of global profitability to the R&D decisions of MNEs.

firms how much they would cut back on R&D if they could collect no rents from abroad. The reductions would be 12 to 15 percent if research results could not be exploited through the firms' foreign subsidiaries, 16 to 26 percent if all foreign rents were cut off. The larger the share of the firm's global sales derived from its foreign subsidiaries, the larger the cut. The more extensive are the firm's sales abroad (both exports and foreign subsidiaries), the higher is the rate of return it expects from R&D activities and the more focused is its R&D on basic research and long-run projects. Because the MNE can extract the rents from its investments in innovation from both local and distant markets, we expect that the stock market will value MNEs' R&D dollars more highly than research dollars spent by domestic companies. This hypothesis was tested by means of Tobin's  $q$  values of U.S. enterprises (Bae and Noh, 2001).

Patent statistics also confirm that large firms carrying on research base their R&D investments on the revenues they expect to earn worldwide. The global orientation of research activities is seen in mirror image in the patents taken out in countries that are not themselves major research centers; most such patents are registered by foreign nationals seeking global protection from imitation of their inventions. Bertin (1987) found that foreign patenting is especially influenced by intentions to transfer technology through licensing.

If foreign investment functions partly to garner rents to the parent's R&D assets, it also serves as a method of acquiring knowledge assets abroad, as was shown in Section 1.1. Mansfield (1984) reported that over 40 percent of R&D expenditures in overseas R&D laboratories of sampled U.S. MNEs resulted in technologies that were transferred quite rapidly to the United States. Research outlays and MNE status thus reinforce each other: Hirschey (1981) showed that research expenditures tend to enlarge a firm's (or industry's) multinational activity, and anything (other than research) that expands multinational activity tends to increase R&D spending.

### **Host-Country R&D Spending by MNEs**

If MNEs take account of worldwide revenue potentials when setting their R&D budgets at home, they also increasingly decentralize R&D activities around the world. Part of the spread is due to inducements offered by host governments (Behrman and Fischer, 1980, Chapter 6), but economic incentives are also at work within the firm. The MNE must determine not only how much R&D to undertake worldwide but also where to do it. This decision sheds light not just on the economics of R&D activity itself but also on the transferability of technical knowledge across national boundaries.

Evidence reviewed in Chapter 2 suggests that the MNE sites its production facilities around the globe so as to maximize the net revenue it earns from serving all accessible markets. If the intangible outputs of its R&D investments could be transferred costlessly among its various plants, the R&D laboratory would simply be placed in the world's cost-minimizing location. However, important forces keep all R&D from settling at some technological Shangri-la. Effective execution of R&D requires a continuous interchange of information with the manufacturing facilities of the company, so that research is directed to commercially significant problems and the solutions are operational. Because of the strategic role of R&D, close contact with top corporate management is also important. These requirements for close communication and interchange, along with any scale economies in the R&D function itself, seem to dominate the decision where to situate R&D activities. They tend to call for centralization at company headquarters, but subject to the centrifugal pull of manufacturing facilities dispersed to serve far-flung markets. One locational pull on MNEs' R&D activities comes from the role of vertically differentiated geographic centers of R&D activities. This factor has recently been found to drive choices of location in certain lines of research; although the specific locations depend heavily on historical accident, the structural conditions for an ongoing center are clear (Cantwell and Janne, 1999; Cantwell and Immarino, 2003). Research centers' vertical differentiation presumably comes from the firms most capable in research being able profitably to meet the opportunity cost of the most highly skilled research inputs. A firm less capable in research presumably lacks a prospective research harvest rich enough to make profitable a jump from a lower- to a higher-ranked center.

Both statistical evidence and survey-based information on the experience of MNEs confirm this framework.<sup>3</sup> First, the agglomerative tendencies for research to remain at the corporate headquarters remain strong. Not much over 10 percent of most source countries' MNEs' research is carried on abroad, although for Swedish MNEs, it reaches 23 percent (Håkanson and Nobel, 1993).<sup>4</sup> That percentage has grown rapidly. R&D abroad is oriented rather more toward development and less toward basic research than is

<sup>3</sup> Statistical studies include Mansfield, Teece, and Romeo (1979), S. Lall (1979*b*), Parry and Watson (1979), Hewitt (1980, 1983), Håkanson (1981), Hirschey and Caves (1981), Pearce (1989), and Zejan (1990*b*). Survey data and case studies were provided by Safarian (1966, Chapter 6), Creamer (1976), Ronstadt (1977), Germidis (1977), Behrman and Fischer (1980), and Pearce and Singh (1992).

<sup>4</sup> Håkanson and Nobel (1993) imputed proportions of overseas R&D employment to various motives: adapt products to local markets, 32 percent; support local production, 5 percent; exploit local resources, 8 percent; political pressures, 34 percent (the residual due to combinations of these motives).

R&D done at home.<sup>5</sup> The pattern confirms that research aimed at adapting products and services to local market conditions often is undertaken in that market. However, there are exceptions: Basic research is more footloose than is applied research, and some of it goes abroad to seek out particular scientific specialists, market conditions, and the like.

Statistical studies have found that the MNE's R&D outlays are more dispersed abroad the larger the percentage of its global sales made by subsidiaries and the less the firm relies on exports to serve foreign markets (Zejan, 1990b, found that exports deter adaptive but not innovative R&D abroad). Foreign subsidiaries' R&D outlays increase with their own exports but decrease with their intra-firm trade with affiliates (Håkanson, 1983). Some evidence indicates that scale economies are influential: The more important are scale economies in research, the less is it decentralized overseas; however, the more a firm's production abroad is concentrated in a few subsidiaries (where R&D scale economies can be realized), the more it decentralizes its R&D.<sup>6</sup> With these influences controlled, variations in the costs of R&D inputs from country to country exert some effect. Decentralization from the United States accelerated in the 1960s, when U.S. R&D personnel were substantially more expensive than their counterparts abroad, then slowed as that differential disappeared (Mansfield, Teece, and Romeo, 1979, Table 3). Using data on individual subsidiaries of Swedish MNEs, Zejan (1990b) showed that more R&D is undertaken abroad in large and high-income host nations. Finally, important confirmation of the sensitivity of MNEs' choices of R&D locations to economic incentives appears in Hines's (1993b, 1994b) studies of their responses to U.S. tax changes.

When one considers the distribution of R&D among a MNE's affiliates, the evidence shows the expected rational distribution in light of the various affiliates' situations. Blomström et al. (2000, Chapter 5) found that among Swedish MNEs each affiliate's own rate of R&D outlay increases with its size, its exports as a fraction of sales, the parent's overall R&D/sales ratio,

<sup>5</sup> Creamer (1976, Chart 4.2) provided the following data on the functional distribution of domestic and overseas R&D by a large sample of U.S. MNEs. In 1972 the overseas affiliates spent 69.0 percent for development, 29.9 percent for applied research, and 1.1 percent for basic research. The corresponding figures for their U.S. parents were 59.8 percent, 33.9 percent, and 7.3 percent. Parry and Watson (1979) found that in Australia, 42 percent of subsidiaries' R&D is spent modifying technology from abroad.

<sup>6</sup> See also Hood and Young (1976). Mansfield, Teece, and Romeo (1979) presented direct estimates of the minimum efficient scale (MES) of overseas R&D facilities. These estimates vary a great deal, suggesting that MES depends on the exact type of work done by the lab. Quality control and "customer engineering" have small minimum scales relative to the development of new products or components (see also Ronstadt, 1977, Chapter 9). Parry and Watson (1979) reported small scales for most industries, but with some exceptions.



the degree to which the parent's R&D is innovative (versus adaptive), and the host country's income per capita. It does not depend on the duration of the parent's international experience or the affiliate's age, and it decreases with the extent to which the affiliate functions as a distributor or processor of imports from its parent. A study of foreign subsidiaries operating in the United Kingdom showed a migration over time of subsidiaries toward R&D and exporting activities and away from the historical "miniature replica" of their foreign parent's activity set (Papanastassiou and Pearce, 1999).

The international transmission of technology through the MNE is part of the larger process of diffusion. For example, van Pottelsberghe de la Potterie and Lichtenberg (2001) concluded that a nation's productivity positively reflects the R&D stocks of foreign countries to an extent that increases with its merchandise imports from each country. It does not increase significantly with its stock of the foreign country's R&D capital overall; however, it does increase where most expected. For example, Japanese productivity benefits from trading partners' R&D capital stocks, to an extent increasing with Japan's stock of each partner's foreign direct investment, but United States productivity does not.

Notice the consistency between MNEs' R&D involvement and their basic dependence on proprietary assets. To pick just one example of linking evidence, Harris and Robinson (2002) found that U.K. plants under foreign control are significantly more productive than other plants. U.K. plants acquired by MNEs are also more productive than plants acquired by domestic enterprises, implying an expected ability of the MNEs to wring more value from establishments already endowed with proprietary assets (R&D and other).<sup>7</sup>

## 7.2. Licensing or Foreign Direct Investment?

We now consider the international transfer of technology and the MNE's role in the process, both microeconomic and in the aggregate (the product life cycle and overall patterns in the flow of technology and innovations among countries).

### Arm's-Length Markets for Technology

The market for technology entails transfers between firms of technical information (designs, descriptions, plans, etc.), including the right to use or

<sup>7</sup> In a related study Griffith and Simpson (2003) found that foreign-controlled establishments in British manufacturing experienced an increase in their productivity with age faster than do domestic establishments.

infringe on patents, and frequently the services of the licensor's personnel to install and debug the technology or train the licensee's operators. Agreements can be one-shot, transferring a discrete technology, but commonly they join the parties in a continuous and long-lasting relationship.<sup>8</sup> Anand and Khanna (2000) reported that 30 percent of the agreements in their sample are repeats for the parties. The agreement includes a royalty rate, frequently some round-number percentage of the licensee's sales revenue or factory costs, perhaps with a minimum payment. The agreement usually contains ancillary restraints: The licensee will grant back to the licensor any improvements made in the process or product; the licensee will not export to certain markets or will otherwise refrain from competing in the licensor's product markets. Licensing is more common the less physically complex the goods are and hence the more easily technical information can be conveyed. It is discouraged in more complex products, such as durable goods, for which research likely involves reconfiguring the product for competitive reasons; the resulting discoveries have little value for licensing to other firms (R. W. Wilson, 1977).

The licensing of technologies between competing firms raises complex issues that have been explored theoretically (e.g., Katz and Shapiro, 1985; Horstmann and Markusen, 1996) and empirically. The firm holding proprietary technology and able to write a complete contract with licensees might in some circumstances be indifferent between licensing the technology and itself producing the output that maximizes the resulting profit. If potential licensees hold a cost advantage for serving some customers, then licensing is preferred by the licensor, but efficient contracts leave the licensees no rents. The empirical evidence on licensing convincingly shows, however, that licensors on average can appropriate less than half of the surplus associated with the license transaction – not surprising, given the problem of asymmetrical information between the parties. If the licensee lowers the costs or improves the product of a licensor's competitor, no licensing will occur in some cases (even though a complete licensing contract could be profitable), and in others it will pay the licensor to restrict the licensee's opportunities for use of the technology in order to limit competitive erosion of its own profits.

Evidence supports this proposition in many ways. The closer and more direct a competitor, the more likely a contract profiting the licensor cannot be written. Competitors in distant countries should therefore be more attractive

<sup>8</sup> Contractor (1980); Herskovic (1976, p. 24); Rosenblatt and Stanley (1978). A recent and notably comprehensive study is Anand and Khanna (2000).

licensees than local rivals. Apparently, much licensing of technology takes place across national boundaries rather than between firms in the same country (Taylor and Silberston, 1973, Chapter 7). Mytelka and Delapierre (1988) noted with surprise the extent to which licenses and other inter-firm agreements of European firms are with non-European firms, despite the integration processes of the European Union. The more vulnerable is the licensor's profit to incursions from strengthened competitors, the more will it restrict the licensee's use of the technology. Caves, Crookell, and Killing (1983) concluded that licensors exposing their core technologies are indeed more likely to tie the licensee's hands, for example, by restricting where products involving the technology may be sold or obligating the licensee to grant any improvements back to the licensor royalty-free. The licensor's own situation matters. One licensing an established technology is more likely to restrict the licensee's exports than one licensing a novel technology that is likely to grow obsolete before the licensee evolves into a close competitor (Herskovic, 1976, pp. 40–47).<sup>9</sup>

Licensees in the technology market behave in ways consonant with the analysis of corporate strategy presented in Chapter 3. Licensing has its risks for them, but it pays where doing one's own R&D is a poor alternative – for example, where the efficient scale of R&D is large relative to the efficient scale of production (Herskovic, 1976, p. 20) or the licensee is diversifying into an unfamiliar product (Caves et al., 1983). Licensing also pays the firm that is adept at using but not producing the technology. A licensee will take on licenses that require a costly and specific physical investment when the technology lies close to the firm's established competence, but it will avoid large investments in specialized facilities when the licensed technology involves diversifying into unfamiliar territory.<sup>10</sup>

Competition among licensors influences royalty rates and terms. Regarding royalty revenues overall, one source claimed that U.S. licensors typically shoot for a royalty rate that will relieve an efficient licensee of one-third of its profits (Baranson, 1978, p. 64). Contractor (1980) found that large U.S. licensors typically face competition from other suppliers of technology,<sup>11</sup> but his statistical analysis only weakly confirmed the negative effect of competition on the total (lifetime) returns to a licensing agreement. He

<sup>9</sup> Also see Behrman's contribution to Mikesell (1962) and Casson (1979, pp. 20–22).

<sup>10</sup> Also see Taylor and Silberston (1973, Chapter 7) and Herskovic (1976). Katrak (1985) established a complementary relation between technology imports and own R&D for Indian firms.

<sup>11</sup> Two to 5 rivals in 34 percent of the cases in Contractor's sample, 5 to 10 rivals in 10 percent, 11 or more rivals in 29 percent. The licensor monopolizes in only 27 percent.

did find that they increase significantly with the size of the licensee's plant, which presumably is correlated with the rents that the licensee can earn from the licensed technology.<sup>12</sup> Taylor and Silberston (1973, Chapter 7) observed that the royalty rate decreases as the volume of sales under royalty grows, confirming a fixed component in the charges. Also, royalty rates are positively related to the amount of know-how supplied and the cost of supplying it, and royalties are higher for products subject to price-inelastic demands.

A device commonly used to avert contractual failures is the long-term or repeated deal between two parties such that the reputation loss or switching costs following a terminated deal deter short-run opportunistic behavior. Technology licenses typically run for a number of years. Also, some sources (e.g., Bertin and Wyatt, 1988, p. 71) indicated that reciprocal licensing among MNEs is itself important, making up 20 percent of the licenses granted by a sample of MNEs and 30 percent of those received.

### **Factors Governing Choice**

The feasibility of licensing offers the (potential) MNE a choice to serve a foreign market by starting a subsidiary or licensing an established firm. The transaction-cost model attributes the horizontal MNE to shortcomings in arm's-length markets for intangible assets: Just as appropriability is necessary for foreign direct investment, the infeasibility of disimpacting the asset to a licensee precludes the alternative of licensing. We therefore expect the relative advantages and disadvantages of licensing and foreign investment to determine where one stops and the other starts.

Strong intellectual property rights in a host country facilitate both foreign direct investment and licensing, making their relative effect ambiguous. Strong rights might allow the MNE to extract the bulk of available rents from host-country licensees and allowing the MNE to avoid the costs of its alien status. Weak rights might exclude MNEs, allowing only limited extraction through licensing. Yang and Maskus (2001) observed this non-monotonic relationship in data on license revenue, but that leaves open

<sup>12</sup> Contractor (1980) tested a number of hypotheses, usually getting the expected sign but not a statistically significant coefficient. In this sense he found that the returns tend to be higher when the licensee is permitted to export (and thus presumably will pay a higher royalty rate) and when the licensor's patent has a long time to run; they are lower when the technology is old. The gross returns to the licensor increase with the direct costs he incurs implementing the agreement or adapting the technology for the licensee.

the question of relative effects on foreign investment.<sup>13</sup> Alternatively, weak property rights may scuttle licensing while allowing the MNE to defend its proprietary assets in a wholly owned subsidiary that allows control over relations with host-country enterprises (see the theoretical model of Horstmann and Markusen, 1987*a*). Nunnenkamp and Spatz (2004) estimated (fifty-eight countries, seven broad sectors) a standard “gravity” model of the determinants of foreign direct investment, including alternative measures of the strength of countries’ protection for intellectual property rights. They found no across-the-board significant influences, but significant interaction terms suggest significant effect in some countries and sectors.

The empirical evidence on their prevalence ought to confirm these advantages and disadvantages. As Davies (1977; Buckley and Davies, 1979) pointed out, an efficient local firm will see greater present value in a given project than will a foreign entrepreneur, other things being equal, because of the latter’s unfamiliarity with the territory. If the foreign firm holding licensable proprietary assets could negotiate licensing terms to extract the local firm’s entire rent, it would always license and never choose direct investment. But the choice tilts toward foreign investment when the foreigner cannot collect the full rent or when suitable local firms are not to be found (e.g., in developing economies).<sup>14</sup> Ramachandran (1993) demonstrated directly the restriction of knowledge transfers between unrelated parties, finding that transfers to wholly owned subsidiaries in India involve substantially more reciprocal visits by licensor and licensee personnel than do transfers to partly owned subsidiaries, which in turn exceed the site visits when transfers pass to unrelated Indian firms.

Several empirical studies (especially Baranson, 1978; Telesio, 1979) exposed the factors that govern this choice between licensing and foreign investment. They suggest, first of all, that companies do contemplate foreign investment and licensing as direct alternatives, preferring foreign investment for its greater rent-extracting potential, turning to licensing only if

<sup>13</sup> McCalman (2004), investigating international trade in cinema and video films, argued that licensing might be the preferred policy where intellectual property rights are either very strong or very weak, ceding to foreign direct investment where rights have middling strength.

<sup>14</sup> The continuum of choice between licensing and foreign investment was illustrated by Kokko (1992, Chapter 4), who showed that among Mexican industries foreign subsidiaries’ technology payments to their parents increase significantly with the license payments made by competing, independent domestic firms.

that potential cannot be realized (Telesio, 1979, p. 37). The following determining factors emerge:

1. Licensing is encouraged where entry barriers deter the firm from foreign investment. Barriers presumably operate when the firm decides that the market is too small, meaning that entry at minimum efficient scale is not warranted given the market's size (Telesio, 1979, pp. 19–20, 38).<sup>15</sup>
2. Licensing is favored when the licensor lacks some assets needed for foreign investment. These might include a stock of accumulated knowledge and experience with foreign markets, managerial skills, or capital (meaning that the firm's shadow price of funds is high because of good competing uses). These considerations help to explain why the smaller the firm and the more valuable its internal uses of its resources, the more likely it is to select licensing rather than foreign investment (Telesio, 1979, pp. 78–80, 84–86).
3. Licensing is discouraged where arm's-length licenses are costly to arrange because of haggling over complex terms, defining the capability to be transferred, enforcing the agreement, preventing quality degradation by the licensee when a trademark product is involved, and preventing leakage of a technology from a licensee's hands into those of unlicensed competitors. This conclusion from survey evidence explains the finding of many investigators (Benvignati, 1983; Chen, 1983c, pp. 63–66; McMullen, 1983; Davidson and McFetridge, 1984; Mansfield, 1984; McFetridge, 1987) that new technologies tend to be first transferred within MNEs or that arm's-length transfers are likely to involve older technologies than intra-firm transfers. Coughlin (1983) showed that countries restricting majority ownership of foreign subsidiaries confine themselves to receiving older technologies.
4. Licensing depends on properties of the technology itself. Kogut and Zander (1993) demonstrated that its codifiability and teachability improve its candidacy for licensing, while its complexity is a deterrent. These factors could underlie the positive effects of a technology's age and number of previous transfers on the likelihood of licensing, as Kogut and Zander's statistical analysis suggests.
5. The lead time required to license an established producer usually is less than that required to start a subsidiary from scratch. If so, licensing is

<sup>15</sup> Buckley and Casson (1981) modeled the choice among licensing, exporting, and foreign investment as one leading from low toward high fixed costs, trading against high to low variable costs (or foregone rents), disposing them in turn toward markets of increasing size.

encouraged where the rents to the intangible asset are short-lived, say, because the industry's technology is changing rapidly (Michalet and Delapierre, 1976, pp. 16–17, 24). This consideration probably explains why Telesio (1979, Chapters 5 and 6) found that the proportional reliance on licensing (relative to foreign investment) actually increases with the importance of R&D for a firm: Foreign investment increases with R&D, but licensing increases even more.<sup>16</sup>

6. Considerations of risk affect the choice between licensing and foreign investment in diverse ways. The licensor exposes no substantial bundle of fixed assets in the foreign market and so avoids a downside risk (e.g., when expropriation is a possibility) that might deter foreign investment. However, the risk of leakage of a technology into the hands of competitors deters a firm from licensing its core technology. This consideration probably explains why firms diversified in product markets are more disposed to license.<sup>17</sup> The option of exporting cannot be ignored in this context, because it avoids exposing an appropriable technology abroad by any means except reverse engineering. Exporting is favored to protect easily appropriated process technologies (Mansfield, 1984), and Ferrantino (1993) showed that host countries with weak protection of international property tend to be served by exporting rather than by either licensing or foreign direct investment. Lee and Mansfield (1996) found that weak property rights promote foreign direct investment over licensing, and also affect the choice between wholly and partly owned subsidiaries.
7. Related to risk is the role of cultural distance between the MNE's source country and the particular host. Arora and Fosfuri (2000), studying a sample of large chemical firms, found that wholly owned subsidiaries prevail for firms investing in culturally similar hosts, but their share gives way heavily to licensing when cultural distance is maximum. Similarly, previous business experience in a host strongly promotes the selection of a wholly owned subsidiary.<sup>18</sup>
8. Licensing is discouraged if the opportunity cost of capital is higher in the recipient country than in the country of the potential licensor, because the licensee then will value the expected stream of rents to

<sup>16</sup> Clegg's (1987) results based on aggregated data seem to support this finding.

<sup>17</sup> Telesio (1979, pp. 76–77) suggested that diversification may also be associated with shortages of complementary assets needed to start foreign subsidiaries for the purpose of exploiting peripheral technologies.

<sup>18</sup> Arora and Fosfuri (2000) also confirmed the prediction that the probability of licensing increases with the number of potential licensees.

the technology less than will the owner of the technology (R. W. Jones, 1979, p. 264). This implication of the capital-arbitrage model of foreign investment (Chapter 2) has not been tested on national aggregates, but is supported by case evidence on how the opportunity cost of funds affects companies' choices between licensing and foreign investment.

9. Licensing is encouraged by possibilities for reciprocity: If you license a technology to another enterprise, some day it may in return license one that you require. Telesio (1979, Chapter 4) and Bertin and Wyatt (1988) found reciprocity quite common in certain industries. It might sustain agreements that are otherwise problematic (as was noted previously) and avoid duplicating fixed costs, but it could have anticompetitive consequences when going firms cross-license each other but decline to license to newcomers, thereby creating a barrier to entry (Telesio, 1979, pp. 62–64).

Some additional light is shed on the trade-off between licensing and foreign investment by Davies's (1977) study of British MNEs' operations in India, at a time when government regulations forced them to choose between licensing and joint ventures with Indian firms. The MNEs were clearly willing to hand over more extensive packages of technologies, provide more extensive auxiliary information, and take the trouble to adapt the technology to Indian conditions when an equity share was retained through a joint venture. Although joint ventures have their own limitations (see Section 3.4), they apparently also avert some of the disincentives to trade in proprietary assets through arm's-length agreements. N. Kumar (1990, pp. 31–44) showed that during the same period foreign investment in Indian industries was negatively related and the importance of licensing royalty payments was positively related to the R&D intensity of Indian industries, suggesting a diversion from MNEs to arm's-length licensing.

Finally, Teece (1977) developed unique data on the costs of intra-firm and arm's-length transfers of technology that upset the standard assumption that information once developed costs nothing to transfer. In the average project that he surveyed, the costs of transferring a production process amounted to 19 percent of the total costs of the activity receiving it, with the range (for twenty-six projects) running from 2 to 59 percent. Teece found that these transfer costs vary from case to case in predictable ways: They tend to be higher the first time the technology is transferred, and higher for newer technologies. They are lower the more prevalent are similar technologies among other companies, and the more experienced in manufacturing is the



recipient unit.<sup>19</sup> Transfers to joint ventures average 5 percent more costly and to independent licensees 9 percent more costly than transfers to wholly owned subsidiaries.

### MNEs, Technology Transfer, and the Product Cycle

Vernon (1966) and others (notably Johnson, 1968) analyzed the international diffusion of technology under the rubric of the “product cycle.” Although primarily concerned with explaining international shifts in production and trade, this model does relate foreign investment and the transfer of technology by the MNE to the diffusion of innovations. An independent line of research demonstrates a similar relationship between the development stage of a product and the number of firms producing it (Klepper and Graddy, 1990).

The model’s interest lies in the link it forges between the diffusion of an innovation and the location decisions of MNEs, a link quite consistent with the transaction-cost model of the MNE that emerged in Chapters 1 and 3. Most innovations, the model assumes, are labor-saving. Process innovations substitute capital for labor or reduce input requirements for labor more than they do for capital. Product innovations such as household durable goods substitute capital for labor in the production of utility within the household. The value of such innovations is therefore greatest in countries where wages and therefore the value of people’s time are highest relative to the user cost of capital. Invention is an economic search process bestirred (in part) by the inventor’s perception of how value can be created. Given the random nature of the search, the inventor is most likely to notice nearby opportunities, so inventions and innovations are concentrated in high-income countries. Early-stage production is also tied closely to the high-income geographical market where the innovation has the best prospects. Methods of producing it are initially fluid and small scale. Uncertainty about optimal production methods and configurations of the innovation discourages both the development of large-scale production and worldwide search for the most efficient production location. They are also deterred by the low price elasticities of demand, small market sizes, and low levels of competition likely to prevail

<sup>19</sup> Other evidence supports Teece’s findings. Tsurumi (1976, pp. 189–92) found that the expatriate personnel needed to transfer a technology increase with its complexity, independent of the scale of the recipient facility. Sekiguchi (1979, pp. 65–67) noted that the effectiveness of transfers of Japanese textile technology has been impaired where recipient countries restrict the presence of foreign personnel. Ramachandran (1993) showed that licensees who conduct R&D need less input of expatriate personnel to effect transfers.

for a new product. Therefore, production as well as consumption of the innovation initially sticks to the high-income market.

Use of the new technology eventually spreads to other countries as their rising real wages (and values of household labor time) make saving labor more profitable and as the real price of the innovation falls. This demand is at first served by goods imported from high-income areas, a prediction that accords with the high R&D intensity of the export industries of the high-income industrial countries. However, as the innovation's technology and production method stabilize, a search intensifies for low-cost production locations, and this search tends to carry production to lower-wage countries. Increasing price elasticities of demand, as users grow more familiar with the innovation, and increasing competition in the product market pull in the same direction. Exports from the high-income innovating countries are displaced by expanding production in other industrial countries. As the innovation matures, the shifting pattern of production and use might ultimately carry production to developing countries, with the industrial countries losing their comparative advantage entirely, but the "mature" innovation could get displaced by its successor before this final stage is reached.

Most empirical research on the product cycle has concentrated on patterns of production and trade rather than on the activity of the MNE (Wells, 1972). Yet the prevalence of MNEs in high-R&D industries (shown in Chapter 1) and the disabilities of the arm's-length market for technology transfer both imply that the MNE functions prominently in the international dissemination of innovations. The model explains why the United States has been a fertile source of innovations and a prolific source of MNEs and why U.S. foreign investments were concentrated in innovative industries both early (Vernon, 1971, p. 85) and late (Gruber, Mehta, and Vernon, 1967) in the twentieth century. As a corollary of the product cycle, the European countries' shortages of native raw materials fostered innovation in materials-saving technologies, a pattern reflected in the industry composition of Europe-based MNEs (Franko, 1976, Chapter 2; Tsurumi, 1976, pp. 174–76), just as congestion in Japan fostered miniaturized innovations (Franko, 1983, pp. 32–35).

Some research has focused on how much difference the MNE's presence makes to the speed and direction of the diffusion process. Extensive evidence that newer technologies are transferred within the firm was cited previously. Tilton's (1971) study of the semiconductor industry emphasized the importance of newly founded foreign subsidiaries in transplanting U.S. innovations to the European countries. Older foreign subsidiaries, however, tend to behave rather like any incumbent firm: An established company will

rationally innovate later than a new firm if the innovation makes its facilities obsolete but is not so good that it pays to scrap the existing capacity immediately. Globerman (1975) found no statistical evidence that foreign subsidiaries in the Canadian tool-and-die industry adopt numerically controlled machine tools faster than did domestic firms, but Chen's (1983c, pp. 63–91) study of the diffusion of innovations through four Hong Kong industries shows a positive association of speed with MNEs' share. Stobaugh's (1972) investigation of petrochemicals and Hufbauer's (1966) study of synthetic materials both suggest that scale economies in production and marketing retard diffusion. The firm that introduces the innovation gains a sustained first-mover advantage and delays taking production outside the country. When diffusion does occur, scale economies point foreign investment toward large host markets. Leroy (1976, Chapter 6) found that overseas transfers of a majority of sampled products followed Vernon's sequence of export-then-produce-abroad; in a minority, however, production started in the MNE's host country and then remained there. Lake (1979), concerned with the relationship between market structures and the international diffusion of technology among MNEs, weakly confirmed the conclusion from many single-nation studies that diffusion is faster in the more competitive industry. He also found diffusion to be faster when it takes place among firms with previous experience in the process, a result consistent with Vernon and Davidson's (1979) finding that diffusion processes are accelerating over time.

The most comprehensive data on the MNE's role in the diffusion of innovation, assembled by Vernon and Davidson (1979; also see Davidson and McFetridge, 1984, 1985), covered the overseas spread through subsidiaries and licensees of 406 innovations introduced since 1945 by fifty-seven U.S. MNEs. Technologies are indeed first transferred to countries with high incomes per capita, high literacy rates, and proportionally large manufacturing sectors (McFetridge, 1987);<sup>20</sup> recipient countries' severe trade restrictions actually accelerate transfers, while screening restrictions on foreign direct investment retard them. The MNE's information network and ready apparatus for making technology transfers demonstrably affect the diffusion process. The higher the MNE's initial proportion of sales made abroad (through both exports and subsidiary sales), the quicker are innovations transferred for production abroad. Transfer comes quicker when the innovation lies in the firm's principal product line and when the firm has

<sup>20</sup> Kokko (1992, Chapter 3) similarly found that royalty receipts from technology transfers increase with the capital expenditure rates of the manufacturing sectors of recipient countries.

had previous experience with transfers in this product line. Similarly, the more previous experience with transfers to a given country, the faster is the next innovation transferred to that country. The MNE with a high ratio of R&D to sales (relative either to its base industry or to other MNEs) transfers technology abroad more rapidly. As between subsidiaries and licensees in the diffusion process, subsidiaries predominate in the first few of years of the diffusion of an innovation, but then licensees start to catch up. Licensees play more of a role for true innovations than for new products that imitate other firms' innovations; presumably the imitations are attuned largely to oligopolistic rivalry among firms and hence have little value for licensing (see R. W. Wilson, 1977). Firms are more likely to resort to arm's-length licenses when they have had substantial past experience with transfers of technologies of all types, and when the technology lies outside their base industry (Davidson and McFetridge, 1984).

The Vernon-Davidson results are broadly consistent with the preceding analysis of international transfers of technology and the core explanation of MNEs' activities developed previously. Indeed, the consistency of the evidence with rational behavior by well-informed MNEs casts doubt on the original product-cycle formulation, which invoked myopia and uncertainty in the introductory stage of an innovation to explain the delayed diffusion beyond the innovating country (Leroy, 1976, Chapter 1). Vernon (1979) suggested that the global information network of the established MNE can sever the link between the site where the invention is first proved and the markets where the commercial innovation takes root.

### 7.3. General-Equilibrium and Welfare Aspects

The international licensing market and the MNE's development and transfer of technology have implications for economy-wide resource allocation in the overall economy and for economic welfare.

#### **Focus on Source (Industrial) Countries**

Economists pursuing technology transfer into the realm of general equilibrium have had a difficult task. Such models are traditionally static and do not easily make room for imperfectly marketed assets such as proprietary knowledge. Even with that problem solved, the effects of technical change on production functions can be complex to model. The relevant contributions are complicated, and so the following summary is selective (see Pugel, 1981*b*).

Krugman's (1979) model does not explicitly capture the MNE as a capital arbitrager but does develop the general-equilibrium implications of technology transfers. Krugman's starting point is the product cycle. Suppose that new technology consists of a continuing stream of product innovations that all emerge initially in one country (Home). With a random lag, each new good's technology becomes known in the other country (Foreign). New goods' technologies are known only in Home; old goods can be produced in Foreign as well. Labor is the only factor of production, immobile between Home and Foreign. Under these assumptions, Home's labor may share the rents from the extra value that consumers everywhere place on new goods. Depending on how highly consumers value new goods relative to old ones, Home may specialize completely in new goods, in which case Home workers earn a higher wage. However, if in equilibrium Home also produces some old goods, its labor earns no premium over Foreign's. Product innovations make both Home and Foreign better off – Home by improved terms of trade, Foreign by making more kinds of goods available for consumption and thus increasing consumers' utility. The transfer of technology, when a new good becomes an old good, also increases the world's real income (because it is then produced by Foreign labor that is cheaper than Home labor). Foreign clearly gains from the technology transfer. Home, however, can either gain or lose: As consumers, Home citizens find that the relative price of the "newly old" good has fallen, but as workers they find that their wage has fallen slightly in terms of all other goods.<sup>21</sup>

Homogeneous, internationally mobile capital can be added to Krugman's model, with its rate of return the same in equilibrium in Home as in Foreign (a case developed further by Dollar, 1986). Innovation tends to raise the marginal product of capital in Home and pull capital in from abroad. The transfer of technology pushes capital abroad to Foreign. Capital movements in Krugman's model are a consequence of transfers of technology, not a cause. There is also a sense in which they substitute for technology transfers in maximizing the efficiency of world production. That is, technology transfers shift the world's production-possibilities frontier outward because they permit producing the existing quantity of the transferred good at a lower resource cost. From such an equilibrium, with Foreign constrained to be completely specialized in old goods, in some cases more efficient world production is attainable by letting enough of Foreign's capital migrate to

<sup>21</sup> In a somewhat similar model, McCulloch and Yellen (1982) showed that Home can gain if Foreign turns out to have such a comparative advantage in an innovative good that production of the newly old good shifts entirely to Foreign. Krugman's model does not allow for comparative-advantage differences among old goods. The McCulloch-Yellen article will be discussed subsequently.

Home to produce new goods. McCulloch and Yellen (1982) developed this proposition as well as the implications of technology transfers for labor's real income. For example, with capital immobile internationally, Home labor benefits from transfer of Home's technology advantage to Foreign if the advantage is in the capital-intensive good. Then, after the transfer, Home's capital stock must be reallocated toward the labor-intensive industry, raising the marginal product of Home's labor in terms of both new and old goods.<sup>22</sup>

For an effort to show the formal consequences of MNEs as transferors of technology, we turn to Findlay (1978) (also see Koizumi and Kopecky, 1977). In his model, Foreign suffers a systematic technology gap. Being backward offers an advantage of sorts: The farther behind the leader you are, Findlay assumed, the more easily can you pick up the leader's innovations and narrow the gap. Findlay argued, however, that this property of relative backwardness implies not a complete catch-up but an equilibrium lag behind the frontier. He assigned the capital that Home's MNEs invest in Foreign the role of a generalized promoter of technological improvement: The more chances do Foreign's native factors have to observe Home's advanced technology used by Home's foreign subsidiaries, the faster does Foreign's technology level rise. Thus, Foreign's general rate of technical progress is higher, the larger is Foreign's stock of Home-originated MNE capital relative to domestic capital, and the lower is Foreign's technology level relative to Home's. The model contains a complex mechanism that adjusts the stocks of domestic capital and MNE capital in Foreign in relation to the levels of technology in Home and Foreign. When Home's MNEs employ relatively advanced technology in Foreign, they earn high profits, which are taxed by Foreign's government. This tax revenue is channeled to finance expansion of the share of Foreign's domestic capital, cutting down the rate at which the MNE capital promotes the advance of Foreign's technology frontier. Also, Foreign's wage level is assumed to rise with the expansion of that technology frontier, and high wages thereupon cut into the profits of the MNE sector and slow its investment rate. The upshot is that the stocks of MNE capital and domestic capital in Foreign assume long-run equilibrium values that are determined jointly with the technological gap.<sup>23</sup>

<sup>22</sup> McCulloch and Yellen also developed the consequences of technology transfers for employment in a Brecher-type model in which the real wage is fixed in terms of the old good. Home's transfer of technology to Foreign can then either raise or lower Home's employment. Segerstrom, Anant, and Dinopoulos (1990) demonstrated how tariff protection of Home's industries can raise Home's wages but at the same time reduce the number of new industries that arise to replace older, declining industries.

<sup>23</sup> Wang (1990) extended Findlay's model by adding human capital that grows exogenously in Home. Its growth in Foreign has an exogenous component but also depends on spillovers

MNE capital's "positive contagion" in spreading technological improvement has striking implications for some of the model's comparative-statics properties. An increase in Foreign's tax rate on resident MNE capital raises Foreign's relative stock of domestic capital and lowers dependence on imported capital, but it also enlarges the long-run equilibrium technology gap; so does an increase in Foreign's rate of saving. Whether the positive-contagion hypothesis has any empirical validity is, of course, a separate question; the point of Findlay's model is that, if technology transfer takes this form, it has quite surprising implications for economic policy.

Other approaches to technology transfer have emphasized its relationship to the commodity terms of trade, as did Krugman (1979), but employed a different strategy in building the model. R. W. Jones (1979, Chapter 16) allowed Home's superior technology to be embodied in capital goods installed abroad by one of Home's industrial sectors.<sup>24</sup> The capital export is likely to expand world output of the affected commodity, even though risks to Home's foreign investors inhibit the superior technology from driving Foreign's inferior technique totally out of use. Home could lose from this export of technology (and capital) if the transferred technology pertains to Home's export good, lowering its relative price and worsening Home's terms of trade. Home will then maximize its welfare by taxing the export of technology. However, if the exported technology expands the output of Home's imported good, Home will gain by subsidizing technology exports.

The models summarized so far have been concerned chiefly with the effects of free dissemination of Home's technology to Foreign and the optimal policy for Home to follow given that no patent holder collects rents on the exported knowledge.<sup>25</sup> C. A. Rodriguez (1975) concentrated on the policy alternatives available to Home's government for maximizing the

from Home (human capital like raw labor is not directly mobile internationally). Foreign's human capital also enjoys spillovers from Home's MNE capital. An influx of MNE capital to Foreign raises the growth of Foreign's human capital, but that increase narrows the gap with Home's human-capital stock and Foreign's catch-up potential (this latter effect is the dominant one).

<sup>24</sup> R. W. Jones (1970) earlier showed in the context of the Heckscher-Ohlin model how technology differences (and thus technology transfers) between countries may affect their equilibrium relative commodity prices in the absence of trade. This model allows for both differential effects between industries and differential biases in the proportional reduction of input requirements for each factor of production.

<sup>25</sup> McCulloch and Yellen (1982) did show that free dissemination is never optimal for Home if trade is free of tariffs and Home's resources are fully employed; with unemployment due to a fixed minimum wage, the optimal royalty rate could be anything from zero to prohibitive. R. W. Jones (1979, Chapter 16) emphasized the relationship between Home's optimal tax on technology embodied in sector-specific capital goods and Home's commodity terms of trade.

contribution of the nation's proprietary technology to its own welfare. In a general-equilibrium model he showed that under certain assumptions (notably, constant opportunity costs: The slope of a country's transformation curve does not change as factors are reallocated between sectors) Home's problem of maximizing rents from its technology is identical to the problem of maximizing monopoly rents on its trade with the rest of the world. Suppose that Home produces soft drinks and controls the secret formula for producing their flavoring. Foreign's consumers are assumed to be better off consuming some soft drinks than if they consume only the other goods that Foreign can produce without access to Home's exports or technology. Then Home achieves the same welfare level (and also leaves Foreign in the same welfare position) whichever of the following policies Home's government adopts: (1) an optimum tariff on Home's trade with Foreign; (2) a tax on soft-drink technology licenses that maximizes Home's monopoly profits; (3) authorization of a multinational subsidiary in Foreign to monopolize the soft-drink business in Foreign's market and maximize its profits.<sup>26</sup> Rodriguez's model becomes somewhat more complex if his countries' transformation curves reflect not constant but increasing opportunity costs (as in Figure 2.2); then Home needs to impose both a charge for technology licenses and a tax on trade in order to maximize its real income.

Most of these theoretical studies have treated Home's stock of technology as exogenous. They thus neglect the basic dilemma stemming from failures in the market for proprietary knowledge: One cannot simultaneously distribute the existing stock around the world efficiently and reward inventors so as to induce investments in new knowledge. Pugel (1980*b*, 1981*b*) investigated how induced R&D investments change the consequences of Foreign's natural bent to free-ride on imported technology or tax away any rents collected in Foreign's markets on Home's behalf. Clearly, the globally optimal royalty payment for the use of technology becomes positive, and Foreign may even improve its own welfare by paying royalties so as to induce a continuing flow of cost-reducing research. Foreign's taxes on royalty payments for Home's technology then cause negative externalities for Home, because in cutting R&D investments by Home's producers, they render Home's own (future) unit costs of production higher than otherwise. In the same vein,

<sup>26</sup> The license fee is assumed to take the form of a royalty per bottle of soft drink. If, instead, Home holds out for a lump-sum royalty payment, it is, in effect, making in all-or-nothing offer that can potentially relieve Foreign's consumers of all the surplus they enjoy from soft drinks – not just the part that a simple monopolist would get. Then the technology license becomes superior to the other policies from Home's viewpoint.



Koizumi and Kopecky (1980) associated the production of technology with learning-by-doing in the use of the firm's capital stock. The more rents the firm can gather by transferring cost-reducing improvement abroad, the larger capital stock it then chooses to maintain at home in order to generate such experience-based improvements. In this model, transfers of technology abroad can have an adverse short-run effect on the wages of Home's labor for the usual reasons, but a positive long-run effect because of the extra capital formation induced to capture overseas rents from the technology improvements. The endogenizing of technical change has lately been pursued at a high level of generality. The results obtained are generally consistent with the standard general-equilibrium models (Heckscher-Ohlin) and with previous findings (Helpman, 1984) about MNEs and the domain of factor-price equalization (Grossman and Helpman, 1991, especially pp. 197–205).

### **Focus on Host (Developing) Countries**

Other contributions address issues of policy and market behavior for the host country with access to spillovers from foreign technology. Positive externalities can provide a reason for a host country to subsidize inflows of MNE capital (Gehrels, 1983). They can also generate microeconomic interactions between domestic firms that benefit from spillover and MNEs that generate it. Das (1987) treated the case of a subsidiary competing as a dominant firm with a fringe of domestic firms that costlessly increase their productivity in proportion to the subsidiary's output. The subsidiary's optimal response is to reduce its output, elevating the product's price but generating a time path of declining values for both price and the subsidiary's market share. Exogenous (and costless) infusions of the MNE parent's technology into the subsidiary reduce price and raise the subsidiary's share in the host-country market. The rate of growth of the domestic fringe's efficiency increases, but the subsidiary still benefits from the technology infusion (despite the spillover and resulting closer competition). Wang and Blomström (1992) assumed that (beyond a point) a subsidiary's domestic rival must invest in order to siphon productivity gains from its foreign-subsidary competitor. This spillover increases host-country market demand for the domestic competitor's differentiated product, just as infusions of the MNE parent's technology to the subsidiary pulls demand to the subsidiary's brand. In the model's steady-state Nash equilibrium the two competitors undertake positive rates of investment respectively to infuse and to appropriate knowledge. When the domestic rival narrows the technology gap, the MNE is provoked to transfer more technology; this transfer increases with the efficiency of

the domestic firm's learning activities and with the sensitivity of market demand to the technology gap.

Rodriguez-Clare (1996) explored a different institutional setting for spillovers: The host country's industry benefits from the MNE's capacity to supply specialized inputs. Specifically, the host-country industry's production function includes a love-of-variety element – productivity increases with the variety of specialized inputs that are available. These are supplied by the MNE (by assumption, they cannot be imported directly by host-country firms). Recent contributions (Haaland and Wooton, 1999) stem from modern trade theory, notably the presence of a “modern” sector producing differentiated intermediate goods and a “traditional” sector that produces homogeneous goods. The differentiated goods are produced by vertical MNEs, and spillovers occur within this sector. The spillovers raise the possibility of multiple equilibria.

#### 7.4. Knowledge Stocks and Spillovers

The [preceding section](#) shows the welfare implications associated with MNEs' involvement in the creation and transfer of knowledge capital. The next major empirical issue concerns the share that MNEs can obtain of the potential maximum rents associated with the technology that they transfer. Alternatively, to what degree are these potential rents diffused through spillovers?

Ideally, the evidence will also shed light on the adversary interests of transferor and transferee countries in capturing the associated economic rents. These rents, we have seen, raise policy problems that turn on whether private-property rights in industrial knowledge are feasible and (if so) legally protected. Other influences on welfare include the incidental effects of the transfer on the terms of trade. Most of the empirical evidence bears on two questions: To what extent does seller competition erode the rents potentially accruing to MNEs' technology? Just how superior is the technology used by MNEs, on the average, and how much of it leaks out to competing domestic factors of production?

#### Competition and Technology Rents

Some evidence indicates how market competition affects the rent streams generated by international sales of technology and how national governments seek to divert these streams. Can the commercial firms controlling Home's technology monopolize it effectively when they sell in Foreign's markets? Does rivalry among them erode Home's monopoly rents

and enhance surplus for Foreign's consumers? Industry studies show a tendency for firms unsuccessful or inactive in foreign investment to license their technology abroad, thereby competing with the foreign-subsidiary sales or exports of other national companies.<sup>27</sup>

Indirect evidence on competition and technology licensing comes from the behavior of governments in this area. If sellers of technology competed as Bertrand price rivals, rents on technologies would tend to yield only a normal rate of return on the resources used in the transfer (not the production) of knowledge. Transferee governments could not intervene so as to better the terms of trade for their citizens. However, if a transferor can exercise monopoly power, a government might usefully intervene to override the bargains struck by its own citizen-licensees and force a cost-minimizing all-or-nothing offer on the foreign owner of the technology. The gains from government intervention should be greater, the more competitively its citizens bid for the license. Peck (1976) concluded that the Japanese government has appreciably raised national welfare by intervening in its licensees' negotiations and suppressing competition among them. Davies (1977) similarly claimed that the Indian government managed to halve average royalty rates and cut the duration of agreements. The alleged success of these interventions does suggest that licensors otherwise command appreciable monopoly power in arm's-length transactions. And, of course, the discrimination in patent policy against foreign applicants, employed by many developing and some developed countries, operates to the same end (Penrose, 1973; McQueen, 1975).

### Spillovers

Much more evidence bears on the second empirical question: To what degree do technologies and related proprietary assets transferred abroad escape from their owners' control or give others access to their benefits? Given the stock of knowledge, such leakage probably increases the recipient country's welfare and world welfare, while reducing the welfare of the country that invested to produce the knowledge (an exception is leakage that reduces costs and prices of the subsidiary's local suppliers or increases the input demand of local customers). But in the long run, reduced appropriability lowers investment in such knowledge assets and hence potentially reduces world welfare. For the policymaker in the country generating the technology, there

<sup>27</sup> See Tilton (1971, pp. 118–19) on AT&T's licensing policy in semiconductors and Baranson (1978) on competition among U.S. manufacturers of light aircraft and its consequences for licensing a Brazilian producer.

is another question: Do its citizens who use or license technology abroad correctly value the risk to the national welfare of the knowledge thereby escaping from proprietary control?

Among empirical studies of the spillover of MNEs' proprietary assets, Mansfield and Romeo (1980) notably focused on measuring and evaluating the leakage of specific technologies. From a sample of technologies exported by U.S. firms, they determined the average time elapsed between a technology's introduction by one of the firms and its transfer abroad. The mean lag was six years for transfer to the firm's subsidiaries in developed countries, ten years for transfer to subsidiaries in developing countries, and thirteen years for transfer to joint ventures or transfer through arm's-length licenses. Use of the technology abroad was not thought to speed its imitation by a foreign competitor in most cases, but in about one-third the appearance of a competing product or process was advanced by at least 2.5 years.<sup>28</sup> Mansfield and Romeo also secured from domestic firms in the United Kingdom estimates of how often their innovative efforts had been hastened in response to technology transfers from U.S. MNEs to their competing subsidiaries in the United Kingdom. Over half believed that at least some of their products and processes had been introduced (or introduced sooner) to meet the competitive effects of these transfers. There is little evidence on the extent to which innovations diffuse without benefit of the MNE or formal licensing arrangements, but De Melto et al. (1980) did report that half of the identified Canadian imitations of external innovations stemmed from independent research, development, and engineering activities of the imitator and not licensing or other commercial transactions with the innovator.

Many studies have touched on the productivity levels and growth rates of MNEs relative to competing domestic firms (especially in host countries). They address issues that range beyond those of technology transfer, such as whether MNEs are more efficient than other companies. Early studies examined productivity in foreign subsidiaries and competing domestic enterprises in Australian and Canadian markets.<sup>29</sup> If the two types of firms coexist, and superior technology or productivity imported by the subsidiaries progressively spills onto their domestic rivals, the subsidiaries' superiority should appear as a differential-rent component of their value

<sup>28</sup> The acceleration was greater for process technologies. A product innovation usually is imitated by "reverse engineering": Buy the innovation, take it apart, and figure out how it works. This does not depend on propinquity to the factory. Process innovations, however, can be imitated only by observing them, contacting suppliers, hiring away employees, or other methods for which distance matters.

<sup>29</sup> See Brash (1966, pp. 194–202) with regard to MNEs' suppliers and customers as well as evidence of effects on competitors (Dunning, 1958, pp. 224–25; Forsyth, 1972, pp. 145–50).

added. And if the gap for domestic firms decreases with their exposure to the subsidiaries, the domestic firms' relative productivity should increase with the subsidiaries' share of the market.<sup>30</sup> Caves (1974a) and Globerman (1979a) both found reasonably strong evidence to support the hypothesis. Neither study had access to data on individual firms or could measure efficiency within the context of statistically estimated production functions for the foreign and domestic firms. Other studies of this type for Canada were reviewed by Globerman (1985).

This line of research faces difficult problems of model specification, illustrated by the theoretical models summarized previously. Spillovers might increase with the foreign-subsidiary presence in an industry, but the spillage itself limits that presence.<sup>31</sup> With spillovers occurring, one might observe either a steady-state difference over time in foreign and domestic producer-groups' productivity levels, with spillovers balancing the influx of new technology to the foreign sector; or one might observe a catch-up process in which spillage eliminates the foreign-domestic productivity gap and reduces the equilibrium foreign share. No empirical studies have had enough data to pin down all these relationships, but recent contributions based on data for individual business units and/or observations on successive years have permitted a substantial advance.

Blomström (1983, 1989) gained access to Mexico's data disaggregated by firm. He found the basic production-function relations quite similar between the foreign and domestic sectors of Mexican industries, except that white-collar productivity appears higher in the foreign units (no doubt, the effect of MNEs' proprietary intangibles) (Blomström, 1989, Chapter 3). On average the productivity residuals of domestic firms are smaller than those of foreign subsidiaries, but they increase with foreign subsidiaries' share of an industry's employment, consistent with a spillover; this positive relationship is robust to controls for labor quality, concentration, and tariff protection (Blomström, 1989, Chapter 4). The gap between productivity of individual plant-size groups and an industry's most productivity plant-size group declines with the foreign units' share of industry employees (Blomström,

<sup>30</sup> The research literature surveyed here assumes that the foreign subsidiary comes endowed with superior technology by its MNE parent. Of equal potential relevance is the foreign subsidiary's performance in picking up new technology from arm's-length sources (Chen, 1983a).

<sup>31</sup> In this sense, the positive relation between subsidiaries' industry-level shares and domestic competitors' productivity is a strong result: if firms' individual efficiency levels were exogenous, large foreign shares should be correlated with low productivity levels for domestic competitors (even the best ones that survive). A negative relationship is also predicted if the effect of foreign subsidiaries is purely to inject additional competition into the market, destroying rents that otherwise count in domestic firms' productivity levels.

1989, Chapter 5). Kokko (1992, Chapter 5) distinguished industries with large and small average gaps between subsidiaries' and domestic competitors' productivity levels, finding that domestic productivity is more sensitive to the foreign presence where the gap is small (and where the two groups probably engage in more fully comparable and directly competing activities). Kokko also found this sensitivity to be greater in industries with small foreign shares, suggesting that the marginal effect might go to zero in industries dominated by foreign subsidiaries.

Other research addressed the dynamics of this relationship. Consistent with the Wang-Blomström (1992) model, U.S. MNEs' transfers of technology to their subsidiaries seem to increase as the subsidiaries' productivity advantage over Mexican domestic competitors declines (Kokko, 1992, Chapters 3, 4; Blomström et al., 1992). Blomström and Wolff (1994) found that domestic producers' productivity increases more rapidly, and the gap from competing foreign producers' productivity narrows, the higher the foreigners' initial share and the larger the initial productivity gap. Kokko (1992, Chapter 6) tested the reciprocal dependence of subsidiaries' and domestic competitors' productivity levels on each other's market shares, rejecting the endogeneity of the foreign sector's productivity in general; it was found endogenous, however, where the foreign share is below 50 percent and the industry is "low tech" (i.e., the foreign presence then depends on static "comparative advantage" factors). He also found that, in industries with foreign shares below 50 percent and large gaps between foreign and domestic productivity, the domestic units' productivity increases not only with the foreign share but also with foreign productivity (that is, the size of the gap) itself. Overall, Kokko's results suggest a satisfying consistency in the complementary operation of technology spillovers and static cost-based competition.

Similar data for Morocco were analyzed by Haddad and Harrison (1993). They replicated the prevailing positive relationship between domestic producers' productivity and foreign competitors' market share, controlling for firm size and the effects of restrictions on import competition. However, they could isolate little if any interdependence between the competing foreign and domestic sectors' rates of productivity growth. In developing countries, no clear line exists between spillovers of technology and of general modern business practice.

### **What Spills? What Is Contained?**

The studies described so far illustrate the recent methodological advances in the investigation of spillovers: the use of data on firms rather than industries;

and the exploitation of panel data, or at least first differences, in order to control for firms' differing structural situations. The new findings raised the possibility that spillovers had been overestimated and could not properly be diagnosed in every case given attention. The numerous recent studies therefore should be regarded as establishing the settings in which spillovers do and do not occur, or occur in greater or lesser amounts. The articles referenced here can be generally regarded as avoiding the methodological shortcomings of the early investigations.<sup>32</sup>

1. Recent articles have confirmed that the cross-section methods used early in this line of research overstate the positive evidence on spillovers. For example, peripheral European countries receiving large inflows of foreign direct investment appear in cross section to enjoy spillovers, but these disappear when the analysis focuses on variance within individual firms (Barrios et al., 2004). A meta-analysis (Görg and Strobl, 2001) found that statistically significant spillovers turn up in almost every cross-section analysis, but in very few time-series studies.<sup>33</sup>
2. Numerous studies of developing countries show one way or another that firms must achieve a certain technological sophistication before they can absorb spills (e.g., Liu et al., 2000). In the Indian pharmaceutical industry, Feinberg and Majumdar found that foreign-controlled firms experienced spillovers among themselves, but domestic firms were left out.
3. Knowledge spillovers are more likely detected where ample knowledge is available for spilling, and where ambient conditions facilitate the spill. Thus, wholly owned subsidiaries appear more prone to spillage (Blomström and Sjöström, 1999), consistent with evidence that richer stocks of proprietary assets tend to be carried by wholly owned than jointly owned units. Likewise, more extensive spillage is enjoyed by domestic firms located in industry agglomerations, rich environments for all sorts of knowledge transfers (Almeida and Kogut, 1999).
4. One way to approach spillovers is to compare an industry's foreign-owned establishments as a group to the set of establishments with only limited foreign equity shares. For Venezuelan manufacturing industries Aitken and Harrison (1999) found that small plants' productivity gained from infusions of foreign equity into those plants. Gains in productivity for ownership injections to large plants are less robust, likely

<sup>32</sup> For another survey of research on spillovers, see Blomström et al. (2000), Chapter 8.

<sup>33</sup> Studies employing time series for individual firms (potential recipients of spillovers) may suffer the opposite bias, losing relevant information in the fixed effects for individual firms.

because foreign investors purchase high-productivity plants in the first place. Large domestic plants' productivity declines with increases in their sectors' foreign ownership, presumably the effect of increased competition among sellers.

5. The conclusion that MNEs play a substantial role in transferring technology depends on whether other channels for infusion of technology are controlled (as few studies have done). Basant and Fikkert (1996) measured the influence on Indian firms' productivity of their own R&D, spillovers from competing foreign subsidiaries, and both licenses and spillovers from R&D in the same industries abroad. Spillovers from subsidiaries, they found, have a positive effect that is independent of the other channels, and the productivity of the domestic firms' own R&D lies mainly in absorbing spillovers from abroad (except outside the science-based industries).
6. Important spillovers can take the form of innovations in business practice as well as technology in the narrow sense. A good example is the domestic firm that picks up methods of exporting from observing foreign affiliates' practice. Aitken, Harrison, and Lipsey. (1996) showed that this spillover is significant for Mexican manufacturers.
7. The economies in transition offer a likely site for spillovers, because the former state enterprises lacked capability for business practice in the broad, and not just technology in a narrow sense. For Lithuania Javorcik (2004b) analyzed not only horizontal spillovers but also vertical (forward and backward) linkages. Significant spillovers occur from foreign subsidiaries horizontally to their domestic competitors and vertically back to domestic suppliers, although not forward to domestic customers. The backward linkage is particularly robust, remaining significant for lags up to four years.
8. The recent studies of spillovers in the industrial countries have generally found them (just as studies of developing countries have not). We therefore stick to investigations with some novel element. One such is Keller and Yeaple (2003) on spills from foreign subsidiaries in the United States to domestic enterprises. They found industry-level spills to result not only from lagged inflows of foreign direct investment (lagged by two years) but also from lagged (up to one year) changes in U.S. imports.
9. Spillovers are found among industrial countries' individual manufacturing sectors, but with significant effects only in selected channels. For example Driffield (2001) found that productivity growth in United Kingdom industries' domestic subsectors increases with lagged productivity growth in their foreign-owned subsectors. However, neither



the R&D undertaken by the foreign subsectors nor the influx of new foreign investment showed significant effects. In a panel data analysis long in the time dimension, Haskel, Pereira, and Slaughter (2002) did find that productivity in domestically owned U.K. manufacturing plants increases significantly with foreign-controlled units' share of activity.

10. With ample evidence that foreign direct investment is frequently asset-augmenting (instead of asset-exploiting) for the MNE (Section 1.1), it becomes clear that research designs for spillovers should incorporate more symmetry. Driffield and Love (2003) studied U.K. manufacturing industries, emphasizing the comparison of the research-intensive (where spillovers are likely) to low-research sectors. In the former, foreign affiliates' productivity increases with the lagged capital stocks of their domestic competitors, and also in regionally concentrated industries. In low-R&D industries no spillage was found. Singh (2003, Chapter 1) sought spillovers in patent statistics – specifically the occurrence of a citation in B's patent to a patent of A, which is taken to indicate a spillover of knowledge from A to B. In six leading industrial countries, Singh found that spillovers not only occur from domestic enterprises to resident foreign investors but indeed are more intensive than spills from foreign to domestic enterprises (spillage between MNEs and other MNEs are more intensive still).<sup>34</sup> Furthermore, Branstetter (2000) showed that the MNE parent can benefit specifically from spillage picked up by its foreign subsidiaries. He obtained data on the counts of patents obtained by Japanese enterprises. This he related to the stock of U.S. patents in the appropriate technology classes, interacted with the extent of Japanese foreign direct investment in that U.S. industry. Indeed (by implication), Japanese foreign affiliates operating in the United States sopped up knowledge that enhanced the Japanese parent's ability to produce patent-worthy innovations. The analysis includes a strong set of control variables.
11. The preceding findings lie mainly in the area of microeconomics, but they also link closely to the new macroeconomic analysis dealing with

<sup>34</sup> The second edition of this book (pp. 185–86) discussed some additional issues that turn on identifying the economic nature of MNEs' profits. These might be rents to transferable knowledge. They might be rents to monopoly power resting on some spill-proof form of entry barrier. For another complication, a firm enjoying a monopoly rent may show an enlarged total profit but not a higher profit *rate*, frustrating the researcher who would distinguish rent sources. An important empirical study that consolidates this issue is Vendrell-Alda (1978). Using Argentine establishment-level data, he showed that the profit advantage of foreign-controlled establishments can be peeled down by adding variables to control for many industry-structure and strategic factors until the significant difference between foreign and domestic disappearance disappears.

endogenous growth. Firms that reach MNE status are efficient producers and arbitragers of new products and varieties as well as a source of spillage. R. E. Baldwin, Braconier, and Forslid (2005) employed a panel of data incorporating major manufacturing sectors in a group of industrial countries, finding growth to depend on R&D activity interacted with the prevalence of foreign investment.

### 7.5. Summary

This chapter first examined the microeconomic behavior of the MNE in developing and transferring technology, alongside the arm's-length international market for technology licensing and then moved to the general-equilibrium theoretical context of these institutions. MNEs tend to be found in research-intensive sectors, and they consciously allocate their R&D activities around the world to best advantage. R&D is pulled toward the parent's headquarters by the need for efficient supervision and scale economies in the R&D process itself; it is dispersed toward the subsidiaries by the advantages of doing developmental research close to the served market and drawing on local resources to enhance its proprietary assets. Empirical evidence confirms that U.S. MNEs would undertake less research if they could not expect to garner rents on it from foreign markets.

The marketing of technological knowledge is failure prone for the same general reasons as any market in knowledge assets. Nonetheless, a market exists in which licensor and licensee strike agreements. Empirical evidence tells something about the kinds of firms that gain from both licensor and licensee activities, and it also identifies the resource costs of technology transfers that make technical knowledge something less than the "public good" assumed in most economic analysis. Technical knowledge can be transferred either within the MNE or between independent firms, the mix depending on the MNE's assorted advantages and disadvantages. Arm's-length licensing is encouraged by risks to foreign investors and barriers to entry of subsidiaries, by short economic life of the knowledge asset, by simplicity and maturity of the technology, by high capital costs for the potential foreign investor, and by certain product-market settings that favor reciprocal licensing.

The microeconomic evidence on licensing and foreign investment can be fitted into Vernon's product-cycle model, which embraces a number of mechanisms to suggest that as a product's technology matures, its production becomes more footloose and disseminates toward countries less active in producing new technical knowledge. The MNE seems to influence the

rate of diffusion at certain stages of the cycle; by implication, the cycle runs its course more rapidly with MNEs active than if technology is diffused only through arm's-length licensing and other channels.

A number of theoretical models aid understanding technology transfer in general equilibrium and its implications for nations' welfare. If Home, the innovating country, cannot collect rents on its technology that is diffused to Foreign, the dissemination generally makes Foreign and the world as a whole better off but leaves Home worse off. But Home might gain from the dissemination if its terms of commodity trade improve enough (e.g., Foreign is very efficient at making the innovation and begins to supply it as a cheap import to Home). If technology disseminates through its attachment to the MNE's international movement of capital, Foreign can benefit from encouraging capital inflows. As to competition in the individual industry, spillovers can cause the MNE either to scale back or expand its activities. If technology transfers and capital movements are independent, however, they can be substitutes for one another: Maximum world output can be attained by moving the technology to the capital or the capital to the technology. Home, of course, maximizes its own welfare by charging a monopoly rental for its superior technology; this rental could be an alternative to taxing exports of the innovative good, or Home might need to use both instruments to maximize its income.

A great deal of research has been devoted to detecting and measuring spillovers of technology between MNEs and their domestic seller-market competitors, since data have come available allowing statistical techniques that can pin down the causation. Spillovers are seldom evident in developing countries' markets, although the demonstrated spills occur so as to suggest domestic firms must possess substantial competence before they can sop up spilled technology (those far behind cannot make the great leap forward). Spillage requires, naturally, that MNEs bear large bundles of technology assets before substantial spillage is evident. Spillage is more widely found in the industrial countries, and particularly in the economies in transition. It may appear related to one aspect of MNEs' activities but not another (e.g., the foreign affiliates' lagged productivity growth but not their R&D activities). Because substantial amounts of foreign direct investment take place in order to augment the MNE's proprietary assets rather than only to exploit them, we expect and find that spillage in some settings occurs in both directions.

## Taxation, MNEs' Behavior, and Economic Welfare

Besides the great issues of progress, sovereignty, and economic justice that swirl around the multinational enterprise (MNE), taxation sounds like a matter for narrow minds that warm to accountancy. That instinct is squarely wrong, because arrangements for taxing corporate net incomes turn out to play an important role in dividing the gains from foreign investment between source and host countries. In this chapter, we consider the normative effect of corporation income taxes imposed on MNEs – first on global welfare, then on the welfare of source and host countries separately. We take up some empirical aspects of the MNE's responses to taxation in the location and management of its investments. These include how intra-corporate transactions can be manipulated so as to minimize the MNE's tax burden.<sup>1</sup>

### 8.1. Corporation Income Taxes, Market Distortions, and World Welfare

All countries levy taxes on the net incomes of corporations at marginal rates typically ranging from 30 to 50 percent. Textbooks traditionally identify the profits tax as a levy on a pure economic rent or surplus that has no effect on saving or output decisions. But, in practice, the tax falls on profits in the popular sense – the sum of the opportunity cost of equity capital plus any rents or windfalls accruing to suppliers of equity capital. Therefore, the corporation income tax drives a wedge between the net return received by savers and the before-tax earnings of their savings when invested by companies. We expect it to restrict the amount of saving and capital formation, even though a pure tax on monopoly rents would leave the monopoly with no incentive to change its price or output. How much tax falls on savers

<sup>1</sup> For a more intensive survey, see Gordon and Hines (2002).

and how much on final buyers of the goods and services provided by capital depends on various elasticities. As always with tax incidence, the inelastic curve takes the drubbing; if the supply of equity capital were perfectly elastic (because people could save in nontaxed forms, or simply consume more of their incomes when a tax reduces the net return to equity capital), the tax would fall entirely on the users of capital's services.

The plot thickens when foreign direct investment occurs, so that Home's savers can place their capital either in domestic industry or abroad, and Foreign's users of capital services can draw upon either local or imported funds.<sup>2</sup> Two concepts of tax neutrality serve to identify the effects of taxes on these allocations. Capital-export neutrality refers to the choice that Home's MNEs make between investing their funds in domestic activities and investing abroad. All relevant taxes taken together are neutral if domestic and overseas investments that earn the same pretax rates of return also yield the MNE the same returns after taxes. Capital-import neutrality addresses the competition between Foreign's domestic savers and MNEs to supply the capital used to produce goods in Foreign. The tax system is neutral if equal before-tax returns at the margin to the competing suppliers of capital translate into equal after-tax earnings. Neutral tax systems promote efficient use of resources and also seem fair. Import neutrality places competing domestic companies and foreign subsidiaries on equal footing in that Foreign's tendency to buy capital services from the cheapest source is not distorted by taxes.

### **Multiple Taxing Authorities**

Neutrality depends on who pays what tax, not which government collects it. Now we consider the implications of various priority arrangements between the Home and Foreign tax collectors. Suppose that Home (the source country) imposes no corporation income tax, but that Foreign (the host country) levies a 40 percent tax on all resident capital, whether of domestic or MNE origin. Capital-import neutrality prevails in Foreign, but capital-export neutrality is violated as Home's MNEs divert their funds toward untaxed domestic investment projects rather than pay Foreign's 40 percent tax. Suppose, instead, that Foreign imposes no tax but Home levies 50 percent on all profits earned by Home's citizens, whether their capital is placed at home or abroad. Capital-export neutrality obviously prevails, but not capital-import

<sup>2</sup> The analysis in this section originated in Richman (1963), Krause and Dam (1964, Chapter 4), and Musgrave (1969).

neutrality (Foreign's capital use is diverted toward the activities carried on by untaxed local capital).

With both taxes in force, the net effect depends on which tax collector gets first crack at the profits accruing to MNE capital, and what allowance the second one makes for this first exaction. Under the prevailing arrangement, the host country takes the first bite. Home can then choose among the following three policies:

1. *Exemption.* Home can exempt from further taxation any income of MNE capital that has been taxed abroad. Foreign's tax rate then governs the allocation of MNE capital. Where Home's and Foreign's tax rates differ, as in the preceding example, capital-import neutrality will prevail, but export neutrality will be violated.
2. *Tax credit.* Home can tax MNEs' foreign profits at the same rate as Home's domestic capital but give a credit for taxes paid abroad. If Foreign's tax collector relieves the MNE of 40 cents of each profit dollar earned by its Foreign subsidiary, Home's tax collector gives a credit of 40 cents against the 50 cents that the MNE owes to Home, so that the MNE must then pay an additional 10 cents. The effective tax rate is therefore Home's, and export neutrality prevails. The same will be true if, instead, Foreign's rate is 50 percent and Home's rate is 40 percent, so long as Home rebates to the MNE the 10 percent excess of its tax credit over its domestic tax liability. In practice, however, source countries limit tax credits to the company's domestic tax liability on the same income (the *partial-credit* system), so the MNE pays the foreign or domestic tax rate, whichever is higher. Accordingly, either capital-import neutrality or capital-export neutrality prevails, depending on which tax is higher. Import neutrality and export neutrality can coexist only if both countries levy the same corporate tax rates and Home gives a full credit for the tax paid to Foreign. With equal tax rates, the same neutrality will prevail if Home lays the first claim on the MNE's taxable income and Foreign gives the tax credit.
3. *Tax deduction.* Home can allow taxes paid by MNE capital to Foreign only as a deduction from income taxable by Home, so that the MNE's capital placed abroad is subject to double taxation. The overall tax rate on MNE capital is then  $t = t_H(1 - t_F) + t_F$  where  $t_F$  and  $t_H$  are, respectively, the Foreign and Home tax rates. If Foreign's tax is 40 percent and Home's tax is 50 percent,  $t = 70$  percent. Obviously, neither export nor import neutrality will hold in this case.

Some major industrial countries employ the exemption procedure (Germany, France, the Netherlands, Canada), others the partial-credit

system (United States, United Kingdom, Japan). There exists a network of bilateral treaties that preclude double taxation (see Section 10.3), and so the deduction treatment finds little use in international tax practice. Nonetheless, we shall see that source countries have reason to prefer it.

With capital-import neutrality and capital-export neutrality both prevailing, taxes do not distort the distribution of foreign investment. But what arrangement for taxing MNEs imposes the least distortion if Home and Foreign choose to levy their general corporation income taxes at different rates? Musgrave (1969, Chapter 7) and Horst (1980) addressed this issue. If taxes on capital's income fail to depress saving in either Home or Foreign, the tax on MNE profits (whoever levies it) should be the same as Home's general profits tax, so that capital-export neutrality prevails. If the demand for capital services is completely inelastic in both countries, Foreign's tax rate should apply to MNEs, and import neutrality should prevail. If taxation depresses supplies of domestic capital to the same degree in both countries, then the optimal tax on MNE capital should lie between the overall domestic rates levied by Home and Foreign.

### Deferral, Transfer-Pricing Regulation, and Other Complications

The effective rates of taxation influencing MNEs depend on many details beyond those identified so far, such as definitions of taxable income, rules on allowable depreciation, and Home's rules on pooling the MNE's tax position in various Foreign countries. The literature on international taxation raises the worrisome possibility that the practical effects of these details might swamp those of the seemingly general principles already set forth. Alworth (1988, Chapter 5) showed that MNEs' financing decisions can have diverse and important effects on their effective tax rates. One pervasive complication is deferral: the practice of tax-credit source countries to tax MNEs' profits from activities abroad only when the profits are repatriated. If  $t_H > t_F$ , the foreign subsidiary of a Home MNE can pay  $t_F$  on its current profits, reinvest the balance for an unlimited period, and pay the extra  $(t_H - t_F)$  only when the profits are repatriated. If  $t_H > t_F$ , the deferral privilege substantially lowers the effective tax rate paid on capital invested abroad (Horst, 1977).

Deferral has another important property that was identified by Hartman (1985; also see Sinn, 1993). Consider a mature subsidiary abroad that might elect to reinvest some of its profits but has no prospective need for more equity from its parent. Assume that  $t_H > t_F$ . The subsidiary's decision to reinvest will be affected only by  $t_F$  and not by  $t_H$ , and capital import neutrality will hold. That is because capital exported from Home becomes "trapped equity," its earnings ultimately subject to  $t_H$ ; it will pay the excess of  $t_H$  over

its tax credit for  $t_F$  sooner or later, whether profits are reinvested or not, and the reinvestment decision does not depend on whether that excess is large or small. By implication, the investment behavior of mature subsidiaries should depend on different determinants from that of others expected to receive further infusions of equity from their parents. Hartman's conclusion is unchanged if  $t_F > t_H$  and the MNE has excess tax credits in Home. Subsequent research (Leechor and Mintz, 1993; articles in Razin and Slemrod, 1990) has qualified Hartman's sharp distinction, but the empirical relevance of  $t_H$  to the reinvestment decisions remain an issue. Sinn (1993) formulated the issue in terms of the optimal initial dowry of capital that the parent should provide its subsidiary given the net effect of all taxes on repatriated profits. A higher anticipated repatriation tax induces the MNE to shrink the dowry and let the subsidiary rely more on retentions to reach its steady-state equilibrium size, but the repatriation tax does not distort the equilibrium size unless it is high enough to preclude the whole investment.

The discussion to this point has assumed that the taxing authority costlessly observes the real economic values of transactions of the MNE parent and its subsidiaries, for the purpose of determining tax liabilities. Previous chapters showed, however, that current transactions take place pervasively between corporate affiliates (funds injections and repatriations, interest and dividends on inter-affiliate financial claims, inter-affiliate merchandise trade, royalty payments and management fees, and the like). The transaction-cost model makes it clear that these transactions will often lack counterparts in arm's-length markets, so that neither the tax collector nor the MNE itself has an automatic and costless standard for pricing them. Effective tax rates are clearly altered by the MNE's opportunities for transfer pricing and limits on the tax collector's ability to combat this strategic behavior. Here we consider the theory of transfer pricing (empirical evidence is presented in Section 8.4).<sup>3</sup>

The basic theoretical point (Diewert, 1985; Eden, 1985) is that the MNE facing a nonneutral set of taxes has an incentive to make its profits appear to the maximum extent in the low-tax jurisdiction.<sup>4</sup> Where  $t_H < t_F$ , the subsidiary in Foreign has an incentive to overstate any purchases it makes from its parent, or understate the cost of goods and services supplied to

<sup>3</sup> These issues have attracted theoretical models focused on asymmetrical information, but these do not yet seem to have contributed much insight into the empirical issues. See, e.g., Osmundsen, Hagen, and Schjelderup (1998).

<sup>4</sup> Significant earlier contributions include Horst (1971), Verlage (1975), Nieckels (1976), Booth and Jensen (1977), Mathewson and Quirin (1979), Itagaki (1979), Samuelson (1982), and Eden (1983).



the parent, until nominal profits earned in Foreign go to zero. That is, the transfer-pricing problem in general has a corner solution, with the firm induced to raise or lower the price on any inter-affiliate transaction until all profits have been shifted to the lowest-tax jurisdiction. The corner solution can become an internal one if the tax collector can at a cost determine the true value, and the probability of detection and punishment is a convex function of the distortion entered on the MNE's books (Kant, 1988a). Setting a maximum transfer price on exports to the affiliate is also constrained where the host government imposes an ad valorem tariff on the declared value of the imports, inducing the MNE to limit the transfer price (Kant, 1988b). Whether financial flows between wholly owned corporate affiliates are designated as debt or equity is essentially arbitrary, and transfer-pricing incentives (if inter-affiliate interest payments are a tax-deductible business expense) can include either maximizing or minimizing the nominal debt-equity ratio of the subsidiary (Hines, 1994a). Rates of extracting natural resources by the MNE can be affected (Samuelson, 1986). Finally, as applications of the literature on optimal policies for incompletely informed regulators, the tax collector can use a national ownership requirement (Falvey and Fried, 1986) or jointly regulate the subsidiary's price and output levels (Prusa, 1990; Gresik and Nelson, 1994) to maximize its objective. The tax collector's mandated change in the regulated transfer price can have peculiar effects on the subsidiary's chosen price-output combination (Katrak, 1984).

## 8.2. Tax Conventions and National Welfare

The normative tax-neutrality concepts used so far pertain to world welfare. But these taxes on MNEs can be collected by Home's treasury or Foreign's treasury, or some combination of the two. Each has a national interest in grabbing the tax revenue, which is part of its national income. The tax system that maximizes either Home's or Foreign's national welfare is not consistent with maximum world welfare. Macdougall (1960) pointed out that in a world of competitive industries, and with no externalities, the host country's primary benefit from foreign investment lies in its first crack at the profits accruing to the capital committed locally by the MNE. And that same effect can make Home a loser from foreign investment. Assume that Home applies the partial-credit system for taxes paid to Foreign's tax collector. If Foreign's tax rate is no higher than Home's, capital-export neutrality prevails. But Home is, at the margin, clearly not making the best use of its capital.

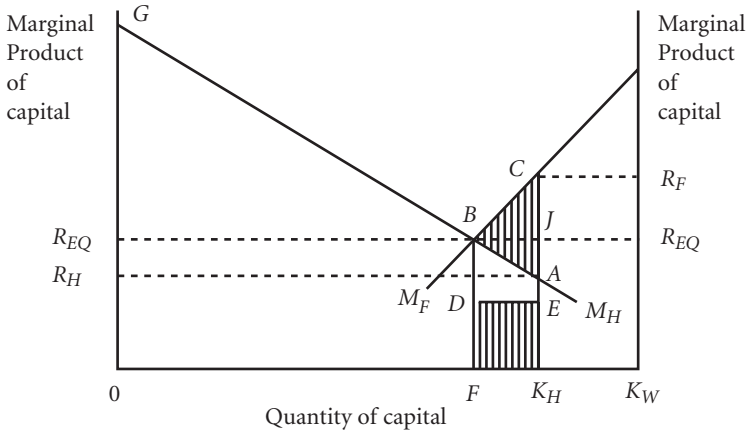


Figure 8.1.

Figure 8.1 illustrates the argument. Assume that the world's capital endowment is  $K_W$ , measured along the base of the diagram.  $K_H$  of this belongs to Home, the rest to Foreign. For each country, a function shows the marginal product of capital, decreasing with the amount of capital combined with the rest of the nation's factor endowment (call it labor). Home's schedule is  $M_H$ . Foreign's schedule,  $M_F$ , is measured from right to left using  $K_W$  as the origin. Suppose that no foreign investment has yet occurred. In Home, the marginal product of capital is  $OR_H$ , before-tax income of capital is  $OR_HAK_H$ , income of labor is  $R_HGA$ , and Home's national income is  $OGAK_H$ . Similarly, the marginal product of capital in Foreign is  $R_FK_W$ . Suppose now that capital is made mobile internationally and that each country's corporation income tax rate is 50 percent. When Home's (new) MNEs have shifted the equilibrium amount of capital abroad,  $FK_H$ , the pretax return to (and marginal product of) capital becomes  $FB$  (or  $R_{EQ}$ ) in each country, and  $FD$  of it ( $FD = 1/2FB$ ) is the tax payment. With the first crack going to Foreign's tax collector and Home giving a tax credit, Foreign's tax revenue from Home's MNEs is  $FDEK_H$ . The gain in world income from the foreign investment is the triangle  $ABC$ , the excess of the increase in Foreign's gross domestic product over the decrease in Home's. But Foreign's increase in national income is  $BCJ$ , a gain to Foreign's labor, plus  $FDEK_H$ , Foreign's MNE tax revenue. And Home loses by  $FDEK_H$  minus  $BJA$ , even though Home's MNEs enjoy more after-tax profits. The Home profit rate after taxes rises from  $1/2KH_A$  to  $1/2FB$ .

Clearly, this outcome does not maximize Home's national income. From Home's viewpoint, its capital should be allocated so that the profit earned on the last unit placed abroad after paying Foreign's taxes equals the pretax return on the last unit placed at home. But the MNEs on their own will place capital to equalize after-tax profits in the two countries. The deduction method described previously maximizes Home's national welfare, as Musgrave (1969) and others (e.g., Dutton, 1982) have pointed out. Feldstein (1994*b*) argued that the tax-credit system's case is understated by neglect of the MNE's ability (intra-marginally) to borrow debt capital abroad at a cost below its after-tax return on foreign assets, yielding an arbitrage profit to its Home owners. Also, Home's choice of the deduction method can hold strategic value for deterring taxation by the host (Konan, 1997).

Foreign, the importer of direct investment, has a symmetrical interest under the prevailing tax convention in luring MNEs for the national-income gain that results when Foreign's treasury captures their tax payments. With the tax-credit system, the MNE pays the source or host tax rate, whichever is higher, and so Foreign obtains a pure transfer by raising its rate up to that of the source country. A higher rate might be optimal, depending on the distribution of pretax profit opportunities that MNEs perceive on Foreign's soil. Foreign might seek policy instruments that inflate MNEs' profit opportunities and thereby increase the tax rate that can be imposed without deterring them. Corden (1967) pointed out that raising Foreign's tariffs does the trick when it induces the MNE to shift from exporting to direct investment in Foreign.<sup>5</sup> The tariff is second best, however, because it distorts consumption patterns.<sup>6</sup> Gersovitz (1987) developed other aspects of the host's optimal policy.

<sup>5</sup> Svedberg (1982*b*) simulated the host country's choice between an optimal tariff on imported goods and a prohibitive tariff that generates income tax revenue from the tariff-jumping subsidiary (but loses the tariff revenue and some consumer surplus).

<sup>6</sup> Horst (1971) provided a more elaborate treatment of the effect of Foreign's tax on the MNE that can serve Foreign's market through local production, exports from Home, or some combination of the two. He found that the leverage Foreign has for promoting local production through manipulating its tax rate depends not only on the level of the tariff but also on whether the MNE's product pricing is constrained by arbitrage. That is, given its costs and the demand elasticities in Home and Foreign, some pair of product prices will maximize the MNE's profits in Home and Foreign, but the differential between these profit-maximizing prices must not be so large that independent parties can profitably buy in the cheaper location and resell in the dearer. Horst showed that Foreign's tax rate may have considerable effect on the location of production when this arbitrage constraint is binding, but (under certain circumstances) not when the MNE's pricing is unconstrained. Also see Itagaki (1979).

### **Taxing for Monopoly Gain**

The simple account of national and international interests in taxing MNEs' net incomes has been extended in a number of ways – by some authors in general and theoretical terms, by others in terms of the interests of particular countries. A general point first made by Macdougall (1960) concerns any effect that the quantity of foreign investment may have on its earnings. Assume that neither Home nor Foreign imposes a tax on corporation income, so as to put aside the problem of tax-collecting priority already discussed. Whatever the structure of Foreign's markets in which Home's MNEs compete, assume that additional capital invested in Foreign drives down the average rate of profit that they earn there, as in Figure 8.1. If the MNEs compete with each other (i.e., do not form a cartel to exploit Foreign's market), they will not take into account that each one's expanded foreign investment lowers the earnings of the others – a negative externality from Home's viewpoint. Home's potential monopoly power over its foreign investment goes unexploited, and to maximize national welfare Home's government should impose a tax on the earnings of foreign capital so as to retrieve this revenue. Home's motive for discriminating against foreign investment so as to maximize national monopoly profits is, it should be stressed, quite independent of the motive to deal with Foreign's priority in tax collection. The quest for monopoly gains can afflict the country receiving foreign investment as well as the source. Suppose that MNE capital is supplied competitively from abroad, but its supply price increases with the amount entering Foreign's economy (a conventional upward-sloping supply curve). Foreign raises its national welfare with a tax that exploits this monopsony power in foreign borrowing, reducing capital imports and driving down the supply price.<sup>7</sup>

Subsequent contributions have brought both the tax-priority problem and the monopoly issue to bear on Home's optimal tax strategy. They have also taken account of the rivalrous relationship between Home's and Foreign's tax collectors. Hartman (1980) provided a useful reference point. His general-equilibrium model assigns to Home and Foreign each an endowment of capital and labor able to produce either of two commodities. However, his is not quite the Heckscher-Ohlin model (see Chapters 2, 5, and 7). Foreign investment results not from differences in the overall returns to capital in Home and Foreign but from a specific productivity advantage enjoyed by Home's MNEs when they go abroad. The MNEs might operate in

<sup>7</sup> Depending on the shape of the demand curve, this maneuver can pay for Foreign even when dealing with a monopolistic MNE that operates with constant marginal costs.

either Home's export industry or its import-competing industry. The industrial site matters, because investment abroad in Foreign's import-competing sector expands world production of the good that Home exports, depressing its price and thus worsening Home's terms of trade; Home's income-maximizing tax on foreign investment is higher when the MNEs operate in Home's exportable-goods sector. Another feature of Hartman's model is that MNEs ship abroad only part of the capital they need in Foreign. They borrow a given fraction locally, perhaps because of the risk-spreading considerations discussed in Chapter 6. Each country imposes a general proportional tax on corporation incomes. When a tax change occurs, this model allows not just for the change induced in foreign investment but also for the reallocation of capital and labor within each country and the adjustment of flows of international trade.

Hartman's conclusions stem from simulating the effect on national income of Home's choice among the policies of exemption, credit for taxes paid abroad, and deductibility of taxes paid abroad. He confirmed that in general a deduction policy comes closest to maximizing Home's welfare, and Home's optimal tax on foreign investment can be even higher than that. The simulations allow Home's export (and MNE) industry to be either capital intensive or labor intensive. Home's welfare gain in moving from exemption to whatever tax on foreign investment is optimal is about the same in either case, but a much lower tax is optimal when the export good is capital intensive. The optimal tax is higher the more of its funds does the MNE borrow abroad. Hartman also investigated the effects of these tax policies on income distribution. When Home's exportable good that the MNEs produce abroad is labor intensive. Home's labor naturally gains as higher taxes discourage foreign investment. However, unlike some models discussed in Section 5.1, Hartman's model implies that labor benefits most from a policy that stops short of forcing the repatriation of all of Home's foreign investment. (The tax strategy that maximizes labor's real wage also maximizes the national income.) If the exportable sector in which foreign investment takes place is capital intensive, a higher tax on foreign investment is not clearly in the interest of Home's labor. Thus, whether the taxation of foreign investment aims to raise national welfare or to redistribute income toward labor, the deduction policy may or may not be the best one – the results depending sensitively on which good MNEs produce abroad, how much capital they borrow locally, and how large is their cost advantage over native firms.

Nor did Hartman (1980) exhaust the factors complicating the simple conclusion that Home gains most from applying a deduction policy when taxing foreign investment. Beenstock (1977) pointed to the implications of two-way

movements of direct investment for the nation's use of its monopoly power in taxing foreign capital. Home's government raises its tax on its MNEs' overseas profits in order to reduce their investment in Foreign and thus drive up their profit rate. But the return rises to all capital in Foreign, causing Foreign's own MNEs to repatriate some capital they had exported to Home. Because Home gets first crack at the profits of the overseas subsidiaries of Foreign's MNEs, the induced repatriation cuts Home's tax revenue, a loss that partly offsets Home's monopoly gains from taxing its MNEs' foreign profits. Home's tax collector can garner no monopoly profits at all from contracting its foreign investment if Home MNE capital repatriated from Foreign is matched dollar for dollar by Foreign MNE capital repatriated from Home.

Another complication surfaces in Heckscher-Ohlin models that allow for international movement of capital. These models emphasize the relationship between the factor endowment (capital and labor) of the country and its comparative advantage in international trade, implying that a change in the factor endowment when capital moves abroad induces a compensating adjustment in its international trade. R. W. Jones (1967) showed that this connection affects the process by which a country imposes a welfare-maximizing tax on international capital transactions. In this model, a flow of capital from Home to Foreign simply increases Foreign's overall stock of capital – MNE capital is not specific to a particular sector, nor does it enjoy any productivity advantage. Thus, when Home changes its tax on international capital movements, the resulting adjustment changes the overall equilibrium return to capital in Foreign. That shift in factor prices changes commodity outputs there, and the relative prices of commodities (Home's terms of trade) if Foreign is incompletely specialized and produces both of the two commodities. Jones showed that not only must Home set its optimal tariff on commodity trade and its optimal tax on international capital jointly, in this case, but also that either the optimal tariff or the optimal tax can be negative. That is, Home can gain by subsidizing its capital exports rather than by taxing them monopolistically if a capital subsidy works a sufficiently favorable change on the structure of product prices. If Foreign produces only its export good (completely specialized, in this two-good model), Home's optimal tariff and capital tax will be independent of each other, and both will be positive (zero in the limit).<sup>8</sup>

<sup>8</sup> Batra and Ramachandran (1980) explored some effects of taxes in the specific-factors version of the Heckscher-Ohlin model (capital is mobile internationally but not between sectors). They were uninterested in sectoral differences and terms-of-trade issues, but they

### Strategic Behavior and Tax Competition

The contributions discussed thus far have treated the optimal taxation of international capital as a problem that the single country solves taking tax and other policies of the rest of the world as given. Feldstein and Hartman (1979; see also Hamada, 1966) considered the strategic aspects of capital taxation, in which Home makes some conjecture about how Foreign will react to Home's policy change. In their model, Home is a large country, in that its MNEs place enough capital abroad to affect wage rates in the receiving countries. Foreign can be thought of as a composite of identical small host economies, each setting its corporation income tax taking Home's tax as given. Home's officials observe this reaction function and set Home's own corporate income tax so as to maximize Home's welfare, with Foreign's reaction taken into account. Home's government also employs another policy instrument – the rate at which MNEs can take a credit against taxes paid to Foreign. The rest of the model is identical to that of Hartman (1980), described previously. Their basic-case conclusions are already familiar from research summarized earlier: Home should allow only a deduction for taxes its MNEs pay to Foreign; if the MNEs' investments are large enough to drive up wages abroad, Home should tax its capital exporters even more heavily. How do Foreign's tax authorities react to an increase in Home's tax on overseas capital? Feldstein and Hartman showed that under standard assumptions about production technology, a rise in Home's tax reduces Foreign's welfare-maximizing tax, making Home's optimal tax on overseas capital even higher than in the model's basic case.

Another aspect of strategic interaction arises over the effect of taxes on the production of the proprietary assets deployed by MNEs. Huizinga (1991) addressed the decision of a source country in a model styled after Helpman's (see Section 2.3), in which multinationals operate in a monopolistically competitive international manufacturing sector. Home's citizens benefit from tax revenues, which produce utility-yielding public goods, but the taxation of MNEs' profits exacts a cost by reducing the viable number of varieties of differentiated manufactures (in this model, everybody consumes all varieties). Part of this negative externality of taxation, however, falls on consumers in the other country. Foreign, itself not a source of MNEs, gains

did allow MNE capital (originating in Home) to be distinguished from Foreign's local capital. Foreign's tax on the income of its own capital, assumed in fixed supply, has no allocative effect. But Foreign's tax on MNE capital sends some of it back to Home. This tax raises Foreign's welfare, up to a point (Home does not tax corporate income), and reduces Home's welfare.

a strategic advantage from this asymmetry, in that Home rationally gives its MNEs a credit for taxes paid to Foreign. This endogenous derivation of the tax credit is the model's striking feature. Huizinga (1992; see also Grace and Berg, 1990) addressed the degree to which governments allow MNEs to charge their research and development expenditures (producing proprietary assets for worldwide use) against profits earned in the national economy. A high-tax country might actually attract MNEs if it allows deduction of a generous share of R&D outlays. When countries act noncooperatively, the global deductibility of the MNE's R&D spending will be less than the whole amount, and R&D will be underprovided in comparison to a global cooperative taxation regime.<sup>9</sup>

More general, if less clearly relevant to the MNE is the literature on international tax competition (surveyed by Devereux, 1994). Suppose that each country taxes its factors of production (capital and labor) to finance the supply of public goods, and that capital is mobile internationally while labor is not. Each (host) country applies a single tax rate to capital working in its territory. Countries can then fall into competition with one another to offer lower tax rates to capital, with the possible implication that public goods are underprovided as a result. Gordon (1992) identified a Nash equilibrium in which capital's services are taxed at the source with a dominant capital exporter (as defined by Feldstein and Hartman, 1979) employing the partial-credit system and the other capital-importing countries setting their statutory tax rates equal to that of the leader. Gordon argued that actual taxation practice among the industrial countries resembled this model, at least until the United States ceased to be the dominant exporter in the 1980s.

Bond and Samuelson (1989) considered the same problem as Gordon but with different assumptions (about other taxes, and the elasticity of the supply of saving). The capital exporter again employs the partial-credit system. Although capital importers again wish to set their tax rates equal to that of the exporter, the exporter's incentive is to set a higher rate in order to restrict capital outflows. The model's only equilibrium occurs with tax rates high enough to choke off trade in capital. A more plausible equilibrium results if the capital exporter uses a deduction system.

Given the small role of net capital exports in MNEs' operations and the practice of taxing other capital income in the recipient's domicile, the tax-competition problem appears to have only modest relevance for MNEs.

<sup>9</sup> Other strategic aspects of capital taxation in the open economy can be noted, although they are remote from the MNE; see Manning and Shea (1989) and Levinsohn and Slemrod (1993).



Whether tax rates are subject to international competition is an empirical question, however, and we shall see (Section 9.1) that governments indeed compete in a discriminatory way for individual foreign subsidiaries.

Tax/subsidy competition has been studied in a quite different context – game theory. The setting of interest can be either the rivalry of host countries setting general parameters of the terms of MNEs' entry or the bilateral bargaining between a host country and a potential-entrant MNE. Game-theory applications have emerged more from theory builders' interests than from empirical instances. Asymmetrical information is a popular keystone: The MNE knows more about its own cost-efficiency or about the value of spillovers that it sheds (Olsen and Osmundsen, 2003). The government can solicit bids from potential entrants in the form of schedules tied to the wage income to be generated (Haaparanta, 1996). The position of country *A* in the deal making may be superior because *A* is the larger country, and each foreign investment incurs a fixed cost (Haufler and Wooton, 1999). Spillovers associated with differentiated varieties of a product can yield multiple equilibria – lots of foreign investments and heavy spillovers, or only small amounts of both (Haaland and Wooton, 1999). The host country may gain from subsidizing a MNE's entry to capture the spillovers that it sheds, even though the MNE's low costs in its source country would otherwise call for it to produce these at home and export (Fumagalli, 2000). Or the role of spillovers can be reformulated in terms of employment creation when competing potential host countries both suffer from unemployment (Barros and Cabral, 2000).

### 8.3. National Tax Policies: Empirical Patterns

Empirical research on national tax policies toward MNEs' incomes has focused on two questions: Do tax laws systematically violate the criteria of neutrality and distort the allocation of MNE capital? How do actual laws relate to the divergent goals of maximizing national and global welfare and to the division of gains from foreign investment between source and host countries?

#### Corporation Income Taxes and MNEs' Location Decisions

The effects of tax provisions on MNEs' location decisions can be examined in two ways – by measuring the sensitivity of foreign direct investment to tax incentives and by directly evaluating the neutrality of actual tax systems. Estimates of elasticities of U.S. investment abroad with respect to host

countries' tax rates generally indicate significant responsiveness. Altschuler, Grubert, and Newlon (1998) employed semiannual data covering 1980 to 1992, finding elasticities that are significant and indeed increasing significantly – from 1.53 in 1980–84 to 2.77 in 1988–92. The elasticities are significantly lower in host countries with heavy restrictions on trade. Horizontal and vertical MNEs differ significantly in their responsiveness to tax rates – as they are to other costs. Horizontal investments, mainly serving the host's own market, are expected to show less tax sensitivity. Mutti and Grubert (2004) indeed found that a tax cut that would effect a 1 percent cut in the MNE's cost of capital triggers a response with an elasticity of 1.19 for horizontal subsidiaries to 2.49 for vertical. Evidence on the tax sensitivities of various particular class of MNEs' decisions appears in Section 8.4.

A good deal of descriptive evidence pertains to the prevailing patterns of tax provisions.<sup>10</sup> Descriptions of countries' taxes on MNE income suggest that capital-export neutrality and capital-import neutrality are not too seriously violated, although with the qualification that effective rates vary more than do nominal ones. The major industrial countries levy the same tax rates on foreign subsidiaries operating within their borders as on domestic companies. They do commonly discriminate against foreign investors and violate capital-import neutrality by imposing withholding taxes on dividends and similar payments remitted to foreigners (often around 15 percent). However, a series of bilateral tax treaties commit host countries to nondiscrimination and result in reductions in or exemptions from these withholding taxes.<sup>11</sup> Blonigen and Davies (2000) found substantial cumulative effects of these treaties, with those long in force associated with 2 to 8 percent increases in annual foreign direct investment. That the increase responds not to the amount of reduced withholding but to the duration of the reduction suggests to the authors that governance effects of the treaties may be important. Chisik and Davies (2004a, 2004b) investigated some strategic implications in the provisions of these treaties. Hines (1998) reported on another class of treaty provisions that allow the host government to provide tax concessions and incentives to foreign investors without invoking their offset under the standard "credit" treatment, turning it into a partial exemption.

<sup>10</sup> It carries the hazard that patterns observed in the past pertain to policy choices that may have shifted significantly in the interim.

<sup>11</sup> See OECD (1991). Earlier contributions include Musgrave (1969, 1975), Sato and Bird (1975), Kyrouz (1975), Ness (1975), Snoy (1975, Part IV), Kopits (1976a), Bergsten et al. (1978, Chapter 6), and Adams and Whalley (1977). The effect of withholding taxes on capital-import neutrality also depends on how the host taxes dividend income received by its own citizens (see Sato and Bird, 1975; Lent, 1977).

The tax-credit system used by some principal source countries produces capital-export neutrality if source-country tax rates are no lower than those of host countries, but deferral violates neutrality when profits are ultimately repatriated. Thus, deferral violates capital-export neutrality when the host's rate lies below the source's rate. It encourages too much foreign investment.

Because capital export and import neutrality together require that all countries set the same corporate tax rate, the divergence of these rates provides evidence on the extent of violations. As of 1991 the basic statutory corporation tax rates of the Organization for Economic Cooperation and Development (OECD) countries ranged from 30 to 56.5 percent, but with sixteen of the twenty-four falling in the 35 to 45 percent range (OECD, 1991, p. 71). However, attention has shifted from these nominal rates to marginal effective tax rates, which take into account the integration of corporate and personal taxes on profit income, effects of the sources of financing of investment, inflation, depreciation rules, and the like. OECD (1991, pp. 138–43) expressed these rates as pretax rates of return that would have to be offered to attract capital from savers with an opportunity-cost yield on investments of 5 percent (with a 4.5 percent rate of inflation assumed). In the average OECD country, a pretax yield of 5.9 percent is required to attract funds for domestic investments. Capital export and import neutrality are equally violated, in that higher pretax yields must be offered: An average return of 7.5 percent is required either to induce investments abroad or to attract funds from foreign savers.<sup>12</sup> The OECD study evaluated export neutrality among OECD host countries and import neutrality among sources by calculating for each country a standard deviation of required yields for foreign direct investments in all the other OECD countries.

The average of these standard deviations is 1.2 percent (range 0.6–3.1). For import neutrality, the corresponding standard deviation of required yields across source countries is 1.3 percent (range 0.5–3.6) (OECD, 1991, p. 141).<sup>13</sup> These figures confirm the impression from earlier studies that the violations of capital export and import neutrality appear larger when

<sup>12</sup> These figures pertain to pairs of countries with bilateral tax treaties; without them, the average for both capital exports and imports rises to 9.7 percent. These treaties exist between all the OECD countries with large outflows and/or inflows but are spotty for the smaller countries (Iceland, Portugal, Greece, Turkey) (OECD, 1991, p. 64).

<sup>13</sup> These standard deviations can be compared to the mean difference between required returns on domestic and foreign investments,  $7.5\% - 5.9\% = 1.6\%$ . All figures quoted here are unweighted averages; OECD (1991, pp. 151–3) concluded that weighting by actual foreign-investment flows would lower the means and dispersions a little.

marginal effective rates are analyzed rather than nominal corporation tax rates (also see Alworth, 1988, Chapter 3).

The shrinking variance of nations' tax rates suggests competition among them to attract foreign direct investment. Mutti (2003) observed that OECD countries' ratios of total corporate income tax revenue to GDP had increased steadily from 1975 to 2000, but the average tax/income ratios reported by foreign subsidiaries of U.S. MNEs declined substantially from 1984 to 1996. This pattern suggests that MNEs succeeded in stirring up tax competition. The 1996 reduction of the U.S. corporation income tax rate from 46 to 32 percent may have triggered competitive reductions by other countries, but the evidence is unclear. Small and poor countries cut more; countries more heavily dependent on the corporation income tax resisted reduction. Tax competition cannot be called plainly evident.

### **National Policies and National Interests**

Tax provisions that maximize individual countries' welfare do not, we have seen, generally maximize world welfare. One source of divergence, the tax priority issue, affects all countries: They need not be big enough for their policy changes to influence MNEs' marginal revenue or supply price. The second source, monopoly power in foreign investment, applies only to large countries. But MNEs' affinity for imperfectly competitive markets (see Chapters 1 and 4) does imply that even a small nation's MNEs might face downward-sloping demand curves in their external markets, giving the source government an incentive to act "large."

Host countries gain much from the prevailing tax-credit system, as several quantitative appraisals have indicated. Jenkins (1979) estimated the gains for Canada, a major recipient. Of the various refinements built into his estimates, one holds particular interest. What happens to native Canadian capital when foreign investment enters Canada, depressing the rate of return that would otherwise accrue to native capitalists? To make the worst case, Jenkins assumed that this depressant effect of inbound MNEs propels all the foreign investment that flows outward from Canada, so that the sums Canada forfeits to foreign tax collectors partially offset the gains from taxing foreign subsidiaries in Canada. Canada's gains from taxing foreign subsidiaries amount to no less than 2.5 percent of gross national product without this offset, 1.5 percent even with the offset. Similarly, Grubel (1974; also see Rugman, 1980*b*, Chapter 6) evaluated the net social rate of return to the United States from its foreign direct investments in a number of industrial countries. He found that the average net rate of return was negative for the

period 1960–69, –5.9 percent annually. It remains negative even if royalties and fees remitted by subsidiaries to their U.S. parents are assumed to add a pure rent component to the parents' profits. Grubel noted that including gross fees and royalties as profits is inappropriate if the marginal costs of transferring intangibles abroad are substantial, as Teece (1977) showed them to be. Rousslang and Pelzman (1983) estimated the effects of deferral for U.S. MNEs. It does not necessarily reduce U.S. welfare (they identified conditions under which its effects could be positive). However, their empirical estimate indicates that deferral lowers U.S. income while increasing rest-of-world income by only a little more.

The gains that host countries enjoy from taxing foreign investments have been sorely neglected in debates over MNEs (see Chapter 10). The various benefits and costs most commonly proclaimed either defy our best measuring instruments or are entirely conjectural; the substantial gains generated by the tax system often go unnoticed.<sup>14</sup> The point is particularly relevant to developing countries that have granted MNEs substantial tax concessions in order to lure foreign investment. As Musgrave (1969, p. 75) pointed out, they may thereby give up their biggest benefit from the inflow.<sup>15</sup> Or they might simply be victims of tax competition. In general the developing countries' policies toward MNEs have evolved into more rational forms (see Section 4.4 and Chapter 10). One example is the replacement of inequitable tax treaties left over from colonial domination by treaties that effectively exploit the partial-credit tax systems of principal source countries (UNCTC, 1988a).

In principal source countries, such as the United States and the United Kingdom, concern about the effects of foreign investment first arose in the 1960s and 1970s in connection with the countries' balance-of-payments positions (see Section 6.4), but tax issues soon surfaced as well. In the United States, the foreign tax credit and deferral were recognized as not sufficiently restrictive of foreign investment to maximize national welfare. Certain policies affecting taxation of dividends remitted by subsidiaries in developing countries and depressing MNEs' charges to their subsidiaries for

<sup>14</sup> A qualification is the need to net out the incremental cost of public services provided to foreign subsidiaries, omitted from the calculations just cited. That qualification is important in the context of local public finances and for developing countries' policies (Section 9.1), but probably not for industrial countries' receipts from corporation income taxes.

<sup>15</sup> Musgrave (1969, p. 94) noted that developing countries often combine a low corporation income tax with a high withholding rate on remitted dividends, so as to encourage MNEs to invest heavily and make maximum use of their deferral opportunities. Also, the tax giveaway is mitigated by the shakedown losses that leave a foreign subsidiary with slender taxable profits in its early years (see Hughes and You, 1969, pp. 158–60, 183–86).

R&D services (thus inflating their profits taxable overseas) were also seen to favor global rather than national welfare (Bergsten et al., 1978, pp. 206–7).

Horst (1977; also see Bergsten et al., 1978, Chapter 6 and Appendix B) undertook the most ambitious investigation of the resulting welfare effects, a model of the profit-maximizing MNE facing all the essential features of the U.S. tax system. The company can manipulate financial instruments such as the subsidiary's rate of dividend payout, transfers of new funds to the subsidiary, and the MNE's rate of capital formation at home and abroad. The model displays, for example, the incentive that deferral provides the MNE to favor foreign over domestic investment and to slant its intra-company financing of the subsidiary toward equity rather than debt. Horst's simulations indicated the effect of repealing the deferral provision so that U.S. MNEs would be liable for U.S. taxes on their foreign profits as earned. Investments in the subsidiaries would fall by 8.5 percent, whereas the parents' investments at home would rise by 3.9 percent; a sharp drop in transfers of funds to the subsidiaries indicates that they would rely more on funds borrowed abroad. Domestic and foreign taxes paid by U.S. manufacturers would rise by 9.1 percent. Repealing both deferral and the tax-credit provision, so that foreign taxes would be only a deduction from income taxable in the United States, would raise U.S. tax receipts by 50 percent while cutting the MNEs' capital formation abroad by 56.2 percent and raising it in the United States by one-fourth. These data suggest that switching from a tax system that (roughly) maximizes global welfare to one that (roughly) maximizes U.S. domestic welfare would produce substantial changes in both the volume of foreign investment and tax revenue.<sup>16</sup>

#### **8.4. Effects of Taxation on MNEs' Behavior**

The normative analysis of Section 8.3 assumed that the MNE arranges its affairs so as to minimize its tax burden but did not pursue the particulars. Now we consider the evidence on MNEs' actual responses to tax incentives. Hostile commentary on MNEs often includes the charge that they seize available opportunities to minimize taxes. That motive hardly distinguishes

<sup>16</sup> Hartman (1977) pointed to a strategic consequence of ending the deferral provision. Because of deferral, foreign countries now have an incentive to hold their corporation tax rates on subsidiaries of U.S. MNEs below the U.S. rate in order to attract taxable U.S. investment. With deferral ended, however, the tax-credit provision would immediately siphon the subsidiary's tax benefit into the U.S. Treasury. The host country would therefore have no reason to keep its corporation tax below the U.S. level.

them from other economic agents, but they might enjoy richer opportunities than single-nation enterprises. We first review evidence on how taxation influences MNEs' resource allocations, then turn to transfer pricing practices.

### **Tax Effects on Transactions**

The evidence reviewed in Chapter 6 indicated that MNEs apparently manage their financial flows so as to maximize expected post-tax global profits, which implies that they should be sensitive to tax factors.<sup>17</sup> Surveys and interview studies of corporate motives usually have rated tax factors less important than key nontax factors governing pretax rates of return. Snoy's review (1975, Chapter 28) suggested that surveys giving attention to tax variables have ranked them below quantifiable costs and political stability in importance but ahead of some other influences. G. P. Wilson's (1993) field study reached similar conclusions. That tax factors do not contribute more to explaining key foreign-investment decisions might indicate only that they vary less among countries than the factors that govern pretax rates of return.

Snoy (1975, Chapters 26 and 27) pioneered a statistical investigation of investment flows over the years 1966 to 1969 from several leading source countries to a number of host-country destinations. His explanatory variables included source-host tax differentials bearing on either retained earnings or remitted dividends of foreign subsidiaries, as well as other controls such as national growth-rate differentials. The tax variables are not very robust in their statistical significance, but their coefficients always take the predicted signs, and their magnitudes imply that tax changes would have large effects. For example, unifying the European host countries' tax rates would change the growth rate of U.S. foreign direct investment in the various individual countries by one-third or more. Root and Ahmed (1978) included corporation tax rates among the factors they employed to explain

<sup>17</sup> That higher taxes on foreign income will repel foreign investment is a proposition not without its exceptions. When the government taxes foreign-source profits, it absorbs part of the profits but also part of the risk to which the MNE is exposed. Suppose, with Hartman (1979), that at the margin foreign investment is financed entirely from tax-deductible debt and that domestic debt is risk-free to borrowers. Then increased taxation of its foreign profits on equity causes the MNE to increase its borrowing and capital formation overseas. Similarly, an increased tax on profits from domestic investments could cut foreign investments through its effect on the MNE's total investment spending (Jun, 1990).

foreign-investment flows into forty-one developing countries, finding a significant negative effect.

Numerous time-series studies have confirmed the finding that taxes strongly affect the location of foreign investment. Boskin and Gale (1987), studying aggregate U.S. inflows and outflows of foreign direct investment, found that a domestic tax policy change that increases domestic investment by \$1 will prompt \$0.08 to 0.27 of additional investment from abroad and deter \$0.04 of U.S. investment abroad (the figures refer to rates of expenditure out of retained earnings). Grubert and Mutti (1991*b*) analyzed foreign subsidiaries' behavior in Canada, observing that capital expenditures are more responsive to U.S. and Canadian tax factors than is foreign direct investment (the financial flow). Also, foreign subsidiaries account for all of the responsiveness of capital expenditures in Canadian manufacturing to this tax differential.<sup>18</sup> Cummins and Hubbard (1994) used panel data on U.S. MNE subsidiaries' capital expenditures in industrial host nations to show that a  $q$ -based model of investment fits much better when tax effects are incorporated than when they are ignored. And Harris (1993) demonstrated that a 1986 U.S. tax charge that removed a favorable tax treatment of domestic capital expenditures raised U.S. MNEs' capital expenditures abroad.

Several recent investigators such as Jun (1990) and Slemrod (1990; see his summary of earlier contributions) focused on Hartman's distinction between tax incentives affecting the reinvestment of foreign subsidiaries' earnings and outflows of inter-affiliate equity and debt. Jun's aggregated time-series models fit rather poorly, but he argued that the greater predictability of parents' transfers than of reinvested retentions gives some support to the view that parents' transfers are (contrary to Hartman) the predominant marginal source of funds. Slemrod also found that U.S. MNE parents' transfers of funds to subsidiaries could be well explained by their marginal rates of taxation (elasticity  $-1.4$ ). He divided the principal source countries into those employing the exemption and tax-credit systems, expecting to find that foreign investment in the United States should depend only on the U.S. tax rate for the exemption countries, a more complicated tax differential for the tax-credit countries. U.S. taxes strongly deter funds transfers to the United States, he found, but the effect turned up in

<sup>18</sup> Grubert and Mutti (1991*b*) experimented with various tax measurements, concluding that the average effective rate outperforms the marginal rate that is commonly preferred on theoretical grounds. It is interesting that a case for the average rate can be built on the assumption that foreign investments are discrete projects rather than incremental changes in foreign-capital stocks (Devereux, 1994).



both exemption and tax-credit countries. Altshuler, Newlon, and Randolph (1994) exploited the implication that temporary but not permanent variations in repatriation taxes should affect MNEs' dividend receipts from their subsidiaries; using international tax differences to capture the permanent component and intertemporal ones for the temporary component, they confirmed the proposition.

Similar findings come from cross-sectional studies that typically rely on the effect of different tax levels in various host or source countries. Grubert and Mutti (1991a) related the stock of U.S. foreign investment to host-country tax rates in cross section, again finding a significant and highly elastic relationship. Cross-section methods were also used by Hines and Rice (1994) to test the effects of host countries' taxes not only on MNEs' actual commitments of resources but also on the use of transfer pricing to shift reported profits to low-tax countries. In addition, given the labor and capital that U.S. MNEs employ in various countries and the country's level of productivity, the MNEs report significantly more income, the lower is the tax rate (Hines and Rice noted that the share of total U.S. capital abroad located in these "tax haven" countries has increased rapidly).<sup>19</sup> Hines (1993a) also found that U.S. states' tax rates on corporate income have strong locational effects (a 1 percent higher tax rate yields a 7 to 9 percent lower share of manufacturing investment from source countries that use the exemption system). Investors from both exemption and tax-credit countries are sensitive to state taxes, but those from exemption countries more so.<sup>20</sup>

Various other transactions of MNEs are potentially sensitive to tax provisions, and of these dividend remittance has been studied extensively. The analysis is behavioral rather than based on value-maximization models because of the puzzle why firms pay dividends, given their adverse tax consequences for shareholders' wealth. Hines and Hubbard (1990) concluded that remittance practices of subsidiaries to their parents largely parallel the dividend-paying behavior of the parents themselves. Nonetheless, dividend-payment patterns are generally consistent with tax minimization: Most

<sup>19</sup> Although the use of tax havens is deplored as tax evasion, it has the property of reducing the locational distortion associated with other host countries' differing marginal tax rates.

<sup>20</sup> Plasschaert (1979, p. 115) described the tax-haven mechanism. In 1962 the United States changed its tax laws to deny the deferral privilege to MNE income reported in tax-haven countries. Musgrave (1969, pp. 85–88) pointed out that this reform's economic benefit to the United States was in fact dubious, because profits that would be remitted to the United States anyhow then had to be reported in higher-tax foreign jurisdictions, transferring real income to foreign countries through the tax-credit mechanism.

subsidiaries pay no dividends (or interest and royalties) to their parents; those that do pay out most of their profits; and dividends respond to the parent's (excess or deficit) tax-credit situation. Both Hogg and Mintz (1993) and Altshuler and Newlon (1993) found dividend payments between affiliates responsive to tax changes in various countries that altered the tax price of dividends. Earlier studies agree that subsidiaries' dividend remittances are tax-sensitive. Kopits (1972) found that the dividend flows from U.S. MNEs' foreign subsidiaries depend on their after-tax profits, interacted with a factor indicating the host country's differential tax rates on retained and distributed earnings. Ness (summarized in Kopits, 1976a, pp. 647–48) similarly found that the retention of earnings in various host countries depends on a measure of the opportunity cost of funds with tax incentives appropriately embedded. Ladenson (1972) detected no influence of tax-rate differentials on dividends, but aggregation of statutory tax rates across regions might have caused this. Hartman (1981) offered some tentative evidence that retentions abroad of profits earned by U.S. MNEs are sensitive to taxes because of the deferral provision. Desai et al. (2001) estimated the size of the repatriation tax's effect on subsidiaries' dividend payments to their U.S. MNE parents. Elimination of the tax on repatriations would increase aggregate dividend payments by 12.8 percent. They estimated the efficiency loss due to the repatriation tax at 2.5 percent of dividend payments.

Taxes on corporate incomes should affect every aspect of the MNE's capital structure. Because a large MNE can be presumed to operate within an integrated world capital market, variations in its capital cost from country to country should depend mainly on variations in tax rates. One consequence is the substitution of debt for taxed equity. Desai et al. (2004d) concluded that 10 percent higher tax rates on U.S. MNEs' subsidiaries in a host country lead them to choose 2.8 percent higher leverage. Because transactions between affiliates are arbitrarily designated as debt or equity, we expect the elasticity of borrowing from the parent (0.35) to exceed that for external borrowing (0.19).<sup>21</sup> The elasticity of substitution between borrowing from affiliates and borrowing externally is very high; it permits the MNE to evade the higher borrowing costs found in host countries with weak creditors' rights.

Another tax-avoidance option for MNEs is the use of tax-haven countries to cause profits to appear in lightly taxed jurisdictions. Tax havens can avoid taxes in high-tax host jurisdictions, but they also let affiliates in low-tax

<sup>21</sup> For an attempt to explain some "internal" choices of inter-affiliate debt/equity, see Chowdhry and Coval (1999).

jurisdictions avoid or postpone taxes payable on repatriation to the United States. Desai et al. (2004b) observed that affiliates located in tax havens differ systematically from other affiliates. They are more often holding companies. They sell more of their outputs to affiliated firms. A MNE whose affiliates include a tax-haven affiliate actually reports larger total sales *outside* of tax-haven countries, suggesting differences in MNEs' propensities to use tax havens and/or fixed costs of setting up tax-haven affiliates. Although many tax havens are "micro-dot" countries, seven are large trading nations. Desai et al. (2004b) found that the greater variety and scale of transactions carried out with these "real" countries make them especially useful for reducing taxes. Overall, the rates of tax paid by subsidiaries outside of tax havens depend on their own host's tax rate but also on whether or not the parent MNE has a tax-haven affiliate in that country's region of the globe.

Tax incentives affect many decisions made by the MNE (Auerbach and Hassett, 1993). These include the mode by which subsidiaries are established (acquisition vs. green-field), the method of effecting acquisitions of new subsidiaries (cash vs. securities), and the location and means of any external financing of asset acquisitions (Hogg and Mintz, 1993). Hines (1993b, 1994b) showed that a less favorable tax treatment by the United States of U.S. MNEs' deductibility of the costs of R&D undertaken at home induced some companies to shift R&D activities abroad. Hines (1994c) demonstrated that withholding taxes on intra-firm royalty payments made by affiliates to MNE parents tend to increase R&D by the affiliates, consistent with local R&D being a substitute for technology transferred from the parent. Froot and Hines (1994) showed that a 1986 change in tax deductibility of interest for U.S.-based parents tended to reduce their borrowing and investing and cause substitution of leasing, likely as an alternative to capital ownership. Finally, MNEs incur not only the income taxes already analyzed but also substantial indirect taxes – nonincome levies such as excise taxes. These also affect MNEs' allocative decisions (Desai et al., 2004c).

### **Transfer Pricing**

The possibility that MNEs avoid taxes and accomplish other unsavory deeds by manipulating the prices assigned to intra-corporate transactions has received much attention. Casson (1979) urged that transfer-pricing maneuvers, undertaken solely to divert tax revenues away from governments, cause an overextension of foreign investment. And Vaitos (1974) charged that MNEs siphon unduly large flows of purchasing power out of the developing countries through transfer-pricing practices (also see S. Lall, 1973).

In Section 8.1, we found that, unless tax minimization is curtailed by other constraints such as avoiding tariffs, MNEs have an incentive to use transfer prices to the maximum extent to place profits in low-tax jurisdictions. Companies' use of transfer pricing hence should be limited only by tax collectors' detection skills. The empirical studies definitely agree. Kopits (1976b) fastened on intra-corporate royalty payments as a likely candidate for transfer pricing. Because arm's-length standards for a "reasonable" price are largely lacking, MNEs should seek to conceal remitted profits as royalty payments from foreign countries with higher tax rates on dividends but lower tax rates on royalties than the U.S. corporate tax rate. The substitution of royalties for dividends is significant and seems to be almost dollar-for-dollar among some industrial countries. Kopits estimated that about one-fourth of royalty payments from industrial countries represent concealed profit remittances, about 13 percent from developing countries. More and Caves (1994), in the course of analyzing intra-corporate royalties as indicators of proprietary assets' productivity abroad, confirmed a significant transfer-pricing component. Klausning (2003) analyzed transaction prices for individual commodities traded between U.S. and foreign affiliated businesses. She confirmed the prediction that exports to affiliates in high- (low-) tax countries would be high (low), imports from affiliates in high- (low-) tax countries would be low (high). Similarly, Grubert (1998) showed that inter-affiliate payments of royalties, interest, and dividends respond to variations in their tax-prices.

Other types of transactions also yield evidence of transfer-price manipulation. Following Vaitos (1974) various other researchers detected the adjustment of the prices of intra-firm transfers of inputs (e.g., UNCTC, 1985, pp. 33–38). Müller and Morgenstern (1974) claimed to find the effect in foreign subsidiaries' exports from Argentina, but the research design is suspect. Stewart (1989) showed that the pricing of intra-firm exports from and imports to Ireland is consistent with incentives to move profits to this low-tax country. Lecraw (1985) found that MNEs operating in countries of Southeast Asia, in pricing goods transferred within the firm, use non-market methods of transfer pricing (more easily subject to manipulation) where the perceived extent of risk in the host country is great. Benvignati (1985) observed that the business units of large U.S. firms use market-based methods of pricing less commonly in their international than their domestic transactions (for which tax-related incentives to manipulate prices generally do not exist); she controlled for industry characteristics that affect the availability of market-based transfer-price criteria. The results of Al-Eryani et al. (1990) suggest that market-based methods are used more intensively by

firms that are (for whatever reason) more concerned about satisfying legal requirements. The one exception to the typical positive findings of transfer-price adjustments is Bernard and Weiner's (1990) analysis of pricing in inter-affiliate and arm's-length petroleum shipments; their large and accurate data set indicates pervasive differences between these prices, but the differences are not stable over time and yield only weak evidence of tax-motivated transfer pricing.

The other line of research on transfer pricing addresses overall reported profits rather than particular classes of transactions. Hines and Rice (1994) showed that the income reported by U.S. subsidiaries in various countries (given the local inputs and their productivity) decreases significantly with the square of the host-country tax rate, confirming that the profit gain from tax-motivated transfer pricing increases more than proportionally to the tax differentials involved. Harris et al. (1993) investigated whether taxes paid to the U.S. government by U.S. MNEs vary inversely with the extent of their operation in tax-haven countries (after controlling for other determinants of profitability); the effect appears but is substantial only for firms with extensive multinational operations. And Harris (1993) demonstrated that a large reduction in the basic U.S. rate of corporate income tax caused U.S. MNEs quickly to shift expenses to foreign jurisdictions and thus taxable income to the United States. The shift was most apparent for firms in industries intensive in spending on intangibles (research, marketing), whose site of benefit is in any case hard to determine.

The empirical evidence identifies organizational constraints on transfer pricing that have eluded the theoretical model builders. The prices attached to intra-firm transactions affect the profitability of the firm's various activities, and an accurate knowledge of opportunity costs is essential for its owners to know whether the firm carries out the optimal set of activities and conducts each of them in the profit-maximizing way.<sup>22</sup> Adjusting these transfer prices in order to reduce taxes therefore requires the MNE either to incur the fixed cost of maintaining "two sets of books," or mandates a centralized system of control, evaluation, and reward that can work around tax-distorted transfer prices without sending wrong internal signals to the firm's divisional managers.

<sup>22</sup> Companies' quests for efficient transfer prices rather closely resemble the processes by which economists identify efficient shadow prices. An arm's-length price in a competitive market is the ideal choice, but unlikely, in the nature of things, to be available for many intra-corporate transactions. Alternatives constructed from the company's internal data have various strengths and weaknesses. See Arpan (1971, Chapter 2) for a survey. Tang (1979, Chapter 5) compared the practices of U.S. and Japanese MNEs (they are quite similar).

Some investigators of businesses' transfer-pricing practices have taken account of this interplay of tax and administrative considerations. Arpan's (1971, Chapter 4) survey of foreign MNEs with subsidiaries in the United States revealed a rough distinction between large companies in noncompetitive environments and small ones facing more competition. The former group both lack arm's-length bases for setting transfer prices and can justify the overhead expense of a complicated cost-based system of transfer pricing capable of compromise among administrative and tax-avoidance objectives. Overall, companies heed tax considerations and some other government fiscal incentives, but also they clearly employ transfer prices for internal-control objectives. Minimizing U.S. customs duties is not an important goal, partly because the possible savings are small, partly because costly litigation can result. Burns's (1980) survey of factors considered by U.S. MNEs agreed with Arpan's results in all important respects. Tax factors weigh in substantially, although with less force than does the need to motivate subsidiaries' managers effectively. The distinction between large, noncompetitive MNEs and small, competitive ones again appears in the transfer-pricing method that they use and the extent to which tax rates influence their policies.<sup>23</sup> Tang (1979, Chapter 6) sought from U.S. and Japanese MNEs rankings by importance of the factors influencing their methods of transfer pricing. The primary roles of global profit maximization, minimization of tax and tariff payments, and the need to motivate foreign-subsidiary managements were all confirmed. Several other studies have suggested more generally that many companies find the gains from transfer-pricing maneuvers to be small relative to the administrative costs and risks involved (Joachimsson, 1980; Rugman, 1980*b*, Chapter 7; Plasschaert, 1981), or that only large companies find the fixed cost worth incurring (Al-Eryani, Alam, and Akhter, 1990; Bernard and Weiner, 1992).

The most comprehensive study of organizational constraints on transfer pricing is by Yunker (1982). Large firms that can justify the fixed cost of tax-motivated transfer pricing tend to have relatively large numbers of autonomous subsidiaries, making tax-motivated transfer prices disruptive for internal control and evaluation. Therefore, it is important to measure companies' situations carefully when seeking to predict transfer-pricing behavior. Yunker confirmed that firms with more autonomous subsidiaries

<sup>23</sup> Lessard (1979) and Brooke and Remmers (1970, pp. 117–22) also commented from casual survey evidence on the degree to which administrative considerations constrain the unfettered use of transfer pricing to avoid taxes. Greene and Duerr (1970) provided more systematic evidence on the point.

are less likely to use strategic transfer pricing. Large overall size of the firm and uncertainty of the environments in which its subsidiaries operate deter strategic pricing; the higher the ratio of foreign to total sales, the greater the potential profit gain, and the more extensive the use of tax-motivated transfer pricing.<sup>24</sup>

Finally, some authors considered the effects of transfer pricing on the welfare of the affected nations. Jenkins and Wright (1975) examined the practices in the U.S. petroleum industry, subject to a long-standing incentive to transfer its profits upstream to crude-petroleum-producing countries, paying as a result almost no corporation income taxes to the United States. Jenkins and Wright sought to measure this profit transfer away from consuming countries other than the United States by assuming that the oil MNEs' investments in those nations should have earned profit rates as high as did the average manufacturing investment of U.S. MNEs in those countries. They concluded that in 1970, transfer pricing cost those consuming countries at least \$240 million. Vaitos (1974) undertook a detailed inquiry into transfer pricing by MNEs operating in four major sectors in South America. Transfer prices on components or intermediate goods imported to Latin American countries were carefully compared with market prices for identical goods elsewhere in the world. Vaitos's (1974, Chapter 4) comparisons between sectors and between Latin American host countries confirmed a number of expectations about transfer pricing.

### **Organizational Strategies**

Related to transfer pricing are certain changes in the MNE's organization that probably have little impact on its operations while altering its tax status. One of these is the employment of chains of ownership (Desai et al., 2002). Affiliate *A* of a U.S. MNE uses its taxable profits to make an equity investment in fellow affiliate *B*. This infusion either replaces the MNE parent's investment in *B* or expands *B*'s capital stock. Any U.S. tax due on this investment upon repatriation then lies far in the future when (if) *B* is dismantled. Statistical evidence on this strategy takes such forms as reported profits of a subsidiary that are under-predicted in settings where investment in such chains of ownership would likely be profitable. This sensitivity is particularly

<sup>24</sup> Yunker also provided evidence on firms' reasons for using "instrumental" (i.e., nonmarket) transfer pricing. Besides tax avoidance these include the avoidance of restrictions on profit remittance, maintenance of good relations with host countries, and stabilizing the competitive position of the subsidiary; about equal weights were assigned to these four motives.

strong among affiliates in European countries, where a U.S. MNE's affiliates tend to be similar and easily coordinated.

A more drastic organizational shift for the MNE is expatriation: Changing the firm's nationality to one that imposes a lesser tax burden. Desai and Hines (2002) found that the enterprises most likely to profit from expatriation are large firms with extensive foreign assets and with a large amount of debt. The stock market has reacted positively to the announcement of a firm's planned expatriation.

### 8.5. Summary

Corporation income taxes on MNEs' investments abroad have distinct normative effects on world welfare and on the welfare of the source and host countries. The taxation of foreign-investment income affects world welfare if either of two forms of neutrality is violated. Capital-export neutrality prevails if taxes do not distort the market's incentives for allocating capital between domestic or overseas uses. Capital-import neutrality prevails if taxes do not distort the recruitment of capital services from domestic or imported sources to serve a given market. Both export neutrality and import neutrality can be achieved only if all countries employ the same tax rate. Conventionally, the host country's tax collector gets first priority at taxing the incomes of foreign subsidiaries. The source country's tax authority can then exempt the same income from further taxation (import neutrality is attained), give a credit against taxes paid abroad (either export or import neutrality, but not both), or allow the foreign tax as a deduction from income taxable at home (neither form of neutrality results). An important influence on effective tax rates is the practice of deferral, which permits the MNE to postpone paying taxes due to the source country until its host-country profits are actually repatriated. Effective tax rates also can be affected by the MNE's seizure of opportunities to move reported profits between countries through the pricing of inter-affiliate transactions. The firm's incentive is to set such prices as high or as low as possible, until all reported profits are transferred to the low-tax location.

Effects on national welfare of taxing foreign income diverge from those on global welfare for two reasons. First, globally efficient taxes can be collected by either country, but each nation cares whether or not its treasury receives the tax revenue. Home wants MNE capital allocated so that the marginal pretax return at home equals the marginal return from foreign investment after foreign taxes are paid. This rule calls for the deduction method of treating foreign taxes. Foreign gains by attracting MNE capital so



as to garner the tax proceeds. The second divergence between global welfare and national welfare stems from monopoly gains. If Home's MNEs compete among themselves in Foreign's market and drive down their mutual rate of return, Home has an incentive to discriminate in its tax structure against foreign investment. If MNE capital is industry-specific, Home's motive for restricting the outflow is amplified if foreign investment expands world production of Home's exportable good, worsening its terms of trade. Similar conclusions follow from a Heckscher-Ohlin model in which MNE capital loses its sector-specific identity: Home's taxation of capital exports for monopoly gain may be tempered or reversed by any induced change in the structure of Foreign's production that tends to improve Home's commodity terms of trade.

The national interests of Home and Foreign are adversary to one another, in the light of both tax-priority and monopoly criteria for taxing foreign capital so as to raise national welfare. Some researchers have investigated strategic reactions between countries, discovering that (if Home is a leader and Foreign a collection of small follower economies) Home may wish to tax foreign-investment income even more heavily than domestic considerations would warrant, because Foreign rationally responds by reducing its own tax. It is possible that symmetrical tax competition among countries to attract mobile capital leads to the underprovision of public goods.

Actual tax systems of the industrial countries violate global-welfare criteria, but apparently not grossly. Export neutrality and import neutrality cannot both prevail unless all countries impose the same tax rate; actual rates vary, but they are rather bunched for the leading industrial countries. Import neutrality is impaired by withholding taxes on dividends abroad, but these are commonly waived or reduced under bilateral tax treaties. The prevalent tax-credit arrangement is potentially consistent with export neutrality, although deferral can introduce a bias toward excessive foreign investment. MNEs can react to tax provisions by rearranging their allocative decisions so as to maximize after-tax profits. Then one would expect a one-dollar change in expected profits due to tax changes to have the same effect as a one-dollar change from any other source. Foreign investors' decisions indeed do appear sensitive to taxes, not only in their basic investment decisions but also in recruiting funds, determining repatriations, allocating R&D, and the like.

MNEs manipulate the prices attached to intra-corporate transactions (royalty payments, inter-affiliate goods movements), moving taxable profits into jurisdictions where they pay a lower tax and reporting higher profits in such locations. However, transfer prices also serve internal needs of

control and evaluation of the corporation's performance. Large companies whose internal transfer prices are not readily compared with market prices apparently do maintain complex transfer-pricing systems aimed in part at minimizing taxes. Smaller companies and those in more competitive environments, whose transfer prices the tax collector can readily check against market prices, do not find such maneuvers to their advantage.

## Multinationals in Developing Countries and Economies in Transition

Multinational enterprises (MNEs) have gone through a cycle in their encounters with host-country governments. They have at times met hostility and resentment in all countries hosting substantial foreign investment, but nowhere more than in the developing countries from World War II through the 1970s. They were blamed for the national economy's manifest shortcomings, not to mention the historical sins of colonial domination, as well as genuine clashes of economic interest. With the waning of socialism and the coming of debt crises in many developing countries, much of the acrimony vanished, but the issues that it raised continue to dominate the research literature. In contrast the Eastern European economies in transition largely welcomed MNEs with open arms, to clear away the wreckage of state-owned enterprises.

The normative appraisal of MNEs' activities in developing countries could be controversial even without this political background. Advocates of diverse policies toward development seem to concur on a diagnosis that key markets are malfunctioning, or important prices are misaligned to their shadow equivalents, so that saving and investment, the foreign-exchange rate, wage rates, returns to human capital, and other such important magnitudes can be far off the mark. Appropriate levels for them may therefore differ greatly from what the market signals to private decision-makers, and not necessarily in unambiguous directions. The MNEs' allocative decisions both respond to and affect these imbalances and distortions. Does the MNE's presence mean more capital formation or productivity growth than otherwise? Can governments apply sticks and carrots to the MNE to produce more efficient allocations? Our discussion will focus on these questions about the instruments of development policy, not its ends or the political and

social processes by which they are defined.<sup>1</sup> This approach is not calculated to maximize the difference between developing and developed countries; on the contrary, some industrial host countries' policies toward MNEs rest on these same perceived shadow-price discrepancies.

Despite these policy issues indigenous to the developing countries, one would prefer to minimize their analytical differences from the developed economies. This option is not available, however; repeatedly, the pooled statistical treatment of the two groups has regularly turned out to be inappropriate (Blonigen and Wang, 2005).

We close this chapter with a short section on MNEs' relationships to the economies in transition. The specific issues that they raise do not much overlap with the developing countries, but in both groups we do find the MNE functioning as an agent of change toward more market-oriented economies.

### 9.1. Determinants of MNEs' Activities

Foreign subsidiaries' operations in the developing countries tend to divide sharply into three categories. The exporters of natural resources and resource-based products need no explanation: They go where the resources are, if conditions in the sector call for vertical integration. The second class is made up of exporters of manufactured goods or components. The third class comprises producers largely engaged in serving the developing economies' domestic markets. An important point of fact is the sharpness of the distinction between the second and third groups. The theory of MNEs' locational choices (see Section 2.2) indicates that, given scale economies and the very small domestic markets of most developing countries, a foreign subsidiary will locate there either to serve the market or to export extensively, but it will not serve the domestic market and export "a little" (Horst, 1971, 1973). The data confirm this prediction. For example, the 80 projects analyzed by Reuber et al. (1973) were divided into export-oriented projects (26) and those serving the domestic market (54); the average proportion of output exported was 87 percent for the former group and 3 percent for the latter. This pattern is not intrinsic to developing countries but rather to small national markets generally; it also turned up (at that time) in countries such as Ireland (Andrews, 1972; Buckley, 1974). Accordingly,

<sup>1</sup> Those interested in a broader approach may consult the work of Biersteker (1978), who did a heroic job of lining up the "critics" of MNEs and the "neoconventionalists" on these large issues, and the analyses of Evans (1979), Hood and Young (1979, Chapter 8), Vernon (1971, Chapters 2, 5, and 7; 1977, Chapters 7–9), Lall and Streeten (1977, Part I), N. Kumar (1990), and Helleiner (1989).

generalizations that span the export and domestic-market subsidiaries are somewhat suspect.

### Foreign Subsidiaries Serving Domestic Markets

The forces explaining MNEs' presence in the domestic markets of developing countries are about the same as those explaining their presence in industrial countries. Nankani (1979) confirmed that foreign investment in developing countries by various industrial source countries depends on the prevalence in the source countries of industries congenial to foreign investment. Morley and Smith (1971) suggested that MNEs respond to their tariff incentives in industries where proprietary assets are important. Juhl (1979) confirmed for West Germany Nankani's finding that foreign investment in developing countries increases with an industry's plant scale and expenditure on producing proprietary assets, and he did not find physical capital intensity to deter investing in them.<sup>2</sup> Hughes and You (1969, pp. 179–83) pointed out that MNEs commonly have initial contact with these markets as exporters, and so import-substituting foreign investments reflect the comparative-advantage structure of the exporting country. Finally, students of Japanese foreign investment (Yoshihara, 1976, Chapter 4, 1978; Ozawa, 1979a, 1979b; Tsurumi, 1976) all stressed defensive investment by smaller-scale Japanese enterprises in unlikely industries such as textiles: These investments utilize managerial and capital assets of firms that lack opportunities for domestic growth and/or face threats in either their domestic or overseas market.

The closeness of the parallel between the inter-industry determinants of investment in developed and developing economies is indicated by Lall and Mohammed's (1983a) study of Indian public companies. They found royalty payments a significant determinant, although not the usual domestic R&D/sales ratio. Other conventional results include positive influences for intensive use of skilled labor and scale economies in production. Unconventional results are the insignificance of the Indian firm's advertising/sales ratio and the significant negative influence of the capital intensity of the U.S. counterpart industry.

Similarly useful for perspective on differences associated with the developing countries' situations is Lecraw's (1991) inter-country analysis of GNP-normalized inflows of direct investment between 1974 and 1986, especially its breakdown of those flows into investments oriented toward the domestic

<sup>2</sup> As an exception, Koo (1985) argued that Korean government intervention had been so intrusive as to dominate Korea's pattern of inter-industry distribution.

market, toward the processing of natural resources, and toward other export-processing activities. Certain factors affect the inflows of all three types of foreign direct investment: The riskiness of the country deters each, although the amplitude of domestic factor stocks and the openness of the host's policies toward MNEs promotes each. The growth of domestic demand and the height of protective tariffs affect only investments oriented toward the domestic market, while taxes and quality-adjusted labor costs affect only the export-oriented investments. Export-processing investments depend on the real exchange rate, while investments in resource extraction depend on the relative price of resource products. Lecraw's results strongly support the distinction among these types of investments.<sup>3</sup> Previous studies had supported many of these conclusions: Reuber et al. (1973, pp. 115–20), Nankani (1979, Chapter 3), and Evans (1979, Chapter 3). Nankani found that aggregate foreign investment in manufacturing shows at least a weak positive relationship to political stability and negative relationships to hostile investment climate and ideological orientation toward socialism, but his data did not distinguish between export-oriented and local-market investments. The evidence of Reuber et al. (1973, p. 95) suggests that these elements of political economy pose less uncertainty for export-oriented projects (also see Root and Ahmed, 1978, and Dunning, 1981*a*). Numerous studies (e.g., Reuber et al., 1973, pp. 113–14 and Appendix A) observed a strong positive correlation between countries' levels of GNP per capita and stocks of foreign investment per capita, perhaps reflecting the attraction of MNEs serving local markets to countries with tastes and factor prices less distant from those of their industrialized home bases.

Other researchers also addressed the effect of risk on foreign investment flows. Nigh (1986) investigated the influence on U.S. investment in eight Latin American countries of indexes of conflict and of cooperation, both within the host nation and between it and the United States. Over a 21-year

<sup>3</sup> Previous studies had supported many of these conclusions: Reuber et al. (1973, pp. 115–20), Nankani (1979, Chapter 3), and Evans (1979, Chapter 3). Nankani found that aggregate foreign investment in manufacturing shows at least a weak positive relationship to political stability and negative relationships to hostile investment climate and ideological orientation toward socialism, but his data did not distinguish between export-oriented and local-market investments. The evidence of Reuber et al. (1973, p. 95) suggests that these elements of political economy pose less uncertainty for export-oriented projects (also see Root and Ahmed, 1978, and Dunning, 1981*a*). Numerous studies (e.g., Reuber et al., 1973, pp. 113–14 and Appendix A) observed a strong positive correlation between countries' levels of GNP per capita and stocks of foreign investment per capita, perhaps reflecting the attraction of MNEs serving local markets to countries with tastes and factor prices less distant from those of their industrialized home bases.

period the indexes of conflict wield a significant negative, and those of cooperation a significant positive influence, both intra- and international. A similar study by Nigh and Schollhammer (1989) of Japanese foreign direct investment found a negative influence of intra-national conflict but not of the other indexes (for developed host countries Japanese MNEs' responses to intra-national conflict proved asymmetrical, declining when conflict increases but ignoring reductions in conflict as well as changes in cooperation).

### Export-Processing Activities

The MNEs' role in the export sectors is distinctively pertinent to developing countries. Helleiner (1973) pointed out that these exports fall into four rough categories. Locally produced raw materials can be subjected to further processing, and MNEs sometimes undertake this role either as an economic choice or in response to the host government's inducements. Second, some countries have become heavy exporters of simple manufactured goods whose production processes are suited to their factor endowments. MNEs' involvement in these products will be discussed subsequently. Third, labor-intensive processes in manufacturing operations may be carried on in facilities that import unfinished goods and re-export them after additional processing. Evidence summarized in Section 1.2 indicates that MNEs play a significant role in these offshore fabrications, but a good deal of business is also done at arm's length between industrial and developing-country enterprises (Hone, 1974; Sharpston, 1975; Sprietsma, 1978; Jarrett, 1979). Fourth, in some of the larger and more advanced countries, some import-competing manufacturing industries (both local firms and MNEs) have been transformed into successful exporters.<sup>4</sup>

Scattered information suggests that MNEs account for a moderate proportion (20–30 percent) of the manufactured exports from some successful exporters, less from the other developing countries (Nayyar, 1978; Blomström, 1990). De la Torre (1972) showed that in several Latin American countries exports of differentiated manufactures encounter marketing barriers to entry in industrial-country markets, and so smaller proportions of these outputs are exported than the proportions of undifferentiated manufactures. But subsidiaries of MNEs enjoy advantages against these

<sup>4</sup> Helleiner (1973, p. 26) noted that MNEs have been firm supporters of regional free-trade arrangements among developing countries because of the resulting opportunity to rationalize small-scale facilities and develop exports.

barriers, therefore exporting larger proportions of their outputs than local firms and accounting for larger shares of exports of such products. Lee (1986) confirmed this statistically by showing how the inter-industry determinants of offshore-processing activities differ between developed and developing host countries. Distribution channels controlled by the manufacturer and quasi-contractual linkage between distributor and customer are more important positive predictors of offshore processing in the developing countries; also, the industry's labor intensity favors them.

Shatz (2004) showed that export-oriented subsidiaries of U.S. MNEs based in developing countries divide quite sharply in their locational determinants. Those belonging to vertical MNEs and supplying goods to their parents are affected by trade costs, the host's general policy toward openness to trade, labor costs, and tax rates. Subsidiaries exporting to third countries (horizontal MNEs) are affected by the host country's openness to foreign investment, the host's wages, an indicator of the country's stability, and an indicator of its geographic advantage. Neither the size of the host economy nor its human-capital endowment exerts a positive influence.

The contrast between export-oriented and local-market subsidiaries extends to many facets of their activities. They of course differ in the general types of incentives that affect the MNE's investment decision. The export-oriented investments are footloose and are determined largely from unit labor costs (Reuber et al., 1973, pp. 115–20; Nankani, 1979).<sup>5</sup> Flamm (1984) modeled this footloose property in terms of portfolio adjustment by the parent MNEs, concluding that actual speeds of adjustment are indeed quite rapid, but expectations about relative costs of producing in different locations are not volatile.

Some differences appear in the financial flows of the two types of investments. Reuber et al. (1973, pp. 87–97) found that local-market subsidiaries rely more than do export-oriented projects on funds secured within the country. The funds supplied by local partners account for part of the difference, but it should also matter that export-oriented subsidiaries have little incentive for local borrowing to hedge assets whose yields ride on the

<sup>5</sup> Of course, low unit labor costs are not the same thing as low wages. Therefore, statistical studies of the relationship between foreign investments in host countries and their wage rates have yielded mixed results. Riedel (1975) found that foreign investment in Taiwan does depend on wage differentials between Taiwan and the investing country. Jarrett (1979, Chapter 8) did find that more offshore procurement tends to occur among low-wage countries. But studies of the inter-country distribution of foreign direct investment itself, such as those of Nankani (1979) and Dunning (1980) generally have found no relationship at all or even a positive relationship between foreign investments and host-country wage levels.



real exchange rate of the local currency (A. C. Shapiro, 1975). Reuber et al. found no robust difference in the average profitabilities of the two investment types. Export-oriented investments show higher nominal profitability (not robust, in their statistical analysis), but local-market subsidiaries remit much larger percentages of earnings as royalties and fees and surely face in greater measure the regulatory incentives for manipulative transfer pricing discussed in Section 8.4. Chen and Tang (1987), however, concluded from an analysis based on frontier production functions that the average efficiency of export processing businesses in Taiwan (relative to inferred best-practice) is about one-fifth higher than the average efficiency of businesses serving local markets. Chen and Tang (1986) also showed that subsidiaries in Taiwan exporting most of their output are about the same size as those serving local markets but substantially more labor-intensive, as Taiwan's comparative advantage would suggest.

Export-oriented and local-market subsidiaries also differ in some strategic operating characteristics. Reuber et al. (1973, pp. 82–7) found that the MNE parents hold significantly higher fractions of equity in the export-oriented subsidiaries. The difference arises partly from public policy, partly from the MNEs' own preferences. Governments frequently demand that MNEs take on local partners in joint ventures. MNEs generally resist this (more in some settings than in others, as we saw in Section 3.4), but local entrepreneurs obviously can prove more useful allies when the project aims to serve the local market. Export-oriented MNEs are likely to be especially resistant if the subsidiary produces components or undertakes processing for transfer to the parent or other affiliates. Furthermore, MNEs situating footloose export-oriented subsidiaries surely enjoy a stronger bargaining position in dealing with potential host governments and so can avoid being bedded down with unwanted local partners.

### Government Incentives and Requirements

The influence of government incentives on direct investments in developing countries is important for its potential to distort MNEs' location choices and affect the welfare of the nations themselves. Reuber et al. (1973, pp. 120–32) emphasized the variety and types of incentives that had been offered by host countries to the projects they surveyed.<sup>6</sup> The incidences of various incentives found by Reuber et al. were as follows: tariff protection, 34 of 76 cases

<sup>6</sup> Indeed, twenty-two of the eighty projects surveyed were initiated because of requests from the host governments (pp. 77–80).

(the mean tariff rate was 68 percent); import-quota protection, 34 of 77; tariff reduction on imported equipment, 43 of 78; tariff reduction on imported components, 29 of 75; tariff reduction on imported raw materials, 26 of 76; tax holiday, 37 of 80 (mean length five years); accelerated depreciation for tax purposes, 20 of 71; public provision of infrastructure investments, 18 of 70. The forms of assistance show some natural correlations with the type of investment. Export-oriented investments tend to receive the tax holidays and infrastructure investments, domestic-market projects protection from competing imports. Correspondingly, the MNE respondents often saw import protection as essential to inducing their local-market investments, and financial incentives as important for inducing export-oriented investments.

Overall, Reuber et al. (1973, pp. 127–32) did not accord these various inducements a vital role in promoting foreign investment, and they noted that previous empirical studies had led to a mixed evaluation.<sup>7</sup> For one thing, companies tend to discount inducements on the presumption that what the government gives with one hand it may well take away with the other. Also, some evidence suggests that government's efficiency and predictability in dealing with MNEs (something on which the government cannot readily bargain) weighs quite heavily relative to the specific inducements put forth. For example, Murtha (1991) demonstrated that foreign subsidiaries purchasing from suppliers who are beneficiaries of the host government's industrial targeting pay close attention to the government's reputation for policy consistency; the subsidiaries' investments in assets specific to transactions with these suppliers decrease with the frequency of disruptive interventions by the government. Nonetheless, the most thorough study of hosts' incentives to foreign investors, Guisinger and Associates (1985), concluded that 50 of 74 investments in 30 countries (some developed) had been influenced by host-government incentives. The proportion is actually higher for investments oriented toward domestic markets (78 percent) than investments oriented toward export markets (58 percent), although the carrots offered to foreign investors serving local markets are usually accompanied by sticks of types described subsequently. The length of tax holidays significantly determines the locations of foreign investors among Caribbean nations, according to Woodward and Rolfe (1993).

UNCTC (1991a) documented the general relaxation of hosts' controls on foreign direct investment between 1977 and 1987. It also provided a panel-data analysis of the responses of aggregate foreign investment flows

<sup>7</sup> See Reuber et al. (1973, p. 131, note 53) and Cohen (1975, Chapter 4). Bond (1981) pointed out that tax holidays induce firms to exhaust their capital services by the holiday's expiration, or to liquidate then and sell their secondhand assets to a new firm.

(new equity, retentions, and intra-corporate loans) to these changes, finding significant positive effects of more favorable terms of both taxes and performance requirements. Indicators of other classes of policies were not statistically significant, consistent with those policies being applied in a discriminatory case-by-case fashion (among other explanations). Among control variables a risk indicator took a significant negative coefficient for developing countries other than the newly industrializing ones. UNCTC (1991a) also showed that the stringency of controls on foreign direct investment fluctuates with the country's rate of economic growth (i.e., foreigners are welcomed when economic conditions are poor).

Another contribution of Guisinger and Associates was to document the competition of host countries to attract foreign investors. Governments not only compete in the general classes of incentives that they offer (some portfolios contain as many as 30) but also get into bidding rounds for particular MNEs. Rivalry tends to be sharpest among similar and nearby countries. It favors footloose activities, and inducements increase with unemployment in the host and with the paucity of MNEs currently looking for sites. Hosts tend to favor subsidy instruments that can be tailored to discriminate among individual foreign investors.

A comprehensive inducement for foreign direct investment in exporting activities is the export-processing zone (EPZ). These zones are simply a device for bundling together many concessions from the host country's prevailing taxes, tariffs, labor regulations, and the like. The government can thereby relax onerous regulations that it does not wish to repeal outright (Wall, 1976). Baerresen (1971) described Mexico's experience, Warr (1987) evaluated the Philippines', and Fröbel, Heinrichs, and Kreye (1980, Part III) undertook an extensive international inquiry. In the countries for which data are available, garments, textiles, and electrical goods account for three-fourths of the activity. Fröbel et al. also described the German garment industry's participation in these foreign investments, indicating a trend toward more and smaller German firms going abroad, and increasingly toward low-wage countries as recipients of these investments. Woodward and Rolfe (1993) determined that EPZ acreage is a significant determinant of the distribution of foreign investment among Caribbean host nations. Fröbel et al. (1980, pp. 139–41) and Baerresen agree that worker productivity in EPZs closely approaches its level in the MNEs' national home bases. Ranis and Schive (1985) found that in Taiwan EPZs mobilized foreign direct investment to play an important catalytic role in the transition from import-competing to export-oriented industrialization.

Hamada (1974) analyzed the EPZ theoretically in the context of the two-sector Heckscher-Ohlin model of international trade. The small, labor-rich

developing country exports the labor-intensive commodity and imports the capital-intensive one. The nation that imposes a protective tariff on imports impairs its economic welfare, because it is too small to improve its terms of trade thereby. MNE capital flowing into the domestic economy simply shifts the output mix toward the import-competing capital-intensive good, leaving the private incomes of domestic factors of production unchanged but the country as a whole worse off (because the government would no longer collect customs duties on the displaced imports). If the MNE capital instead enters the EPZ, exactly the same thing happens: Now it attracts labor out of the domestic factor endowment instead of adding capital to it, with the same unfavorable effect on welfare. One senses that the Heckscher-Ohlin model, with pure competition and all factors of production fully employed, captures little of the institutional setting of the developing economy; in his survey of empirical evidence on EPZs, Balasubramanyam (1988) argued that the prevailing evidence of structural unemployment in developing economies and elevated wages in the EPZs suffices to put the negative welfare implications aside. Hamilton and Svensson (1980) tried to improve things by making capital sector-specific in what is otherwise the same simple two-sector model. An inflow of MNE capital to the export sector then will improve the economic welfare, and an inflow to the EPZ may do so, but the outcome depends on some hard-to-interpret technical conditions.

Another aspect of investment incentives that raises both theoretical and empirical questions is the performance requirements that are commonly linked with subsidies and incentives offered to import-competing foreign investments. Half of the investments studied by Guisinger and Associates (1985) were subject to requirements that involve either export targets (or requirements to balance foreign-exchange earnings and uses) or minimum content levels for locally produced inputs. If these requirements impose binding constraints, they raise the costs of the foreign subsidiary (to purchase overpriced locally produced inputs, or to subsidize unprofitable exports). If the subsidiary competes against a domestic rival, the host country gets a profit-shifting gain, although it might suffer a net loss if the local inputs or the exports in fact are inefficient when valued at proper shadow prices (Davidson, Matusz, and Kreinin, 1985).<sup>8</sup>

Export-performance requirements were analyzed in general equilibrium by Rodrik (1987), who assumed that the subsidiary must export some fixed

<sup>8</sup> Again, evidence developed in UNCTC (1991*b*) suggests that these trade-performance requirements are used flexibly to extract surplus from MNEs, and thus imposed less frequently than their prevalence on the statute books suggests.

fraction of its output in a two-good, two-country model with specific factors of production. An increase in the mandated share of output exported then has various welfare effects for the host. The subsidiary reduces its output, which raises host welfare because the tariff-protected subsidiary's output itself generates a welfare loss. The associated reallocation of domestic factors of production can involve a gain (especially in a specific-factors model); profit-shifting to domestic enterprises competing with the subsidiary also involves a gain. Despite this net benefit, Rodrik showed that the increase of welfare with the export requirement eventually ceases (i.e., an optimal value exists).

Observers commonly deplore the redistributive effects of the competition among host governments to secure foreign investments (recall Chapter 8's discussion of tax competition). Their effect on global efficiency, however, is not necessarily negative. Given that governments engage in many surplus-redistributing transactions with firms (taxes, mandated activities, public services), under certain assumptions the government that can offer the sweetest deal to a foreign investor is controlling the site at which the investor's activity will be most productive (see Bond and Samuelson, 1986).

Capital controls are another type of restriction like export requirements, that cuts against the incentives set before foreign investors. They are costly to MNEs in light of their affiliates' propensity to borrow in the host country, plus the potential threat that they pose to capital repatriation. Desai et al. (2004e) demonstrated the effect on borrowing costs. They also showed that the affiliates employ transfer pricing to reduce profits that they report in hosts that employ capital controls. Controls also reduce the initial investment that the MNE makes in a country employing them.

### Local Ownership Requirements

Another policy common in developing and some industrial countries requires MNEs founding subsidiaries to sell or give some equity to local partners. This policy seems to stem from nationalistic preferences (see Chapter 10) and does not evidently recognize the trade-off for the host between tax revenue and nationals' control of business units (Katrak, 1983b). We saw in Section 3.3 that without policy intervention the MNE prefers a joint venture to a wholly owned subsidiary under some circumstances. Even without a local-ownership policy, the riskiness of conditions can itself cause the MNE to forgo full ownership, as can sociocultural distance between source and host countries (Gatignon and Anderson, 1988). Beyond this unconstrained choice the MNE might encounter requirements or incentives for a higher

level of local participation. Statistical analyses by Fagre and Wells (1982), Lecraw (1984), and Gomes-Casseres (1990) usefully distinguish between the MNE's unconstrained preferences on ownership and the bargaining relationship that might induce it to settle for less (also see Grieco, 1984; Kobrin, 1987; and Contractor, 1990).

Fagre and Wells inferred the MNE's ownership preferences from its choice in host countries that impose no local ownership requirements, while Lecraw employed a refined definition of the bargaining range defined by the lowest local share the host government had accepted for any previous foreign subsidiary and the highest that the MNE had tolerated in any of its subsidiaries in the region (Southeast Asia). Within this bargaining range Lecraw found the MNE does better if it enjoys technological leadership, has a strong goodwill asset (advertising intensity), exports heavily from the host country, and finds the host country not a particularly attractive business location (the MNE manager's subjective evaluation).<sup>9</sup> The MNE does less well the more MNEs from its base industry had previously invested in Southeast Asia. The evidence weakly suggests that larger subsidiaries do better. Fagre and Wells reported similar results, including the finding that the U.S. MNE does better, the fewer firms operate in its three-digit industry in the United States. Gomes-Casseres simply ran his cross-section model of joint-venture choices separately on subsidiaries in host countries that do and do not restrict full ownership by the MNE. Significant predictors of the joint-venture choice in the restricting countries are previous operating experience in the host country (positive) and the recent prosperity of the host economy (also positive). Interestingly, in light of the obsolescing bargain discussed in Section 4.4, carrying on in a resource-extraction activity induces taking on local partners in all countries, not just those with policies of restricting foreign ownership.

Statistical studies of observed ownership patterns do not reveal dynamic aspects of the issue that appear in some case studies. Mytelka (1979) reviewed the experience of the Latin American Andean Group of countries with their Decision 24, which in effect sought to stiffen each member's resolve about confining MNEs to minority ownership positions. It specifically denied benefits of the group's trade liberalization to nondivesting subsidiaries. Those benefits were not large for most firms, and Mytelka concluded that Decision 24's effects on ownership and investment inflows were small. Martinussen (1988) analyzed experience with India's Foreign Exchange Regulation Act

<sup>9</sup> Regarding the higher MNE ownership shares in exporting subsidiaries, we note the theoretical result (Katrak, 1983*b*) that the MNE capable of serving a market from either a wholly owned or a partly owned subsidiary might discriminate against the latter.

(1973), which put a ceiling of 40 percent foreign ownership on nonexempted subsidiaries, attempting to drive foreign investors out of the consumer-goods industries. Companies' responses included increased remittance of dividends in order to repatriate some capital; also, equity was issued in such a way as to disperse holdings or place it in the hands of passive domestic investors and preserve control by the MNE. The inflow of new investment plunged as a result of the controls. Nonetheless, little contraction of the foreign-controlled sector took place. Martinussen (1988, pp. 83–4) quoted an interviewee: "It takes a long time to enter the system of licensing and controls, but once you are inside, you are protected and you can make very good returns."

## 9.2. Effects on Economic Development

The effects of foreign investment on the host economy run from the narrowly microeconomic to the aggregative (savings, investment, growth of real income) to the political and social systems. We proceed along this path but stop short of the political and social, where neither economic analysis nor the organized stock of informed observation offers much help.

A common theme is the problem of second-best outcomes. Consider a foreign direct investment that is profitable and would raise world welfare if all markets in the host economy (and the source, as well) were largely free from distortions. When some distortion is present, however, the social evaluation of the MNE's investment can diverge from its private profitability. The distortion can go in either direction and is wholly specific to the situation: The MNE that invests to expand the output of a tariff-protected activity can reduce economic welfare; the MNE that invests and hires labor at a conventional or statutory minimum wage exceeding labor's opportunity cost generates greater social than private benefits (but cf. Batra, 1986). The literature on the effects of foreign direct investments in developing countries identifies many second-best problems but seldom supplies enough evidence to convince us that a substantial and confidently signed discrepancy exists.

### Industrial Structure and Performance

The effects of MNEs on the structure and performance of industries raise the same questions reviewed in Chapter 4, but their various weights differ to reflect conditions in developing countries. We draw on surveys of this diffuse literature by S. Lall (1978a) and Newfarmer (1985). S. Lall observed

(pp. 226–29) that the correlation between the presence of MNEs and the concentration of sellers in the market, regularly seen in the industrial countries, prevails in the developing countries as well. It has the additional force of a historical basis in colonial powers' tendency to exclude or restrict entry by MNEs from other countries (Svedberg, 1981). However, most studies observing that correlation have not grappled with the problem of common causes giving rise to both foreign investment and high concentration, and so the conclusion sometimes stated that MNEs cause concentration is called into question. S. Lall's (1979a) study of Malaysia did attempt this control. In consumer-good industries, the common-cause hypothesis prevails, but in producer-good industries, the presence of MNEs seems to wield a net positive influence on concentration.

The soundest way to determine the effects of MNEs' entries on concentration is to follow industries over time. As S. Lall (1979a) pointed out, entry's initial effect of reducing concentration can be followed by an ultimate increase, and the normative significance of that increase depends on how it comes about. The best of the time-profile studies suggest several generalizations.<sup>10</sup> First, in some sectors the entry of MNEs (indeed, of modern industry generally) has brought the demise of artisan and small-scale local producers. This event resembles any displacement of a less efficient technology by a more efficient one, but of course the negative effects on the welfare of the displaced producers can attract national economic and cultural concern. The effects of MNEs' entry on local industrial competitors are largely consistent with Chapter 4's evidence about the market shares commanded by MNEs. In some industries MNEs hold decisive advantages, so local entrepreneurs either imitate them or drop out; this pattern applies especially to advertising-intensive industries (R. Jenkins, 1990, 1991, pp. 125–28). In other sectors, MNEs might capture moderate market shares but settle into a market equilibrium along with viable domestic competitors. The MNEs' subsidiaries typically are larger firms than their domestic rivals (e.g., S. Lall, 1978a, p. 232; N. Kumar, 1991), a finding that also holds for the less industrialized and smaller developed countries (such as Canada and Australia). Also, studies of individual markets (Evans on Brazilian pharmaceuticals) suggest that MNEs and domestic firms commonly carry out different arrays of activities when they compete in the same general market.<sup>11</sup> Some

<sup>10</sup> Biersteker (1978, Chapter 6) on Nigeria; Evans (1979, Chapter 3) on Brazil. Also see Newfarmer (1979, 1980, 1985).

<sup>11</sup> The question whether or not these differences exist should itself vary predictably from industry to industry. Cohen (1975, Chapter 3), for example, undertook a rather unmotivated comparison between paired foreign-controlled and domestic firms producing 11 narrowly defined commodities in Singapore, Taiwan, and South Korea. The sample leaned



evidence suggests that MNEs' shares in developing markets may, on the average, be rising. However, the world's population of MNEs is also growing, including those originating in developing countries (see Section 9.2); put in that context, a rising trend in their aggregate share does not carry any necessary implications for seller concentration in the markets tenanted by MNEs.

One element in developing nations' concerns over the market activities of MNEs is the displacement of domestic entrepreneurs. If natives can learn the entrepreneurial ropes in a softer environment without MNE competitors, the argument goes, they can then spread their skills throughout the economy. The argument suffers severe limitations,<sup>12</sup> but it does flag certain empirical issues. MNEs have been entering these markets more and more frequently by buying out local firms; indeed, this mode of entry is more common the larger the supply of "good" local firms to buy.<sup>13</sup> Concern therefore arises about the fate of native entrepreneurs in "denationalized" enterprises. Evans (1979, Chapter 3) noted a handful of cases in which bought-out entrepreneurs transferred their skills to other industries in which local enterprise suffers less or no disadvantage. Vernon (1976*b*) suggested that since World War II local enterprises have become more viable competitors by sending managers abroad for business training.

A similar issue arises in connection with R&D done by MNEs and local firms. Although MNEs decentralize some R&D to subsidiaries' locations (see Section 7.1), partly in response to host-government pressures, levels of local R&D spending often are perceived as low by host governments. The implicit model of market failure holds that the skills acquired by nationals in undertaking R&D yield greater value for the national economy than their opportunity cost, presumably because not all rents from new knowledge of special local relevance get collected by the R&D proprietors, or because R&D skills somehow spill over onto other activities. If national firms undertake R&D at all, the evidence from Chapter 7 leads us to expect that their spending rates will be higher than those of local foreign subsidiaries. Fairchild and Sosin (1986) determined that subsidiaries in Latin America are more likely to

toward simple manufactures and export-oriented production. In these sectors Cohen found no obvious differences in terms of share of output exported, wages, employee turnover, thickness of the value-added slice, or other descriptive features. Also see Gershenberg and Ryan (1978) and Riedel (1975).

<sup>12</sup> Nationals also learn the ropes by working for MNEs before venturing on their own. Also, the fact that nationals may rise to the occasion when put on their own mettle does not preclude learning more by watching the successes (and mistakes) of foreign managers.

<sup>13</sup> One implication of MNEs' lower opportunity costs of capital is that they will discount the expected future cash flow of a national firm at a lower rate than will its local owners and hence will be willing to pay more than their asking price.

use foreign engineering consultants and to hold licenses from abroad than domestic firms, but all rely on imported equipment, and domestic firms depend more on their own research. Evans (1979, Chapter 4) concluded that Brazilian domestic pharmaceutical firms have done reasonably well in developing local products, whereas the foreign subsidiaries depend on their parents' innovations.

Numerous studies address differences in productivity and profitability between MNEs and local firms. The various sources of rents linked to MNEs' activities, identified in preceding chapters, imply that MNEs will on average be more profitable than competing single-nation firms, although that margin will vary from sector to sector. S. Lall's (1978*a*) survey concluded that most studies have found this difference, although in the more careful inquiries it has not always proved statistically significant.<sup>14</sup> Aggregate data for the United States indicate no difference in the profitability of subsidiaries between developed and developing countries once the petroleum sector has been omitted (Leftwich, 1974). Although there are reasons why MNEs' activities should be more profitable in developing countries (risk premia, monopoly positions in small markets), there are also reasons why actual or reported profits may be lower (regulations, transfer-pricing incentives). In any case, the prevailing pattern is for subsidiaries to show higher profits; those can be regarded as stable rents, as well-controlled studies such as Fairchild and Sosin (1986) find no difference in rates of growth or technology adoption.

Productivity comparisons raise many complex issues, some of which will be developed subsequently, but they yield a few generalizations. Among the more advanced economies, MNEs seem to enjoy no intrinsic productivity advantage independent of the transaction-cost advantages that make them MNEs in the first place. This was shown most fully for Argentina by Vendrell-Alda (1978). Similarly, Tyler (1978) found no differences within most Brazilian industrial sectors, although MNEs seem to enjoy higher residual productivity when all industries are lumped together. Tyler's results associate the advantage with scale economies enjoyed by the MNE rather than with intrinsic efficiency. Lim (1976) found for Malaysia that large raw differences in capital utilization favoring the MNEs disappear when controls are imposed for various factors including the professionalism of management. Negandhi (1975) likewise found no difference between foreign subsidiaries

<sup>14</sup> Gershenberg and Ryan (1978); Willmore (1976); Lall and Streeten (1977, Chapter 6). Yoshihara (1976) applied no statistical tests to his extensive data on Singapore, but they seem consistent with no significant difference.

and comparable local firms. In the studies assembled by Ramstetter (1991) foreign subsidiaries and local firms in Thailand appear to use identical technologies, but with the subsidiaries more efficient (pp. 89–92); no advantage appears in Korea, where a sufficient explanation is public policy limiting activities open to MNEs (pp. 111–23). Studies using the methodology of frontier production functions have found that, after controlling for such factors as size and age of firm, foreign control accounts for no statistically significant difference in a firm's efficiency (Tyler, 1979; Pitt and Lee, 1981).<sup>15</sup>

### Skills, Wages, and Employment

The next group of issues concerns the wages that MNEs pay, the training that they provide, and the level of employment offered. Although MNEs' affiliates are expected to pay the going local wage for labor of given qualifications, the statistical evidence (see Chapter 5) suggests that they pay, on average, higher wages in the developing countries. The survey of Reuber et al. (1973, pp. 175–6) found that the majority of MNE respondents pay the prevailing wage, but an appreciable minority pay more, and national surveys (e.g., Markensten, 1972, pp. 88–93, 102–10; Willmore, 1986) typically have reported higher wages in MNEs. In a careful statistical analysis Lim (1977) found the MNEs' wages in Malaysia to exceed those of national companies, even with many variables controlled, although the excess comes in fringe benefits rather than the basic wage. The normative significance of the wage differential is an open question. It may involve the transfer of rents to the work force. It may reflect a preference of alien entrepreneurs for better “quality” workers, or those already accustomed to industrial work in local firms (which suggests that the local firms' lower wages may partly reflect training benefits). Neither of these cases involves any transfer of rents except to the extent that foreign investment reduces structural unemployment. Also, an adverse corollary of any tendency of MNEs to pay high wages is their incentive to import labor-saving technology that could be welfare-reducing (Berry, 1974: also see Lapan and Bardhan, 1973).

Some sources (e.g., Chen, 1983c, pp. 51–63) suggested that MNEs invest heavily in training labor. But training does not appear to be a major or distinctive activity of MNEs, and it bestows no benefits on the host country

<sup>15</sup> The utilization rate for physical capital is commonly an important component of industrial efficiency. Gershenberg (1986) investigated this issue in Kenyan firms, finding no significant ownership-related differential after controlling for size and industry.

if employees themselves finance it through apprentice wages. Reuber et al. (1973, pp. 172–4) found no evidence of apprentice wages, since rates of labor turnover are high in the foreign subsidiaries,<sup>16</sup> MNEs apparently cannot capture all the rents of the training that they provide. However, Svedberg's (1977, pp. 123–32) analysis of the limited evidence available indicates that the aggregate value of the resulting externality is small. Reuber et al. (1973, pp. 169–72) also provided evidence on the use of native employees in skilled and managerial positions, where any significant training benefits should accrue. Managerial and engineering positions had only a bare majority of nationals when the average project began, but the proportion had risen to 70 percent by the time of the survey. This survey also showed that the skilled proportion of the work force is much lower for export-oriented subsidiaries than for those serving the domestic market.

In industrialized host countries the main labor-force issue has been the stability of employment. McAleese and Counahan (1979) explored this issue for Ireland. They found ad hoc reasons why employment in foreign subsidiaries might be either more or less stable over a recession period than in domestic companies, but no compelling factor running either way. They found employment to be more stable in larger plants and in firms that perform a marketing function locally (and perhaps thereby able to “manage” demand somewhat), but no difference associated with nationality.

### Choice of Technology

A suspicion commonly voiced in developing countries holds that MNEs create too few jobs because they fail to adapt their technologies, designed for industrial-country wages and capital costs, to local factor prices. This issue has been extensively investigated, perhaps because the thought of capital and labor optimally combined can drive economists to ecstasies that other humans find baffling. It involves not just MNEs but also whether technology developed in the industrial countries gets adapted efficiently by any local users. As S. Lall (1978a) suggested, the issues boil down to whether or not the advanced-country technologies familiar to the MNEs (1) are economically adaptable to the developing countries' conditions of labor abundance,

<sup>16</sup> Other investigators (Cohen, 1973) disagreed, finding low rates of labor turnover among foreign subsidiaries. Diverse patterns are likely, but subsidiaries that pay higher wages can expect to reduce turnover. Host-country gains from rents to labor therefore trade off against any gains from the circulation of trained personnel.

(2) are in fact adapted by MNEs, and (3) are adapted better than by local firms.<sup>17</sup>

The first question gets only a general answer here. The labor intensity of a production process can be quite inflexible: There is only one way to make  $x$ , or only one that is efficient over a wide range of factor prices. Or, technologies might be adaptable to developing countries' factor prices, but only with an investment in devising and developing the technology that is large enough to deter the individual firm. Why, then, does some firm not make the adaptation and profitably license the results worldwide? The limitations of the market for proprietary technology (see Chapter 7) supply one answer. Also, technology can be specific to many local conditions besides relative factor prices.<sup>18</sup>

Some direct surveys address MNEs' adaptations to developing countries' local cost conditions. Reuber et al. (1973, Chapter 6) reported that MNEs make adaptations of technologies rather infrequently, the process technology being unchanged in 73 percent of their cases, quality-control systems unchanged in 83 percent. Courtney and Leipziger (1975) employed an interesting statistical research design that compared the technology choices of foreign affiliates of U.S. MNEs in developing and industrial host countries. They determined whether or not the two sets of subsidiaries appeared to operate from the same production function and, if they did, whether or not the subsidiaries adopted more labor-intensive technologies appropriate to their surroundings. In most industries more labor-intensive technologies were chosen in the developing countries; in some cases the underlying production functions seemed to differ, in others only the equilibrium capital-labor ratio chosen along a common function. In a study similar to Courtney and Leipziger's, Lipsey, Kravis, and Roldan (1982) showed that foreign subsidiaries of U.S. and Swedish MNEs choose capital-intensities that increase with host countries' wage rates, with industry and scale of operation controlled.<sup>19</sup> Yeoman (1976) found the amount of adaptation to vary greatly from industry to industry, which could be due to intrinsic differences in technology.

<sup>17</sup> For more complete surveys, see S. Lall (1978*a*), Chudson and Wells (1974), Moxon (1979), and R. Jenkins (1990).

<sup>18</sup> Grossman and Razin (1985) presented a rather contrived model in which MNEs choose more capital-intensive techniques because holding capital in different countries is an effective way to spread risks.

<sup>19</sup> The factor-price conditions of the source country apparently can also matter. Ranis and Schive (1985, pp. 115–16) found that Japanese subsidiaries are more labor intensive than U.S. subsidiaries in every broad Taiwanese industry, and in both domestic-market and export-oriented investments.

Several results confirm that adaptations of technology are costly, so that only the inexpensive or the necessary ones get made. Yeoman (1976, Chapter 6) suggested that adaptation takes place only in activities where the potential effect on the product's unit cost is substantial. Reuber et al. (1973) and Martinussen (1988, pp. 153–4) found that adaptation frequently is to the smaller scale of operation in developing-country markets rather than to different factor prices. Morley and Smith (1977a), Hughes and You (1969, pp. 195–4), and Chen (1983c, pp. 148–49) also found that a lot of adaptation takes place, but mostly to small scales of operation. Strassmann (1968) reported fairly widespread use of secondhand machinery by MNEs in Mexico and Puerto Rico – a low-cost way to access the lower capital-intensity of the preceding generation of industrial-country technology (Markensten, 1972, pp. 97–101). Both MNEs and domestic companies tend to stick with machinery from their own nations (Morley and Smith, 1977b; Lecraw, 1977), possibly due to the transactions costs of worldwide search for other wares. Forsyth (1972, pp. 124–7) suggested that the amount of adaptation increases with the subsidiary's age and experience. However, Chen (1983c, pp. 102–19) argued that in Hong Kong's efficient input markets there is no reason to expect different technology choices, and in a well-controlled study none appear except in the garment industry, where they can be ascribed to different products. For individual affiliates of U.S. MNEs, Borga and Lipsey (2004) analyzed variations in producers' plant and equipment per worker with wage and the affiliate's scale of operation, finding significant positive influences for both variables.<sup>20</sup>

If MNEs do some (but not much) adopting of technology to developing countries' cost conditions, how do their input choices compare with those made by local firms? Numerous studies found differences, although only a few controlled for many contributing factors (R. Jenkins, 1990). Without control for industry mix, for example, MNEs' plants might be capital-intensive because they operate in more capital-intensive industries. Even with industry mix and perhaps other variables controlled, the results are still diverse. Morley and Smith (1977b) found foreign firms more capital-intensive in about half of the industries they analyzed, and size differences were not involved. Examining a small number of matched pairs of foreign

<sup>20</sup> Borga and Lipsey found that individual MNE parents' capital-intensities strongly influence the capital intensities of their affiliates. The parental variations in capital intensity might be due to the MNE's product choices within its industry or to firm-specific choices of technology. Another finding about factor-intensity choices: subsidiaries that export select their capital intensities 50 percent more sensitively to wage variations than those that do not.

subsidiaries and local companies in Mexico and the Philippines, Mason (1973) found the subsidiaries to be more capital-intensive on both stock and flow measures of capital. Wells (1973) identified specific technologies, so that the choices made by his Indonesian firms could be unambiguously classified; four-fifths of the foreign firms chose the capital-intensive technology, but only one-tenth of the local firms. Forsyth and Solomon (1977) (also see Solomon and Forsyth, 1977) found a similar difference for Ghana, as did Biersteker (1978, pp. 123–29) for Nigeria.<sup>21</sup> Most studies not reporting the result, such as Pack (1976), Cohen (1975, Chapter 3), Riedel (1975), and Chung and Lee (1980), were based on industries not heavily tenanted by MNEs or export sectors in which MNEs are expected to employ labor-intensive processes.

These studies suggest several explanatory factors. MNEs might face different factor prices, MNEs might rationally not base their technology choices on local capital costs, and several papers that found MNEs more capital-intensive also report that they pay higher wages (Wells, 1973; Mason, 1973; Forsyth and Solomon, 1977; Biersteker, 1978, pp. 137–42). Labor-intensive processes incur increased costs of supervision and coordination that can easily offset their ostensible advantages (Strassmann, 1968). A monopoly market position mutes the incentive to adapt efficient technology (Wells, 1973; Yeoman, 1976; White, 1976). Wells (1973) argued that an absence of market pressure allows playroom for “engineering man,” who relishes technical sophistication for its own sake. However, monopoly cases blur into those for which capital-intensity serves to maintain quality control in a product subject to a worldwide trademark (Wells, 1973; Keddie, 1976), and it is not clear that an explanation based on technical inefficiency is needed.

Several studies classified the enterprise population more elaborately than MNE versus local. Forsyth and Solomon (1977) divided national enterprises in Ghana into those owned by natives and those owned by resident expatriates. What factor-intensity differences they found distinguished native-owned firms (less capital-intensive) from all others, suggesting that something other than entrepreneurial residence may be involved. Morley and Smith (1977*b*) made two-way comparisons among U.S., German, other Western European, and national firms in Brazil. Value added per worker turned out to be greater for U.S. MNEs than for other MNEs, and greater for MNEs than for national firms. They concluded that these differences

<sup>21</sup> Lecraw (1977) concluded that MNEs based in developing countries and operating in Thailand make more efficient adaptations than do developed-country MNEs.

reflect some unknown combination of chosen factor proportions and out-right efficiency differences.

### Linkages

A concept stressed in the literature on development is linkages of input-output relationships extending back from the purchases made by a firm and forward through the inputs that it supplies to others.

The implicit assumption is that many cells in the input-output table of a developing country are empty for lack of entrepreneurial effort or other requisites. Encouraged by a specific demand for an output or a concrete supply of an input, a viable activity may spring up. MNEs' critics in the developing countries claim that MNEs do not generate enough of these linkages (Singer, 1950). Although this proposition is not itself operational, some factual evidence does appear that can be related to the behavior that is expected of MNEs. Studies of foreign subsidiaries in industrial countries indicate that their purchases of inputs from the host-country market tend to increase as the subsidiary matures (Safarian, 1966, Chapter 5; Forsyth, 1972, p. 115; McAleese and McDonald, 1978). Developing nations take some of the rents they can extract from MNEs in the form of requiring more local inputs. Case studies such as UNCTC (1992*b*) on Mexico show that local subcontracting of inputs is undertaken largely to minimize costs, only partly under imposed obligations, and the main contractors extensively provide training in quality control and technical assistance (pp. 42–45). Activities undertaken by MNEs differ considerably in terms of linkage potential; MNEs doing labor-intensive processing of components for export buy few local inputs, only half as much as other projects according to Reuber et al. (1973, Chapter 5). Most of their respondents claim no forward linkages, but a substantial minority boast (perhaps self-serving) of encouraging numerous local distributors or sales organizations.

A few researchers investigated these linkages statistically. Biersteker (1978, pp. 89–91) found that MNEs' affiliates in Nigeria purchase more inputs abroad than do native firms, but the difference stems mostly from MNEs' prevalence in newer products. Cohen (1973), who sampled closely matched pairs of foreign and domestic firms, also found that the foreign subsidiaries import more. Langdon's (1981) study of Kenya associated subsidiaries' reliance on imported inputs with quality control and determined that the inputs come principally from affiliates abroad. Buckley (1974), McAleese and McDonald (1978), and O'Loughlin and O'Farrell (1980) found that



foreign subsidiaries in Ireland buy fewer local inputs than do national firms, especially if the subsidiary draws inputs from an overseas affiliate. Foreign subsidiaries make smaller (but increasing) proportions of their sales into the Irish economy (potential forward linkages) than do domestic firms.

It seems important to recognize that vertical linkages can occur across national borders as well as between foreign subsidiary and domestic forms within a country. Hobday (1995) documented the extensive transfers of technology and business practice by foreign customers (MNEs and others) made to firms in the industrializing Asian nations in the setting of long-run supply contracts and joint ventures.

Theoretical models have developed the point that foreign direct investment can raise productivity for the host nation simply by enlarging its economy, in some models of underdevelopment. Rivera-Batiz and Rivera-Batiz (1990) assumed that the manufacturing sector (constant returns to scale) purchases business services as inputs, and each differentiated business service incurs a fixed cost of production ( $F$ ). The productivity of the manufacturing sector increases with the number of business services available, which in turn is determined by the economy's (the manufacturing sector's) size relative to  $F$ . Inflows of direct investment then increase manufacturing productivity in two ways: By enlarging the manufacturing sector they make more business services viable; and by bidding down the economy's cost of capital they reduce the effective size of  $F$ . Malley and Moutos (1994) addressed the externality of increased employment that stems from inflows of direct investment (driven by the migration of new goods technologies as in Krugman, 1979) when the host economy has an unlimited labor supply at a convention-driven opportunity wage. Lin (1993) estimated an econometric model across 23 semi-industrialized host countries to analyze linkages in a related model. Lin employed a two-sector model: an export-processing sector containing foreign affiliates and a domestic sector. The export-processing sector hosts MNEs' proprietary assets (their prevalence indicated by license and royalty fees remitted to the United States), and the growth of payments for those stocks (weighted by the export-processing sector's importance) indeed exerts a significant positive influence on aggregate output growth, with the growth of capital and labor controlled. The growth of the export-processing sector itself exerts an independent positive influence on aggregate economic growth, in the spirit of export-led growth models.<sup>22</sup>

<sup>22</sup> The linkages investigated by Lin encompass the specific leakages and spillovers of MNEs' technologies, analyzed in Section 7.2.

### Capital Inflows, Saving, and Balance of Payments

The next issue concerns the net contributions made by MNEs to the capital stocks of developing countries. Closely related is the effect of their financial activities on a developing country's balance of payments. The simple view of foreign investment as capital arbitrage contrasts sharply with the allegation that foreign affiliates borrow much capital locally, earn high profits, and soon are removing more capital from the developing nations than they imported at the outset. As we saw in Sections 5.2 and 6.4, drawing conclusions about these questions once again entails tricky issues of controlled experiment. But the MNE is not primarily an arbitrageur of capital, and risk-bearing considerations explain matching of local-currency assets and liabilities.

The qualitative finding that industrial MNEs are unimportant sources of net capital inflows is clearly established. The capital stock of the typical nonextractive subsidiary in a developing country is small (Cohen, 1975), and MNEs seem to account for only a small proportion of the capital inflow to some of the more successfully developing, such as Korea (Westphal, Rhee, and Pursell, 1979).

Whether the capital that MNEs bring to developing countries is "a lot" or "a little" may matter little for their welfare. If capital is indeed scarce and commands a high return, that reward tends to pass directly to the foreign investor (after the tax collector's bite). The arbitrage premium does not raise the developing country's own national income. Indeed, an influx of MNE capital can lower the rate of return to domestic savers, depressing their rate of saving and hence the growth rate of the national income. The same proposition can be stated in other ways: The reward to domestic labor might rise and that to domestic capitalists hence fall, reducing saving if only the capitalists save; or the MNE might preempt investment opportunities, discouraging local capitalists from saving in order to seize them. A number of studies investigated this relationship statistically. Using data for 21 developing countries, Areskoug (1976) related aggregate domestic fixed-asset investment to various sources of gross saving available to the economy – foreign private investment (including direct), government borrowing abroad, and domestic GNP (source of domestic saving). If a dollar of capital inflow is associated with less than one dollar of domestic investment, we can suppose that domestic saving was reduced somewhat and consumption increased. Areskoug found that for the typical case, private foreign investment and government borrowing abroad each produces a good deal less than a dollar of capital formation per dollar of inflow. This "leakage" appeared to be less in developing countries with more authoritarian governments, where

agents in the private sector probably enjoy less chance to make an economic response to the injection of capital from abroad.

Areskoug's results are generally consistent with those of several other studies. Bosworth and Collins (1999) analyzed a panel of 58 developing countries, relating national investment and saving (each normalized by GDP) to inflows of direct investment, portfolio investment, and loans. A unit capital inflow (all types), they found, effects a resource transfer of 0.69, and foreign direct investment brings a unit transfer. Inflows' effects on saving, however, produced puzzling results.

Another study of interest is Weisskopf (1972). He employed the "two-gap" model of development planning, which suggests that the country's growth rate can be constrained either by the amount of savings available for investment or by the nation's foreign-exchange earnings available to buy development-related imports. Weisskopf identified those countries in which savings appear to be the binding constraint, and for them he estimated that a given net capital inflow from abroad prompts a 23 percent offset in the form of reduced domestic savings.

The two-gap model and the foreign-exchange constraint on development provide the basis for much critical discussion of the MNE's repatriation of profits and other payments (such as royalties). MNEs contribute foreign exchange when they first invest, of course. The ongoing foreign subsidiary borrows locally, plows back its profits, but eventually remits cumulative earnings that may be large relative to its initial injection of foreign exchange. Its output may replace imports (and save foreign exchange), but its purchases of imports from abroad are a drain on foreign currency. Obviously no general presumptions arise as to the effects of MNEs in the country that places a high shadow price on foreign exchange (see Section 6.4).<sup>23</sup>

Closely related to the foreign-exchange constraint is the research inquiring whether foreign subsidiaries or domestic firms import or export more (Willmore, 1986; Jenkins, 1990). This literature holds little interest for reasons implicit in Section 9.1: Whether a subsidiary does or does not import or export depends on the nature of the profit opportunity that it seeks to exploit, and without controlling for these opportunities one cannot predict any particular relationship of foreign ownership to trading activities. Willmore (1992) is a good example of a study that takes this problem seriously, to good effect. Petrochilas (1989, Chapter 7) modeled Greece's exports as depending on terms of trade and supply capability, with foreign direct investment

<sup>23</sup> See Biersteker (1978, pp. 93–97) and Lall and Streeten (1977) for typical analyses. Bos, Sanders, and Secchi (1974) developed an ambitious model.

contributing to supply along with domestic investment and technology inflows. Smits (1988) analyzed the cross-country association between direct-investment stocks and exports and imports (with GNP and population controlled): In small countries a significant positive relationship exists between foreign investment and both exports and imports, although for the full sample of countries neither relationship is significant. The result presumably reflects MNEs' propensity to seek profit opportunities wherever they may be, with production for the local market holding greater attraction in large countries.

There is also evidence that MNEs respond with alacrity to both market and governmental incentives to shift their activities from the local to the export market. UNCTC (1992*b*) analyzed Mexico's 1982 reform, which removed many controls and regulations, imposed performance requirements on many foreign subsidiaries in the auto, computer, and office equipment industries, and at the same time heavily devalued the currency. Between 1982 and 1987 U.S. foreign subsidiaries increased their combined exports/sales ratio from 11 to 32 percent, much of this through inter-affiliate trade. Survey respondents confirmed that the initiating change in public policy was accommodated by changes in strategy through the whole MNE.

### **Rate of Growth**

MNEs' effects on the nation's rate of economic growth might seem to provide the ultimate relationship to be investigated. Unfortunately, it seems a rather ineffective focus for research. All the effects of foreign investment noted earlier can alter the nation's growth rate in various ways, and pursuing the individual strands of influence beats trying to measure some amalgam of diverse effects, each with its own time structure of operation. No overall theoretical prediction connects the stock of foreign investment to the rate at which national income grows. Even if foreign investment should have spillover effects that raise the *level* of national income, these need not translate into an ongoing favorable effect on the rate of growth. If foreign investment generates a flow of investible tax revenues for the government, it can increase the growth rate. If it reduces the private sector's rate of saving, it can lower the growth rate. Many other hypotheses are possible.

The empirical research on this topic has suffered both from this lack of theoretical guidance. It is generally agreed that the stock of foreign investment per capita is positively correlated among developing countries with GNP per capita, but that fact leaves open the causation involved, which could clearly run in both directions. Let us consider some of the recent investigations. Blomström, Kokko, and Zejan (1994) concluded that the growth of income

per capita in developing countries between 1960 and 1985 is increased by the average ratio of the inflow of foreign direct investment to GDP over that period, on the basis of a significant positive regression coefficient in a model with reasonable controls for other influences. A limited analysis of lead-lag relations seems to support this finding, but the obvious two-way causation was not addressed directly. Carkovic and Levine (1996) did address the simultaneous causation between foreign investment and growth, in a sample of 72 countries observed from 1960 to 1995. Their analysis related inflows of foreign direct investment (specifically its exogenous component) to the growth of GDP per capita. No robust positive influence was found, but the restrictive specification of the test might be the cause. Balasubramanyam, Salisu, and D. Sapsford (1996) focused on a distinction between countries maintaining trade policies of import substitution and those pursuing export promotion. They computed elasticities of GDP growth to the ratio of foreign direct investment to GDP for both sets groups of countries, finding a significantly higher value for those following a policy of export promotion. Borensztein, De Gregorio, and Lee (1998) employed a similar panel data set and took into account the sample countries' stocks of human capital (secondary education). Similarly Alfaro et al. (2004) observed that the responsiveness of GDP per capita to foreign direct investment (and other capital inflows) depends on the country's level of financial development; in the less developed nations the effect of foreign investment on income per capita is not positive. Overall, a significant positive influence of foreign investment on growth was found, but it varies with human-capital levels and levels of financial development disappears when they are sufficiently low.

### **Tariff Protection, Import-Competing Foreign Investment, and Welfare**

An issue that has attracted much theoretical research is the potential adverse effect on the small host country's welfare of inflows of foreign investment attracted to industries sheltered by tariffs. Inefficient production is enlarged, if foreign capital is paid its marginal product at tariff-inclusive domestic prices. Tariff revenue is lost to the government (although tax revenue might be gained). Welfare declines (Minabe, 1974). Brecher and Diaz Alejandro (1977) pointed out that this impairment of welfare will be reversed if the capital inflow proceeds far enough to affect domestic factor prices. Where the country's optimal tariff is positive, Svedberg (1977, pp. 43–52, 1979) showed that it might need to ban foreign investment in order to prevent welfare-reducing inflows (Markusen and Melvin, 1979, examined these issues in the context of a two-country model). However, Sechzer (1988) showed that a

sufficiently high tariff can cause capital flows large enough that the overall effect is welfare-increasing. Other contributors to this large literature investigated the effects of trade restrictions other than tariffs (Buffie, 1985, 1987; Dei, 1985), other economic distortions such as unemployment (Brander and Spencer, 1987; Buffie, 1987; Grinols, 1991) or scale economies in the import-competing sector (Ishikawa, 1991), the presence of nontraded goods (Tsai, 1987), and strategic interactions between the tariff-setting country and a foreign monopolist (Levinsohn, 1989). Miyagiwa and Young (1986) addressed the problem in the context of host countries with different economic structures joined in a customs union.

These theoretical models have their empirical counterpart in research on the benefits and costs of foreign direct investments. The analyses of Reuber et al. (1973) and Lall and Streeten (1977; see the summary and evaluation of Encarnation and Wells, 1986) concluded that substantial proportions of projects have negative social rates of return largely associated with tariff protection that attracts the MNE investors. Almost all export-oriented projects yield positive social rates of return. Encarnation and Wells (1986) themselves analyzed fifty projects, finding that all of the export-oriented ones yield positive benefits, 55 to 75 percent of the whole sample (depending on the assumptions made). The normative problem of tariff-induced foreign investments is thus a real one; its cause of course is not the MNEs themselves but the governmental decisions that distort price signals.

Consider instead a two-sector specific-factors model, with internationally mobile capital used only in manufactures, land used only in agriculture, and labor used in both. An exogenous inflow of capital under free trade is welfare-increasing. However, a tariff again causes it to reduce welfare, and the optimal tax on inflows of capital exceeds the (given) rate of tariff on imports of manufactures (Brecher and Findlay, 1983). If the exportable (agriculture) sector's specific asset were also internationally mobile, exogenous inflows would increase welfare even in the presence of tariff protection (Srinivasan, 1983). R. W. Jones (1984) pointed out that the result does not depend on the correspondence between home and foreign technology, the factor intensity of the imported commodity, or whether or not the inflowing capital is sector-specific.

### 9.3. Third-World Multinationals

It was first recognized in the late 1970s that developing countries were beginning to sprout MNEs of their own. These apparently have expanded rapidly; no global data are available, but in Indonesia, they recently accounted for

56 percent of foreign-investment projects approved by the government, while between 1967 and 1977 they accounted for only 18 percent (Wells, 1993). A large literature has arisen on the properties of “third-world multinationals.”<sup>24</sup>

### **Motives for Foreign Investment**

The results are consistent with the transaction-cost analysis of the MNE amended to suit the institutional conditions of developing countries. The proprietary-assets approach on its face seems ill-attuned to them as source countries, resting as it does on assets built up by research efforts and large investments in goodwill assets. The third-world MNEs do indeed possess proprietary assets, but with properties different from those common in industrialized countries. Some foreign investors employ technologies appropriate to third-world relative factor prices (S. Lall, 1983, pp. 51–61); Ferrantino (1992) found that the likelihood of Indian firms investing abroad increases with their own R&D expenditures but decreases with patenting activity in their industry in the United States.<sup>25</sup> The advantages of Hong Kong-based MNEs turn out to be product designs rather than technologies (Chen, 1983*b*). Those with marketing goodwill assets depend on capabilities for serving customers and not advertising-based goodwill (S. Lall, 1983, pp. 61–2). In general, third-world MNEs cluster in traditional manufacturing industries, not those associated with advanced technology or rapid growth. An exception is Arab MNEs, which tend to be capital-intensive and associated with the petroleum industry and the wealth that it generated (Nugent, 1986).

A second property of third-world MNEs’ proprietary assets is that they complement entrepreneurial adaptation to third-world institutional conditions (Euh and Min, 1986). Korean MNEs, for example, depend heavily on the ability to use cheap skilled labor to design and operate projects abroad at low cost (Kumar and Kim, 1984). Some evidence that supports this is indirect: Third-world MNEs move abroad when their growth opportunities run out in the source country due to market conditions (Katz and Kosacoff, 1983) or curbs imposed by the government (Aggarwal and Weekly, 1982). Foreign investment would not be attractive in such cases without some

<sup>24</sup> Early investigations included Lecraw (1977), the chapters by Wells and Diaz Alejandro in Agmon and Kindleberger (1977, Chapters 5 and 6), Yoshihara (1976, Chapter 7), Heenan and Keegan (1979), Kumar and McLeod (1981), and Wells (1983). Aggarwal and Weekly (1982) and Aggarwal (1985) provided literature surveys.

<sup>25</sup> Ferrantino (1991) analyzed the advantage in technology adaptation theoretically.

entrepreneurial advantage. A specific entrepreneurial capability important in export-processing activities is a reputation for prompt delivery of products meeting agreed standards of quality and/or uniformity (Wells, 1993). As a qualification of Chapter 1's transaction-cost model of the MNE, if the supply of entrepreneurial capability is inelastic (as in developing countries), foreign investment can occur simply because a nonnative entrepreneur can excel marginal native entrepreneurs.

Some foreign investments from developing countries fit the standard case of vertical integration either backward into securing raw materials or forward into the distribution of manufactured exports. Korea in this regard follows in Japan's footsteps (Euh and Min, 1986), and backward integration is also observed in Latin America (UNCTC, 1983*b*, p. 14).

A motive for foreign investment distinctly strong in the third world is the spreading of risks. These include both political risks of governmental interference or instability and economic risks of exchange-rate and other disturbances. Some foreign investments substitute for forbidden outflows of personal capital to safe destinations; certain source countries permit foreign investments only by means of machinery exports, mandating a joint venture abroad to mobilize other inputs (S. Lall, 1983). However, Lecraw (1977) concluded that these MNEs are less sensitive to host-country risks than other MNEs, and that they have a comparative advantage in dealing with host governments.

Another distinctive feature of third-world MNEs is the prevalence of personal foreign investments, especially those of ethnic Chinese in Southeast Asia (Yoshihara, 1976, Chapter 7). Here the capitalists move with their capital, and the traits of the resulting enterprises are indistinguishable from those of host-country national firms (see Ranis and Schive, 1985, on Taiwan). At the opposite pole, Lecraw (1992) showed that foreign investment in export-oriented projects by Indonesian industrial groups is strongly complementary with each group's development in its home base as well. While foreign investments were occurring, the typical group also improved product quality, lowered costs relative to Indonesian rivals, and increased its capital intensity.

### **Destinations and Activities in Host Countries**

Strong regularities appear in the relationships between the source and host countries of third-world MNEs. These investments flow from higher-income to lower-income developing countries. The host countries tend to be nearby and/or familiar nations: Indian firms to English-speaking and Argentine



firms to Spanish-speaking countries. Ferrantino (1992) confirmed this and showed that the prevalence of source-country migrants in the host country is also a positive predictor. Several studies find source-country exports to the host a positive predictor of foreign investment, which could be for various reasons. Trade barriers are pervasively important influences on the location of third-world MNEs. These include not only the obvious host-country restrictions but also international regulatory regimes such as the now-terminated Multifibre Arrangement in textiles, which induced firms in quota-constrained exporting countries to expand their outputs elsewhere (Chen, 1983b).

Joint ventures and minority participations seem to be much more common in the subsidiaries of third-world MNEs than among industrial nations' MNEs that possess strong proprietary assets (e.g., UNCTC, 1983b). Among the factors contributing to this are inexperience of the MNEs and thin administrative resources that cause subsidiaries to be left with considerable autonomy (Aggarwal and Weekly, 1982). Operating scales of the foreign subsidiaries are typically quite small – for this organizational reason and also the lack of scale economies in third-world MNEs' typical activities. This pattern holds despite the fact that large firms are the ones most likely to make foreign investments (R. Lall, 1986). Comparison studies tend to find that foreign subsidiaries of third-world MNEs are less capital-intensive than subsidiaries of industrial countries' MNEs, and indistinguishable from local firms (Athukorala and Jayasuriya, 1988).

The skimpy available evidence (Lee and Beamish, 1995) suggests that third-world MNEs may outperform the industrial nations when operating facilities in developing countries.

## 9.4. Economies in Transition

### Acquisition and Performance of Transition Firms

Although the developing economies and the Central and Eastern European economies in transition present very different issues regarding MNEs, they benefit from juxtaposition. The end of central planning and privatization of state-owned enterprises immediately opened opportunities for MNEs, especially those based in Western Europe. The opportunities brought challenges, however, to deal with novel problems of selecting an entry mode and operating within the resulting governance framework. Evidence on why MNEs sought access to the transition markets agrees nicely with the proprietary-assets theory of the MNE. Western firms with strong proprietary assets had

been denied access to these markets under central planning, so they had well-developed proprietary assets ready to exploit in the transition markets. Nearly all German and British firms surveyed by Meyer (1998) concurred on this motive. Furthermore, decision-makers in the transition economies lacked the knowledge of standard commercial practice – how to operate in competitive markets, and that asset in the hands of the western firms also took on value (Klein, 1998, pp. 43–48).<sup>26</sup> Finally, Western enterprises seeking component inputs (vertical MNEs) had a strong incentive to shop for them in the transition economies. Czech Republic wages were roughly one-tenth of those in next-door Germany, and the transition economies were well endowed with skilled labor and engineering capability (Estrin et al., 1997, Chapter 2).

Given a strong motive to enter the transition markets, MNEs faced the standard question of which entry mode to choose. Meyer (2001) obtained questionnaire information on the modal choices of British and West German enterprises operating in the transition economies in 1994–95. Against the base case of full ownership, what factors prompted the alternative choice of joint venture, a nonequity contractual relationship, and exporting and/or importing? Meyer's (2001) main result was that the host nation's progress in the transition strongly encouraged the choice of full ownership. So did various indicators of the MNE's familiarity: wholly owned subsidiaries were preferred by MNEs with previous experience in the transition region. So did German firms, with closer institutional connections than the British firms in the sample. This pattern is consistent with findings about modal choices in the developing economies.

How well did transition firms perform after absorbing MNEs' equity? Uhlenbruck and De Castro (2000) obtained managers' subjective assessments of this performance along with accounting rates of return on assets. They focused on product-market relationships between MNE parent and subsidiary. Thus, profits are significantly higher when parent and affiliate operate in the same industry and when the two are vertically related, but performance is unrelated to whether the affiliate was absorbed organizationally into the parent. Performance deteriorates if the government, presumably with motives other than profit, retains any ownership stake in the affiliate. A later data set analyzed by Uhlenbruck (2004) focuses on the acquiring firm's

<sup>26</sup> Ghemawat and Kennedy (1999) related the change in foreign presence in Polish manufacturing industries to structural indicators of their presence (based on the standard proprietary-assets approach). After some interpretation of Poland's position in regional trade under central planning, the expected results were obtained.

experience: The affiliates' rate of sales growth increases with the acquirer's total number of recent acquisitions and the share of its global sales made in Central and Eastern Europe. Cultural distance between acquirer and affiliate (which here is highly correlated with geographical distance) significantly reduces the affiliate's growth. Finally, Fahy et al. (2000) exposed the importance of marketing assets in the performance of transition enterprises and their MNE connections. Research on the transition has also addressed the extent to which the former state enterprises underwent major reorganizations that would presumably lead to productivity gains. Djankov and Murrell (2002) reviewed all the studies of control changes involving workers, enterprise insiders, the state in commercialized enterprises, banks, investment funds and other block-holding investors, and foreign enterprises (actual or prospective MNEs). The MNEs were clearly among the most likely investors to bestir a reorganization of the enterprise, but they did not necessarily outperform other large outside block-holders.

Transition firms that acquired Western equity participation can also be compared to transition firms that did not. Djankov and Hoekman (2000) compared Czech Republic firms that did and did not acquire foreign equity participation between 1992 and 1996. At the outset foreign buyers picked better (more productive) acquisitions. Those organized as joint ventures did not also raise their productivity significantly faster, but acquired units under majority control did. Also, firms remaining independent suffered from competition with market rivals with freshly improved productivity.

### **Aggregate Performance in Transition Economies**

For the transition economies, like the developing economies, researchers have sought a connection between foreign investment and national economic growth. The long-standing inefficiency of the regime of central planning left abundant room for accelerated growth based on large efficiency gains before this opportunity could be exhausted. Campos and Kinoshita (2002) analyzed a panel of twenty-five transition economies from 1990 to 1998, finding a statistically significant contribution of foreign investment to real GDP growth. Furthermore, it does not depend on the transition economy having reached some threshold (e.g., sufficient human capital), in contrast to the developing economies. Lee and Tcha (2004) employed a similar database (sixteen transition economies, ten years), concluding that a unit input of MNE capital into the transition economies increases their labor productivity by an amount several-fold greater than a unit input of domestic investment. (Domestic investment was neither crowded out nor

pulled in by the foreign capital.) The statistical finding is consistent with the apparent prevalence of “brown-field” foreign investments, in which the entering MNE largely scraps the acquired business’s physical plant, keeping its trade-marks and other local business adjuncts and part of its labor force (Meyer, 1998, p. 48).

Although it is clear what sectors and activities in the transition economies have attracted foreign investors, one can also explore the factors that determine geographic source-country/host-country flows. Carstensen and Toubal (2004) estimated such a model from a data panel of ten source countries and seven leading transition economies covering 1993 to 1999. Their exogenous variables (all proved statistically significant) include the size of the host market (including its distance-weighted neighbor countries), its import restrictions, its relative unit wages, its tax rate, a host-specific country risk measure, controls for the host’s method and timing of privatization, and the relative capital and labor abundance in the source and host. The authors’ analysis of lags in the data indicated that capital inflows respond quite promptly to conditions in the host.

Besides the institutional developments associated with the transition, these countries face some policy choices in common with the developing nations. One of these is the amount of protection to provide to intellectual property. Generally, as a nation develops, its outputs shift toward activities that depend in some measure and fashion on intellectual property protection. Free riding on foreign nations’ intellectual property then exacts some cost to its own producers. Javorcik (2004) investigated the propensity of the investing firm’s base industry to the protection of intellectual property. She found as expected that entries by firms in these sensitive industries varies with a nation’s intellectual property protection, while investors in other industries are insensitive. For firms with some previous investment in a transition country, however, the quality of its intellectual property protection does not depend on the transition nation’s extent of protection.

## 9.5. Summary

This chapter addresses the causes and effects of foreign direct investments in developing countries. There the foreign subsidiaries tend to divide sharply into those producing primarily for export and those serving the domestic market – a reflection of the small sizes of most economies. MNEs are active in sectors where marketing entry barriers would otherwise limit developing countries’ manufactured exports, as well as in sectors that undertake labor-intensive stages of processing. Subsidiaries that serve domestic markets are

found in about the same sectors as their developed-country counterparts. Export-oriented subsidiaries and domestic-market subsidiaries differ in various ways: The former are more likely to be wholly owned by the parents and less reliant on local capital markets; as expected, there are no systematic or average differences in their profitability levels.

Despite hostile rhetoric, governments often offer substantial inducements to MNEs – tax holidays and infrastructure investments for the export-oriented, tariff protection for the import-competing. These inducements significantly affect choices of location. Economic theory casts a skeptical eye at countries' benefits from some of these concessions. If MNEs are lured into a small national market by an "inefficient" tariff, the investment inflow can reduce national welfare, but considerations of raising employment and host-country tax revenue can supply reasons for offering such inducements.

Systematic evidence on MNEs' effects on developing economies is not abundant. Foreign subsidiaries' relationships to surrounding market structures generally are similar to those found in industrialized countries. Although MNEs tend to populate concentrated sectors, they do not enjoy universal advantages over native entrepreneurs, nor do they always claim commanding market shares. National enterprises in the more advanced developing countries may do more R&D (if they do any at all), and native entrepreneurs who cannot compete successfully in sectors where MNEs are advantaged do flourish in other sectors.

MNEs on average pay higher wages than do domestic enterprises, and they may provide some training for which the benefits accrue partly to nationals who receive it. But the evidence does not suggest that either the training or the extra wages provide a large stream of rents to nationals.

Concern is expressed that the technology of industrial countries is not adapted sufficiently to the labor-abundant conditions of most developing countries. Survey evidence indicates that MNEs do some adapting, but not a great deal, and it appears that the costs of adaptation commonly are high relative to the benefits expected by individual companies. Much adaptation takes inexpensive forms, such as the use of secondhand machinery, or occurs incidental to designing facilities for operation on a small scale. Some studies find that foreign subsidiaries use less labor-intensive techniques than their national competitors. They may adapt less where product quality depends on use of the parent's home technology, or where the market structure provides less of a competitive spur.

MNEs' operations do not turn mainly on moving capital from where it is cheap to where it is dear, so they are not important sources of funds for capital-scarce economies. Foreign direct investments more than other

funds from abroad, tend to expand capital formation to an equal extent (other capital inflows yield less).

Third-world MNEs differ from their industrial-country cousins in possessing proprietary assets well suited to conditions in developing countries, and in having the incentive to avoid risks or the ability to deal with them in this setting. They are attracted to other (and nearby) developing countries, where they tend to operate at small scales in collaboration with local partners. They tend (especially the ethnic Chinese investments in Asia) to be little distinguished from local firms. But they are not clearly outperformed by industrial-country MNEs when operating on native ground.

The European economies in transition from central planning offered Western MNEs rich opportunities to apply their proprietary assets, but also their general capability to operate in commercial markets. Among the various entities assuming governance roles in the former state-owned enterprises, MNEs were among the most successful. Foreign investment contributes to the growth rates of these nations – more clearly than it does to the developing nations'. Bilateral country-level investment flows depend on the same host-country attributes as with such flows elsewhere, including the role for protection of intellectual property.

## Public Policy

The literature on public policy toward MNEs compels an approach different from previous chapters. To describe the policy issues and conflicts arising in each country touched by MNEs' activities would be a hopeless task. Therefore, we employ a telescopic approach that emphasizes not the substantive details of these issues but the behavioral context in which they arise. This chapter follows a two-pronged normative and positive strategy. First, the apparatus of standard welfare economics supplies conclusions about what economic policies will maximize real income. The relevant results, most of them reported in the preceding chapters, are recapitulated in the first section of this chapter. Then we attempt a sketch of governments' dealings with MNEs as political behavior in the context of economic choice. Are there simple models of political economy that can claim any empirical explanatory power? Do they line up with host countries' choices of regulatory regime?

### 10.1. National and International Welfare

The preceding chapters set forth the neoclassical welfare economics of MNEs on the following assumptions: First, each national government seeks to maximize the real incomes of its citizens, taking other nations' policies as given. Second, decisions about distributing that income get made separately from decisions about maximizing the pie to be divided. (We did, however, note some theoretical connections between MNEs' activities and the functional distribution of income.) Third, each enterprise is assumed to possess an unambiguous national citizenship, so that it maximizes its profits (or optimizes its profits and risks) in terms of one national currency and price set, and the nation's government can regard its maximized profit as a component

of national income.<sup>1</sup> Fourth, the MNE's proprietary assets lead it typically to face downward-sloping demand curves for its outputs (this assumption is sometimes applied to the source nation's competing MNEs as a group), and the host nation faces an upward-sloping supply curve of MNE resource commitments (in a sense that varies from model to model). Fifth, each country is assumed to make policy decisions on MNEs in its role as either source or host. The cross-hauling of direct investments makes many countries play both roles, but many policies can feasibly distinguish between domestic and foreign MNEs (subject to the equal treatment obligations under treaties and the threat of retaliation by other countries).

The normative analyses presented previously, generally resting on these assumptions, lead to results that will be reviewed after a few preliminaries. Foreign investment indicates arbitrated resources. To the extent that the arbitragers seek profits, and market prices are undistorted, arbitrage is a productive activity until the margin is competed away. On that simple basis rests any general presumption that the actual allocation of MNE resources is efficient. The same conclusion flows in more qualified form from the transaction-cost model of the MNE. Where alternative methods of allocation – administrative or market – can compete freely, the resulting distribution of activity between MNEs and single-nation companies can make some claim to pursue an efficient outcome. The claim is qualified by sunk costs and transitory disturbances that can make the outcome path dependent. At their best, the benefit-cost techniques of development planning can claim some usefulness for weighing the appropriateness of a foreign investment where shadow and market prices might diverge widely (e.g., Encarnation and Wells, 1986). Applications of benefit-cost analysis to MNEs, however, are seldom at their best. The approach usually dwindles into list making, the listed items running to poorly defined economic benefits and politically defined costs.

A generally positive Darwinian assessment of MNEs is also qualified by the distinction between national and global welfare. Bhagwati and Brecher (1980) pointed out that the presence of MNEs qualifies the proper choice of many policies ostensibly unrelated to foreign investment, because the policy

<sup>1</sup> The third assumption has not been defended explicitly in this book. The great bulk of MNEs clearly keep their legal and administrative headquarters in single national locations where most of their beneficial shareholders also reside. A few well-known bi-national MNEs are exceptions. So are some individual proprietors of MNEs based in developing countries, in that the entrepreneur may move with his capital when a foreign subsidiary is started. Finally, the increasing international diversification of securities portfolios chips away at the assumption.



instruments redistribute income between domestic income recipients and foreign suppliers of equity capital. To take their simplest case, suppose that national policy aims to maximize national income, that the nation exports capital-intensive goods, that all workers are citizens, but that all capital is supplied by foreigners. Moving from autarky (no trade) to free trade will maximize domestic product, but it will reduce national income because the real wage falls while the real return to capital rises. Svensson (1981) assessed (rather negatively) the generality of their finding. Now we turn to a review of the normative conclusions from preceding chapters.

### **Taxation**

Surely the most important case for positive government action toward MNEs lies in the field of taxation. Corden (1967), for example, stressed the density of assumptions needed to warrant a zero tax in a host country. If governments' revenue needs demand the taxation of profits, maximizing global welfare generally requires that all countries apply the same rate and that it apply to both foreign and domestic investments (see Chapter 8). For global welfare, it matters not which country, source or host, taxes the foreign investment income so long as the common effective rate applies. The divergence of national welfare from global welfare stems from two sources. The first grows from the host country's prior claim to tax the profits of resident subsidiaries. When investment flows to the host nation, tax revenue (and national income) is therefore transferred from source to host country. Optimal tax arrangements for the source require marginal equality between pretax returns to capital at home and returns abroad after payment of foreign taxes, which calls for giving MNEs only a deduction rather than a credit for taxes paid abroad. Optimal policy for the host depends on the tax policies of source countries, but it generally involves setting a tax rate no lower than that (assumed common) of the source countries. One important qualification applies because the source country lets its MNEs defer taxes on foreign profits until they are repatriated. With deferral put in effect, the host optimally lowers its tax rate below the source's but imposes a withholding tax on the dividends when they are paid to the parent. Tax competition can occur among countries, tending to cause underprovision of public goods and to shift tax burdens onto immobile factors. Alternatively, in countries that enjoy opportunities for exploiting monopoly/monopsony power in world markets for MNEs' services, optimal taxes will be higher, analogous to the "optimal tariff" on traded goods.

Taxes on capital interact importantly with tariffs on trade. Without the opportunity to annex tax revenue from abroad, the small nation (unable to improve its terms of trade) can lower its real income if its tariff induces a capital inflow to its capital-intensive import-competing sector, unless the capital inflow shifts its production structure enough to extinguish international trade (Brecher and Diaz Alejandro, 1977). This result is subject to many qualifications noted in Section 9.2. If all countries do tax capital, then the tariff becomes attractive for a small host country as a way to attract tax-paying capital,<sup>2</sup> although if capital is sector-specific, a particular tariff could fail by repelling more foreign investment from some industries than it attracts to others (Corden, 1967). Finally, in the general-equilibrium context of the Heckscher-Ohlin model, the capital stock in a (large) country influences its terms of trade, and the individual country might either tax or subsidize foreign investment because of the indirect effect on the terms of trade (R. W. Jones, 1967). All these tax applications aim to improve national welfare at the expense of global welfare.

Transfer-pricing decisions by MNEs seek (among other things) to minimize the burden of taxes and tariffs paid by the company. Tax minimization redistributes real income between countries and will be condoned by one, condemned by another (their effect on global welfare depends on the optimality of the underlying taxes being avoided). A country whose taxes and tariffs create incentives for adverse transfer pricing makes an optimal outlay on policing transfer prices in relation to the extra revenue captured. An ad valorem tariff can deter strategic transfer pricing of imported goods or components.

### Natural-Resource Rents

The economics of natural resources indicates that world welfare is maximized by the competitive extraction of nonrenewable natural resources by well-informed owners. Neither the owning country nor the using country gains from any different long-run program for extracting natural resources (although either would benefit from springing an unexpected monopoly or monopsony on the other). The efficient program for extracting resources leaves their owner with the maximum (present value of) scarcity rents. If the resource deposits are heterogeneous in quality or location, this same efficient allocation also yields differential rents to those deposits of better quality or

<sup>2</sup> The tariff is just one example of small profit-increasing market distortions that could play this role.

more favorable location (than the worst in actual use). MNEs enter the picture as bargainers with owning governments over the terms of extraction (see Section 4.4). The MNEs have no general interest (barring global monopoly power) in departing from the efficient program for extracting the resource. But they gain through any rents they can capture from the resource-owning nation (as will the resource-using countries if they are the homes of the MNEs). For the resource owners, if the extracting MNEs are not their citizens, the problem is to capture all rents imputable to the resource, leaving only a normal rate of return for the MNE. A predetermined royalty rate is not efficient for this purpose because it distorts the operating firm's output decision. Other instruments include demanding a "free" equity share for the government at the outset, requiring a local joint-venture partner, taxing, or nationalizing the project once in place. Shifting rates of taxation – the obsolescing bargain – might offer the highest yield by annexing not just the rents but also the quasi rents (depreciation allowances) from the project, but the possibility of such expropriation halts the foresighted foreign investor in the first place, and the host has an incentive to commit not to use its taxing powers fully.<sup>3</sup>

### Competition Policy

Competition policy, like tax policy, encounters the dilemma of discordant national and international interests (Section 4.3). In the absence of other distortions, maximum world welfare requires competitive markets. National welfare is similarly maximized by competitive domestic markets. However, each nation gains if it can monopolize its sales abroad (exports, foreign subsidiaries, rental of proprietary assets) and monopsonize its foreign purchases (including those by its MNEs' foreign subsidiaries). Private-sector monopoly is as good for this purpose as taxes and tariffs, unless the current shadow price on government revenue is positive. However, the country might lack policy instruments to make an industry behave monopolistically in its foreign sales or purchases but competitively in domestic transactions. An intermediate degree of competition in both foreign and domestic markets is then optimal.

<sup>3</sup> The source country without monopsony power lacks any instruments to help its MNEs to capture rents overseas. We can note the discussion over what the source can do to avert the obsolescing bargain. In the United States this issue has related to the Overseas Private Investment Corporation and to the use of various threats and punishments against countries treating U.S. MNEs in ways deemed unacceptable to the United States. See Bergsten et al. (1978, Chapters 9 and 13) and Haendel (1979).

The nation has a parallel interest in fighting off exactions by foreign monopolists (monopsonists). A tax on monopolized imports might be helpful even if the foreign monopolist produces subject to constant costs (this depends sensitively on the shape of the demand curve); authorities should pay attention to whether or not the tariff induces the foreign seller to invest behind the tariff wall, which may or may not be desirable. If foreign subsidiaries take part in noncompetitive domestic industries, and competition policy is confined to high-priority situations, it should first attack MNE-dominated sectors if monopoly leads mainly to excess profits, but sectors dominated by domestic sellers if monopoly leads mainly to inflated costs (technical inefficiency).

An extensive literature (surveyed by Krugman, 1989) addresses countries' opportunities for strategic profit-shifting policies in world oligopolies. Although most articles deal with trade policy rather than policy toward MNEs, the translation is typically straightforward. Core findings are that a country gains from any policy that can aid its national firm to shift to a higher-profit equilibrium in competition with a foreign rival. The policy instrument is (generally) a tax or subsidy applied to the home firm, modifying its behavior and indirectly causing the foreign rival either to reduce output (in Cournot competition) or increase price (Bertrand competition). The action might aim to affect the market equilibrium either at home or abroad. This literature suffers from at least two major limitations. First, it addresses the policy option open to one country on the assumption that the foreign nation (which loses from the policy change) remains passive. Depending on the model, rivalry in industrial policy can leave both countries worse off and calls for a coalition on the globally optimal policies noted above. Second, as a practical matter, the policy prescription (tax or subsidy) depends on the mode of competition in the global industry, a matter that is not obvious empirically.

### **Technology Creation and Transfer**

Technology policy toward the MNE can be regarded as either very simple or very complex. To make it simple, dwell on the analogy to the economics of the patent system. The outlays on innovation and the dissemination of innovative results that will maximize social surplus diverge from what profit-seeking firms will expend. The terms of the patent system can be optimized to minimize the discrepancy, although a discrepancy will remain. Buyers of innovative goods can, in principle, form a coalition to pay up as a lump sum the cost of investment in innovation, but the free-rider problem induces

each to try to avoid payment. In relation to MNEs, the source country hopes to collect monopoly rents on technology sent abroad, the host country hopes to pay as little as possible, and no arrangement emerging from this interaction is likely to maximize world welfare. Specifically, each country underallows the tax deductibility of outlays on producing globally useful intangible assets. The presence of many source and host countries worsens the problem by amplifying the free-rider elements.

The complexities enter via the theoretical models described in Chapter 7, which suggest the following points: (1) The source country has a self-interest in establishing property rights in new industrial knowledge, which the free-riding host will tend to resist. (2) The source country should cheapen the dissemination of its knowledge stock if the resulting production changes will improve its terms of trade. (3) On restrictive assumptions the source country could command the same innovative rents whether it exports the innovation embodied in goods, lets its MNE monopolize the host's market, or licenses the technology; if production is subject to diminishing returns, however, using more than one of these instruments becomes attractive. (4) The source country can trust its national MNEs to maximize the foreign rents to the nation's technology unless they compete as suppliers of technology or they value incorrectly the probability of technology leaking from proprietary control when licensed abroad or used by a foreign subsidiary. (5) The level of foreign investment optimal for the host country is increased if the MNE's proximity raises the rate at which its technology leaks into natives' hands or induces the MNE to infuse technology faster to its subsidiary (see Katrak, 1994, on other welfare aspects of R&D performed by MNEs in host countries).

The discussion in this section certainly does not cover every normative issue bearing on MNEs; any close study of the questions affecting a particular country (e.g., Bergsten et al., 1978; Graham and Krugman, 1991) will expose many more. However, they bring out the form that those issues take and the prevailing divergence among global welfare, source-country welfare, and host-country welfare. This divergence, long a staple in the theory of tariffs, proves widely relevant, especially because MNEs tend to be prevalent in markets with few participants.

## 10.2. National Policies: A Behavioral Approach

Traditional welfare economics assumes that the government wishes to maximize real income for its citizens and merely needs an economist's help with the technical details of its policies. The behavioral approach to public policy

assumes, instead, that governmental decisions result from self-interested agents interacting in a political setting. This positive treatment of policy decisions has had fair success in explaining countries' chosen patterns of restriction on imports of commodities, and we venture off in search of an explanation why they have made the policy choices that we observe toward foreign direct investment. Granted, many will see that venture as a voyage on a very leaky vessel. It is well known that until the 1980s most countries attracting much foreign direct investment surrounded it with extensive restrictions. In the 1980s, however, attitudes began to change massively, and countries found themselves competing to attract foreign direct investment rather than to repel it. Furthermore, it is quite clear what exogenous events underlay the change, starting with the collapse of central planning as a way to organize economic activity.

Even before central planning's demise, the general stance of public policy toward MNEs had been in motion. Host countries, especially developing nations, since World War II tended to hold a broadly suspicious approach to foreign subsidiaries that rested on a collection of both economic and noneconomic concerns (Vernon, 1977). In general this hostility began to recede in the 1970s, and regulatory policies manifestly took on a more clearly economic character (UNCTC, 1988*a*, pp. 239–329; 1991*a*). The process continued in the 1980s (Oman, 2000), with several factors contributing. In the developing countries the shift toward export-oriented growth strategies, the pressures associated with the crisis over their governments' international debts, and the general retreat of interventionist ideologies were important factors. Among the industrial countries a significant factor was the increase in the symmetry of countries' positions as both sources and hosts of foreign investment. The United States illustrates this, having long seen its interest as a source country but quickly erupting with the standard suspicions of foreign investors as the country first became a major host nation in the 1980s (Kudrle, 1991, reviewed some major diatribes). Also significant is the increasing density of alliances and agreements among MNEs of different nationalities, which effectively pools national interests (Cowhey and Aronson, 1993).

### Host Countries

We concentrate on countries in their host capacities, because policy toward resident foreign subsidiaries attracts more attention than policy toward overseas activities of the country's own MNEs. The policies implemented by or

urged on industrialized host countries prove particularly suggestive. Many are not easily reconciled with the preceding prescriptions of neoclassical welfare economics, and so they call out for other explanations.<sup>4</sup> They suggest two models:

*National preference.* The first model follows the research tradition by assuming a democratic political system in which the elected government, seeking to remain in power, proposes packages of measures expected to appeal to a majority of voters. Each vote goes for the package among those offered expected to yield the most utility to the voter. But what preferences will drive voters' choices? Economic self-interest is an obvious possibility. The voters as producers hold various equities in factor services that they supply, but one set of factor services, by assumption, yields income flows not reaching domestic voters: equities in the local subsidiaries of foreign MNEs. The government's package of measures can include various devices for redistributing income from the political minority to the majority, and these are expected to win approval up to the point where expected losses of income to the median voter due to inefficiencies of the redistributive devices offset that voter's gains from the redistributions. Because foreigners do not vote in national elections, pure redistributions away from foreign equity holders cause no negative votes and thus should proceed further than redistributions adverse to the interests of enfranchised minorities.<sup>5</sup>

Voters' tastes, as they affect politicians' efforts to assemble winning coalitions, need not be confined to narrowly economic benefits and costs. National preferences may also be nationalistic preferences: disutility from observing significant decisions about the use of the nation's resources being made by foreigners. Once free of the tether of economic value, economic reasoning loses its predictive power. Consider the (incumbent) foreign subsidiary that discharges some of its employees. Its plea that a domestic firm in the same straits would choose the same policy likely serves as no excuse. Voters who entertain nationalistic preferences may trade them against

<sup>4</sup> Useful descriptions of these policies have been provided: Kindleberger (1969); Behrman (1970); Vernon (1971, Chapters 5–7; 1977, Chapters 6 and 8); Parry (1973); Hodges (1974); Safarian (1978); Organization for Economic Cooperation and Development (1978, 1980); Wallace (1982); Behrman and Grosse (1990); and Stopford and Strange (1991).

<sup>5</sup> Foreign interests do not vote in elections, but of course they make campaign contributions and exert political influence through other channels. Their successful rent-seeking subtracts from the national income (Graham and Krugman, 1991). In general the political influence of foreigners is sensibly regarded as discounted from that of equivalent domestic business units.

“correct” economic reasoning in formulating their policy and electoral choices. For example, workers welcoming foreign investors who represent extra capital competition for labor serves might fear that foreign managers would be more hard-hearted in the policies they would impose in difficult times.

A different formulation of nationalistic preference holds that voters themselves prefer to deal with nationals and experience disutility from economic contact with foreigners. National preference in this version involves xenophobia, but not the aspect of collective goods invoked earlier. This form of preference could explain, say, a political decision to exclude foreigners from sectors bringing them into contact with large numbers of voters as stylers and sellers of consumer goods and services (broadcasting, publishing).

The national-preference hypothesis naturally leads into a consideration of interest groups, which provide an alternative way to think about political choice. MNEs (perhaps large companies in general) are commonly asserted to influence political decisions beyond their weight in voters’ preferences. This proposition derives from the fixed cost of lobbying activities, which weighs less heavily on the large firm. In an inversion of this view, Hirschman (1969) argued that the political impotence of foreign entrepreneurs (undone by nationalistic preference) displaces the interest-group equilibrium from what would prevail if untainted native entrepreneurs sat in the same executive chairs. In this spirit, interest groups of domestic entrepreneurs may seek regulation or exclusion of MNEs as undesired competitors or, alternatively, may promote their expansion for rent-increasing effects on supply or demand in adjacent markets.

*Government policy.* The second model’s predictions need not diverge much from the national-preference model, but we develop it differently in order to illustrate its potential. Shift the focus from utility-maximizing electoral behavior to the utility of a coalition of government officials whose tenure in office is not explained within the model. Assume that the government pursues many policy objectives but lacks policy instruments that are reliably sufficient to attain them. Perhaps powerful interest groups forestall or restrict policies that unavoidably (if perhaps incidentally) harm their welfare. Perhaps norms of convention or constitution keep the government from imposing or fully enforcing theoretically sufficient policies. The government often wants to modify the economic allocations that result from market transactions, but it lacks the instruments to modify as many market outcomes as it wishes, or to modify them as much. Private economic agents who can dodge its allocative designs become odious to the government. If



MNEs enjoy better alternatives than nationals (they can spread the transaction cost of dealing with the government over more business, or when pressed can credibly threaten to cut back their local activities), they incur ill will with the government and invite overall restriction or special regulation of their activities.

The government-policy model can assume an electoral flavor if we suppose that the median voter prefers that the government's bidding be done, whatever its effect on that voter's welfare. Put simply, the median voter may believe that allocations sought by the government are intrinsically superior to those cast up by the market. In that case, any proposal to restrict or regulate MNEs wins approval, because the median voter's restraining concern with regulatory effects on real income (present in the national-preference model) is defined away.

We induced the government-policy model as described from policy patterns several decades old. A moment's reflection suggests it can equally run in reverse: The MNE has capabilities that give the government an agent that places expanded policy options in the government's hands. That is, the MNE expands rather than restricts the policies that the government can implement – at a price that the government might find attractive.

These models of political behavior call for a systematic empirical test. Unfortunately, writers on policy toward the MNE generally have not considered the issue in this positivistic framework. Some simply offer descriptions, others polemics. Hence, the following assessment of the fit of these models is entirely tentative and impressionistic.

### Empirical Evidence

Both models seem to possess some explanatory power. The national-preference model accords particularly well with the cases in which a source government uses its MNEs to influence resource allocations within a host country. The invasion of sovereignty typically evokes a popular response in the host country that is quite disproportionate to the effect on real income, suggesting a preference for sovereignty *per se*. Similar resentment surrounds the MNE's decision to, say, reallocate production facilities from host *A* to host *B*; *A*'s suffering at the hands of foreign decision makers begets a political reaction much exceeding what would occur if, instead, one independent national firm contracted in *A* and another expanded in *B*. The national-preference model also explains restrictions in some hosts (especially developing countries) on the foreign nationals employed by the MNE or the presence of

MNEs in “nonessential” activity. All countries including the United States (Graham and Krugman, 1991, pp. 119–29) ban foreign control of firms in certain sectors: defense (obviously), but also others perceived to have broad significance for the economy or culture, such as banking and broadcasting. Chronicles of the controversies over MNEs’ attempted acquisitions of domestic firms show repeated ad hoc instances of the targets claiming (or receiving) special status in the national interest; sometimes the claim has a clear basis in competition policy or other public interests, sometimes not (see the cases reviewed in Canada, Industry Canada, 1994). Exclusion of MNEs, however, can also respond purely to the preference of certain interest groups (local entrepreneurs) for shunning the competitive pressure of MNEs’ rivalry in the market.<sup>6</sup>

The government-policy model also seems to hold a good deal of explanatory force. This fit is rather obvious for socialist governments openly disinclined to accept the market’s allocation of resources. The model more interestingly explains behavior patterns of less interventionist governments that periodically find themselves short of policy instruments. One example is the exclusion of MNEs from policy-sensitive sectors, consistent with the government-policy model. Another is the policy of conditional national treatment currently popular among U.S. policy makers: Classes of benefits routinely provided to business firms are denied to those under foreign control unless the source government makes analogous benefits available to foreign subsidiaries of U.S. MNEs. Also consistent is the preference of some governments for using informal suasion on economic agents rather than laying down clear rules—a logical compromise when the policy goal in question is controversial or is in conflict with more general policies or precepts. The government then grows fearful that the foreign subsidiary may enjoy better alternatives than national firms to profit-reducing adherence to the policy, or that the MNE may simply hear the whispered hint less clearly. Observers such as Behrman and Grosse (1990) argued that host governments tend to hold rather stable neomercantilistic preferences that are implemented as opportunities permit. These preferences favor exports (and resist imports), the creation of jobs (especially in economically disadvantaged regions), and the development of technically sophisticated industries. The effort devoted to implementing these preferences tends to fluctuate widely in response to whatever perceived conditions drive the strengths of the preferences. In the past decade the MNE’s role in creating policy options has rapidly become

<sup>6</sup> Japan’s highly restrictive policies (now modified) contained both strands (Henderson, 1973).

conspicuous in its use to implement development projects. Mody (2004) summarized an UNCTAD survey of 45 governments' deals with MNEs. Of these 70 percent offer incentives for MNEs to operate in backward regions, while nearly all seek MNEs' entries into favored industries.

An empirical pattern of policy making related to both models is short-run fluctuation of policies toward MNEs with the perceived state of the host economy. The government-policy model is consistent with unstable policies toward MNEs: welcomed when policy instruments cannot conquer unemployment, restricted when conditions are good (UNCTC, 1991*a*). Such patterns were noted in Canada's regulation of new foreign investments (Globerman, 1984) and Venezuela's profit-threatening actions against U.S. MNEs (R. J. Jones, 1984). Safarian (1993, p. 433) observed that, comparing various countries' policy regimes, the countries with the most complete and coherent policies are not always the ones with the most stable policies. The pattern emphasizes the paucity of instruments assumed by the government-policy model but is not inconsistent with the national-preference model.

One good test of the national-preference and government-policy models is their ability to explain a widespread host-country policy such as incentives or requirements that the MNE take on local partners in its subsidiary, or yield control to nationals. The policy is seldom consistent with maximizing national income by the host country, because the MNE is allowed to auction equity shares in the subsidiary and thereby capitalize any rents it is earning (Wallace, 1982, pp. 74–8).<sup>7</sup> Imposing a requirement of 50 percent or more control by nationals is consistent with the national-preference model. Requiring local minority shareholding or participation, however, is hard to explain, because it neither maximizes the incomes of nationals nor mitigates foreign control. Perhaps governments believe that it sensitizes the subsidiary to informal suasion, thus serving the government-policy interest. In short, the policy of requiring equity participation by nationals seems more consistent with the nationalistic preferences than with the straight maximization of national income.

The national-preference model does not necessarily conflict with the assumption of neoclassical welfare economics that host governments maximize national income. Therefore the extent of inconsistency between host policies and income maximization provides some evidence on the political-behavior models. To hazard a bold generalization, developing countries'

<sup>7</sup> Sometimes the government itself demands a minority shareholding, which is simply an alternative to taxation. See Section 8.3 and the suggestive but special-case models of Svejnar and Smith (1984).

policies run toward consistency with income maximization, whereas developed hosts are more likely to pursue noneconomic goals (Negandhi and Baliga, 1979). The evidence on the rationality (or increasing rationality) of developing countries' policies was presented mainly in Chapter 4 (the obsolescing bargain), Chapter 8 (maximum exploitation of source countries' tax-credit policies), and Chapter 9 (use of policy commitments).<sup>8</sup> Developed-country policies that seem best explained by collective preferences for nonmarket goals include pressures for local minority ownership and local performance of R&D and support for competing national firms ("national champions") in sectors deemed nationally important.<sup>9</sup> This difference between developed and less-developed hosts is consistent with collective nationalistic preferences for the economy's mixture of activities being an income-elastic (i.e., "normal") good that is consumed in greater amounts by wealthier societies.

It is important to consider the administrative mechanism that host countries commonly employ to screen MNEs' proposed investments. These take the form of review boards that screen these proposals and wield the power to reject them or require modifications (Safarian, 1993). They appear to align with the government-policy model by substituting bureaucratic case-by-case screening for the presumed alternative of a statutory rule book. Review boards are seldom bound by any specific statutory standards and are free to interpret the public interest as they see fit. They can respond to short-run swings in public priorities. Furthermore, they are not formally bound to any standard of consistent treatment of the supplicants who come successively before them. The review board can then undertake a form of price discrimination, plucking the maximum number of feathers from each fowl presenting itself—something that statutory standards could not accomplish. Of course, a government agency can seek to extract rents only when the MNE lacks good alternative locations—it *does* have a substantial rent in prospect.<sup>10</sup> The horizontal MNE seeking entry to serve the host's market

<sup>8</sup> Hawkins, Mintz, and Provisiero (1976) argued that nationalizations of MNEs' subsidiaries between 1946 and 1973 resulted from a left-wing shift of government in about half the cases, but otherwise displayed considerable (and increasing) economic rationality. Also see Diaz Alejandro (1970), Truitt (1974), M. L. Williams (1975), Sigmund (1980), and UNCTC (1991a).

<sup>9</sup> Obviously there is ground for doubt whether market failures, or only neomercantilist preferences are involved. Behrman and Grosse (1990, pp. 203–4) did notice a general trend from minority ownership requirements to substantive performance requirements.

<sup>10</sup> Companies that have rationalized their production internationally, Doz (1980) found, resist national intrusion more than those serving closed local markets. Competitive position influences the MNE's adaptation. A firm with unique assets attractive to host governments

provides the most tractable client for the review board. Another easy case is the vertical MNE seeking a natural resource matched in few other hosts (Section 4.4). In sum, the review board plays a role in both the national-policy and government-revenue models. It can implement national-policy preferences as they wax and wane. It can serve the government-policy objective via its flexibility and the opacity of its decision processes to the outside world.<sup>11</sup>

Of course, it takes two to bargain. The review board squeezing rents from would-be foreign investors can become the promotion board, when the government is sufficiently eager to create jobs or promote technically sophisticated industries. The government-policy model obviously fits here: the government lacks other (more cost-effective?) policies to serve these goals. But the goals want service only thanks to the electorate's preferences for such policies; it takes some subtlety to appreciate that a job created is generally matched by a job lost elsewhere. In any case the shift of bargaining power toward the MNE investor got under way in the 1980s as the proportion of subsidiaries receiving inducements and the types of inducements offered began a steady increase (Safarian, pp. 432–33).

### Source Countries

Models of public choice can also be applied to countries' policies toward their own MNEs. The basic voting model implies that a policy benefiting the nation's MNEs at the expense of foreigners will win favor with the median voter. If capital income (including equity shareholdings) is more concentrated than labor income, however, a voting model does imply that under some conditions source-country voters will approve restriction of foreign investment in order to redistribute income from capital to labor (see Chapter 5). This issue aside, source countries will also approve public measures to assist national MNEs in maximizing their rents from foreign markets, subject to conditions relating to the costs of these policies and how they are financed. This behavior pattern should apply to such source-country

can take a tougher line, and the MNE without close international rivals tries to do so. The less advantaged MNE, however, may follow a policy of close cooperation with the host government to secure a local-market position from which stronger rivals cannot dislodge it.

<sup>11</sup> Review boards might be regarded as honest brothers of the corrupt government that holds up the applicant MNE for the maximum possible bribe. If the prospective investment has important sunk costs, and the corrupt government cannot commit itself to its maximum (present value) bribe, the only equilibrium is no foreign investment. Government corruption is found to have a large negative effect on foreign direct investment (Wei, 2000).

policies as the promotion of intellectual property rights among host countries. It is not obvious that a nationalistic preference to avoid dealings with foreigners leads the median voter to curb the MNE from dealing with them abroad, and so the national-preference model seems to predict no restrictions on the nation's MNEs and some basis for public assistance if needed to increase their overseas rents.

The government-policy model seems potentially more symmetrical between host and source countries than the national-preference model. A government acting to curb hard-to-control economic agents will find domestic MNEs no more appetizing than foreign ones. However, rational voters with a preference for public-sector allocations should appreciate that the national MNE itself provides the government with an instrument usable to affect resource allocations abroad, or that MNEs' rents from abroad should compensate for some disutility from any weakening of the government's ability to control. Therefore the government-policy model predicts that MNEs' foreign activities will be subject to some constraint.

We do not pursue these suggestions in detail because countries recently have acted so much more passively as sources than as hosts.<sup>12</sup> The sporadic policies of the United States toward its MNEs have been consistent with a willingness to let nationals earn rents abroad so long as no obvious incidental costs result,<sup>13</sup> and government resources have at times been committed to increase or preserve these rents. Sigmund (1980) characterized the main line of U.S. policy, holding that because the market allocation of MNEs' activities yields benefit to both source and host, the host country should not act to increase its share of the pie. The United States and other source countries have occasionally sought to use their MNEs to influence allocations abroad, usually in support of objectives of the nation's foreign policy. This practice may connote some positive support for MNEs explained by

<sup>12</sup> The debate over imperialism as a possible front for foreign investment will not be reviewed here, but note Rodman (1988) and Behrman and Grosse (1990, pp. 83–84) on the changing responses of source countries to host-country interventions.

<sup>13</sup> Bergsten et al. (1978, Chapter 9). Once more, thresholds of perception may be important. The costs of allowing favorable tax treatment to foreign-source income have received less attention from the voting public than issues on which much less real income rides. The same holds for the possible redistributive effects of MNEs, although these resist easy quantification even by subtle economic research (see Chapter 5). These patterns might suggest a model in which MNEs and other large corporations have privileged or cost-efficient access to political favor. (Helleiner, 1977, argued from U.S. trade policy for such a model.) However, U.S. companies have not secured or even sought protection against entry by foreign MNEs, although they repeatedly succeed in repelling competition from imports.

the government-policy model. However, the consequent conflicts between MNEs and host countries point to severe limits on the MNE's usefulness as a policy instrument (Graham and Krugman, 1991, pp. 95–118).

### 10.3. International Regulation

Economic analysis points to a number of divergences between source and host countries' national interests in the MNE, and between any nation's interest and that of global welfare. One branch of public policy toward MNEs rests, however, on a different perception of the policy problem. What has been called the "sovereignty at bay" school argues that MNEs have escaped the regulatory reach of *any* national government. One cannot readily make sense of this, in that every business unit of a MNE is legally domiciled in a territory where some government is sovereign. The government-policy view that governments find themselves short of policy instruments offers some explanation, as does the competition among governments to attract foreign investors. Behrman and Grosse (1990) suggested that the MNE's bargaining power against the host nation is nothing more than its desirable attributes that makes it costly for the host to exclude. In any case, that the MNEs' power vis-à-vis governments calls for international regulation is widely urged. Is there an economic case for collective international commitments on policy toward MNEs? If so, does it bear any relation to the actual dialogue over international regulation?

#### Global and National Interests

The analysis summarized in Section 10.1 makes clear that the national policies consistent with maximum global welfare from MNEs' activities diverge from those that seek to maximize national welfare. This proposition holds if countries fail to recognize the interdependent effects of their policies, and there is no guarantee in the theory of bargaining and retaliation that recognition will bring consensus on policies that maximize joint (global) welfare. The problem is highlighted by comparison to the World Trade Organization (formerly General Agreement on Tariffs and Trade) as a forum for mutual reduction of barriers to trade. One possible interpretation of the WTO is that each nation acting independently imposes excessive tariff protection for some combination of two reasons: It thinks it can thereby improve its terms of trade, and it caters to domestic special interests for lack of any general principle or commitment for holding them at bay. General Agreement on Tariffs and Trade (GATT) attacked both problems over the

years. By staging rounds of coincident tariff reduction, it caused the global gains to be spread fairly evenly among the participating nations (because no country's terms of trade undergo much change when calculated at ex-tariff prices). And it gives the national government that really wants to maximize national welfare a commitment helpful to stand off domestic pressure groups.

One can imagine a similar international forum that would bargain toward the previously identified policies that would maximize global welfare (Rubin and Hufbauer, 1984). It could mediate or arbitrate cases in which the MNE serves as the alleged instrument for one country's incursions on another's sovereignty. These conflicts differ importantly from the economic ones emphasized earlier, because conflicting interests in international political or military (power) arrangements usually are intrinsically zero-sum and provide no basis for bargaining toward a global optimum.

Comparison to GATT/WTO reveals intrinsic difficulties with this idealized agenda for international coordination of policy toward MNEs. Countries' interests in efficient arrangements for international trade are made similar by the (at least approximate) balance that must prevail between exports and imports (they can differ only through a persistent net international flow of capital). That balance permits a general tariff reduction to distribute its benefits fairly evenly among the participants without any complicating side payments. But there is no comparable balance condition for a country's interests as source and host of MNEs. Therefore, no globally efficient change in policy that is not neutral between source and host can claim to spread its benefits equitably without the aid of side payments. The trend for more and more countries to play significant roles as both sources and hosts improves the prospect, but the difference remains.<sup>14</sup> A package of globally optimal policy changes would likely contain some providing net benefits to source countries, others shifting gains to hosts; the result could be declared to balance, although only as an act of faith.

### **Treaties Governing International Investment**

If the GATT/WTO model asks too much as a template for the governance of international investment, it also understates what has been accomplished

<sup>14</sup> A valuable analogy is to intellectual property rights (IPR), which also lack any intrinsic balancing of interests among countries. Nonetheless, substantial progress has been made under WTO toward common international standards. It is common for developing countries' interest in IPR to pick up as they begin to develop industries (pharmaceuticals, computer programs) dependent on such protection.



through bilateral and regional treaties. We referred previously to these agreements bearing on particular issues – expropriation (Chapter 4) and taxation (Chapter 8). Now we consider their prevalence and the issues that they cover (information from UNCTAD, 2006).

These agreements take two forms. Bilateral agreements in force between pairs of countries numbered 2,393 at the end of 2004; they have been increasing, though at a decreasing rate. What are called regional arrangements are agreements among groups of countries that share some common set of interests or concerns. Geographic propinquity is just one basis; membership in a preferential trading agreement is another. Their contents are more diverse than the bilateral treaties. In mid-2005, regional agreements numbered 215. They differ considerably in the issues addressed and the manner of treatment.

International law asserts no right of a foreign entity to invest in a country. A core function of investment agreements is to concur on that right and also on its limitations. Traditionally these treaties protected investments already in place, but increasingly they link countries at similar levels of development, so that they are becoming more symmetrical and forward-looking.<sup>15</sup> A treaty might permit all investments except for exclusions stated in the agreement. A different approach permits all investments consistent with the host's laws; because the host is free to change its laws, this provides little insurance. Last, the host may commit itself to future liberalizations.

Foreign investors permitted to enter gain little without some assurance about their future treatment. Some agreements guarantee the investor “fair and equitable treatment,” which ensures little in the absence of case law that defines fairness. Recent agreements have shifted toward a most-favored-nation approach: the foreign investor is treated at least as well as comparable domestic investors and/or other foreigners. Most-favored-nation protection may come with its own exceptions list. Expropriation with compensation to the investor is permitted, and the agreements show increased sophistication in recognizing that a foreign investment's value can be destroyed in various ways other than expropriation. A specific example: Where the host imposes foreign-exchange control, the investor needs a guarantee that it may repatriate its investment and profits. The host may retain the right to impose performance requirements (e.g., the foreign investor must procure some inputs locally), subject to limitations. Agreements may include procedural features to increase transparency of procedures and provide for arbitration.

<sup>15</sup> In 2004, 40 percent of agreements linked developed and developing countries, but 25 percent involved only developing countries.

#### 10.4. Summary

Traditional welfare economics supplies rules for optimal policies in the many markets affected by the presence of MNEs. These policies' assumed goal is to maximize real income. A dilemma immediately arising is that policies to maximize the incomes of source countries, host countries, and the world as a whole are not identical. Conflict is therefore expected, and in the important case of taxation policy, the conflict does not depend on countries being "large" in world markets or on the MNEs themselves enjoying monopoly power. The principal areas of policy, besides taxation (explored in earlier chapters and summarized in this one), are natural-resource rents, competition policy for industrial markets, and the creation and transfer of industrial knowledge. These policy conclusions are qualified by the existence of multiple market distortions, which forces the analyst into second-best prescriptions and benefit-cost analyses of individual investments. The presence of MNEs also colors the formation of policy on matters ostensibly unrelated to MNEs, because a policy's redistributive effect between nationals and foreign investors can make national income decline even when domestic product rises.

The divergence of actual policy toward MNEs from the normative prescriptions calls for a behavioral approach. Two lines of analysis seem fruitful. One addresses national (nationalistic) preferences registered by voters under a democratic government. It emphasizes the consequences of voters' quest for maximum benefits against investors domiciled abroad (who lack voting rights but can exert influence through other channels). The national preference itself can take several forms, such as a collective distaste for perceived influence by foreign companies on the nation's resource allocation. Another model concentrates on the means-end relationship in policy and the shortcomings of a government's policy options that are amplified by the superior alternatives open to MNEs. If the government's preferences for allocating resources are axiomatically superior to the market's, or if the median voter believes them superior, discriminatory restrictions on MNEs follow from the fact of their superior alternatives. No systematic empirical research has followed up these policy models, but casual evidence suggests that both command some explanatory power. The national-preference model holds few implications for source countries' policies, but the government-policy model does call attention to the home-based MNE's possible usefulness as a policy instrument for influencing allocations abroad. An important device of host countries is the review board that can impose policies that are underserved (the government-policy concern) and obtain some rents from MNEs.

However, such bargaining between review board and MNE can also transfer rents to the MNE.

International regulation of MNEs has sometimes been urged. A logical case can be built on the conflict between policies maximizing national and global welfare, but a comparison to GATT/WTO stresses the improbability that such regulation could be realized. There does exist, however, a network of treaties, mostly bilateral, that define foreign investors' rights and their limitations. It appears to serve as a reasonable substitute for a multilateral approach.



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