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The Role of Taxes in Location and Sourcing Decisions

G. Peter Wilson

This descriptive study examines how nine firms integrate tax planning into other business planning.¹ More specifically, it considers how taxes influence companies' decisions on capacity expansion (the location decision) and on the use of existing capacity (the sourcing decision). The study will identify important tax and nontax factors that firms consider when making location and sourcing decisions and will assess the relative importance of different factors on these decisions. The findings are based on interviews with chief financial officers and high-level manufacturing, treasury, tax, and strategy managers. These conversations centered on sixty-eight location decisions that were made during the past twenty-five years.

The subsequent analysis argues that the relative importance of taxes in explaining location and sourcing decisions varies considerably across industries and business activities (e.g., R&D, manufacturing, marketing). A conceptual framework, based largely on theory discussed in Porter (1990) and Scholes and Wolfson (1991), is proposed to identify salient industry and business ac-

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1. As will be discussed in section 6.2, the sample firms were selected because they were known to have operations in low-tax countries. All of the firms are in an excess foreign tax credit limitation, though most of them claim to be close to an excess credit position. Thus, the usual caveat about drawing inferences from small biased samples is amplified here. To facilitate the exposition, however, I have not qualified the text to account for this bias. Wherever possible, I integrate my findings into the conceptual framework developed in section 6.1. This should help readers assess whether these findings extend to other firms.

tivity characteristics that determine the role of taxes in location decisions.² The framework builds on the Scholes and Wolfson theme that efficient tax planning differs from tax minimization. In the Scholes and Wolfson framework, tax planning is subordinate (as a managerial objective) to maximizing firm value. Therefore, tax planners must sometimes sacrifice tax benefits because of nontax considerations. Scholes and Wolfson refer to these nontax considerations as restrictions and frictions that impede tax minimization. Restrictions are government rules. Frictions are all other impediments to tax minimization, including costs associated with meeting other business purposes. Frictions and restrictions are related.³ By identifying frictions, or equivalently nontax considerations, associated with location and sourcing decisions and by understanding how they evolve over time, we can better understand the role that taxes play in these decisions.⁴

The framework proposes three categories of frictions that are based on Porter's global strategy theory: coupling frictions, which tend to fuse activities together in a firm's value chain; country frictions, which are the opportunity cost of locating a specific activity, or collection of activities, in a particular country; and coordination frictions, which are associated with incentive and communication mechanisms that impede tax minimization. Firms assign activities in their product value chains to countries where the maximum value is added at a minimum after-tax cost. To this end, they must first identify spots in their value chains where coupling frictions are small, and then locate these separate activities, taking account of country and coordination frictions and local taxes.

The interviews with the sample firms' managers suggest a number of conclusions:

- Tax considerations largely dictate location decisions for business activities where these frictions are small, such as administrative and distribution centers
- Nontax considerations are very important in all *manufacturing* location de-

2. In developing their frameworks, both Porter (1990) and Scholes and Wolfson (1991) acknowledge other authors' contributions. Rather than conduct an extensive literature review, I cite these two works repeatedly because they summarize and/or develop the requisite strategy and tax background for this paper.

3. Scholes and Wolfson develop the relationship between frictions and restrictions. In particular, frictions curb both favorable and unfavorable economic activity. When they curb unfavorable activity, they preclude the necessity for government restrictions (e.g., tax rules). When they curb desired activity, policymakers must offer tax benefits to compensate for the cost associated with the frictions.

4. Admittedly, referring to marketing, manufacturing, and other business considerations as frictions is a rather egocentric view of taxes. An alternative expositional approach would have been to describe taxes as but one of several costs that managers must consider to maximize firm value when making location and sourcing decisions. The Scholes and Wolfson framework is used here because my primary objective is to study how nontax factors affect tax planning.

cisions, including those where the final decision is to locate in a low-tax country

- Flexibility in setting transfer prices is related to gross margins and the ability to decouple activities in the value chain
- Threats of significant penalties and extensive audits in many countries have recently curbed managers' ability to transfer price aggressively⁵
- Tax transfer prices do not affect performance evaluations for the sample firms, either because they use separate transfer prices for managerial and tax purposes or because they use pretax evaluation measures that do not depend on transfer prices
- Larger decentralized firms use location team contests to coordinate more efficient local and corporate tax planning
- The role that taxes play in location and sourcing decisions and, more generally, the relative importance of various nontax considerations in these decisions have changed dramatically during the past twenty years
- Tax compliance costs have also increased considerably

Furthermore, public goods that are subsidized by taxes, such as education and transportation, weigh heavily in many location decisions.⁶ Thus, because tax rates can reflect infrastructure differences, resource allocations are not necessarily inefficient when location decisions are tax motivated.

Section 6.1 presents an informal conceptual framework for analyzing the role of taxes in location and sourcing decisions. Section 6.2 describes the sample firms and the interview procedures. Section 6.3 shows how the sample firms' location decisions are related to this framework. Several examples are used to demonstrate the role of tax and nontax considerations in location decisions. In Section 6.4, the emphasis shifts to sourcing decisions, transfer prices, and performance measures. Section 6.5 summarizes the major findings.

6.1 Conceptual Framework for Analysis

Two research areas motivate the analysis: (1) strategy research, where taxes are acknowledged in passing as important but tax features central to international tax planning and location decisions are usually absent; (2) tax research, where the consequences of nontax considerations are recognized but not ex-

5. The sample firms were selected because they have facilities in low-tax countries and the conventional wisdom is that tax-haven firms set transfer prices aggressively. While some of the sample firms' managers admit to transfer pricing aggressively (particularly in the past), they emphasize that they mean aggressively relative to other firms and that their transfer prices are within acceptable bounds. In this paper, I use the modifier "aggressively" in this relative sense.

6. Labor and capital, the central factors in location decision models proposed by many economists, are also very important considerations, but, like taxes, they do not tell the whole story.

plored sufficiently to fully explain location and sourcing decisions. Although this study embraces both research areas, the primary objective is to extend the tax literature. Specifically, the objective is to identify the frictions, or equivalently nontax issues, associated with location and sourcing decisions and show how they affect tax planning. The strategy literature discusses many of these nontax issues.

In Porter's global strategy theory, firms gain competitive advantage in two ways: by determining where their facilities are located and by coordinating their dispersed activities. These activities include all the elements in firms' value chains: research and development, various manufacturing stages, marketing, distribution, and certain administrative activities. Porter argues that in configuring worldwide activities, firms must first decide whether to concentrate activities in a few nations or to disperse them to many nations. Second, firms must decide where to locate these activities. Porter argues that the concentration versus dispersion decision differs across value-chain activities. In addition to choosing whether or not to concentrate and where to locate, firms must also decide where to decouple their value chains. For example, presuming a firm elects to concentrate development and manufacturing, it must still decide whether to couple these value-chain activities—locate them together. I refer to the nontax considerations that fuse different types of value-chain activities (such as marketing and manufacturing) or that concentrate a specific activity (such as manufacturing) in a few locations as *coupling frictions* and *coupling restrictions*. Coupling frictions include, but are not limited to, technology constraints, transportation costs, company culture, the need to be close to customers, and the need to concentrate manufacturing in a few world-scale plants to compete on cost. For example, in developing drugs, certain intermediate chemicals are not stable enough to transport or can only be transported after costly environmental testing. If an intermediate chemical could be produced efficiently in a low-tax country but the entire compound were too costly to produce there (relative to alternative sites), then the coupling frictions that make it too costly would preclude locating any manufacturing in the low-tax country. Coupling restrictions are government rules that make it costly or impossible for firms to decouple value-chain activities. Such rules include duties, import restrictions, local content requirements, and (in some industries) product and price regulatory authority. For example, high duties can, de facto, force companies to manufacture close to their markets.

Even if a firm can completely decouple its value chain at low cost, it will not locate activities in low-tax countries if the nontax costs of doing so exceed the tax benefits. *Country frictions* (or country-specific factors) are the opportunity cost of locating a value-chain activity, or collection of activities, in a particular country relative to the next best alternative location (ignoring differences in tax benefits in the two locations). Thus, just as coupling frictions and restrictions are related to concentration and dispersing strategies, country fric-

tions are related to location strategies. Depending on the value-chain activity, country frictions include the differences across countries in factors such as the labor force, infrastructure, political stability, proximity to markets, and financial systems. Typically, a country will have a relative advantage in one or more of the requisite resources for a facility but a comparative disadvantage (high friction) in others.

Coordination mechanisms, such as transfer prices and performance measures, are used to motivate divisional managers and to align corporate and local planning. Just as companies sometimes sacrifice operating conditions to locate in tax havens, they will also use inferior coordination mechanisms (that is, mechanisms that are inferior before tax considerations) to facilitate tax planning when the benefits from doing so exceed the costs. *Coordination frictions* are the opportunity cost of using a coordination mechanism relative to the next-best alternative (ignoring differences in tax benefits). For example, the opportunity cost of using transfer prices that are based on tax considerations rather than those that are based on nontax considerations include forgone operating efficiencies. Like the other frictions, coordination frictions arise when there are conflicts between tax and nontax considerations. Of particular interest in this study, firms must coordinate sourcing decisions in such a way as to maximize corporate after-tax income. These sourcing decisions frequently involve trading off higher operating costs for lower taxes.

Countries also play their own strategies. They want to attract high-value facilities and benefit from these facilities as much as possible, either through high wages, taxes, or other means. Countries with large developed markets, such as Japan, or potentially large markets, such as China or India, use duties, import restrictions, price regulations, or local-content restrictions to induce companies to manufacture locally. Essentially, they exert their market leverage to prevent companies from locating facilities in lower-cost countries. In the process, they can extract an additional return on a resource, their market, either by taxing these manufacturing facilities or through wages, et cetera. In contrast, countries that do not have large markets or do not have unique manufacturing capability frequently compete for companies by offering tax or other incentives.

6.2 Sample Selection

This section briefly explains the sample selection and interview procedures and describes some characteristics of the sample firms. The research strategy was to identify firms with manufacturing facilities in both low- and high-tax countries and to study their location and sourcing decisions. Fourteen firms with manufacturing facilities in Ireland, Singapore, or Puerto Rico were contacted; nine agreed to participate, including three pharmaceuticals, three semiconductor companies, and one company each from chemicals, specialty ma-

terials, and software. The emphasis on semiconductors and pharmaceuticals is intentional. These industries have significant presence in low-tax countries and are known to have sophisticated tax departments. Firms from other industries, although interesting in their own right, were included primarily as benchmarks. Thus, the sample is biased toward firms that traditionally have been regarded as aggressive tax planners. As indicated earlier, this bias is reflected in the fact that all of the firms are in excess foreign tax limitation, although most claim to be close to an excess credit position. Because these firms are in excess foreign tax limitation, their tax planning is probably different from that of other firms. However, foreign tax credit issues per se did not appear to affect most of the decisions studied. Many of these decisions were made prior to the Tax Reform Act of 1986, when there was less concern about being in an excess credit position. Also, when managers were questioned about how their foreign tax credit position affected recent decisions, they downplayed its importance.

Three of the sample firms' 1990 sales exceeded \$5 billion, six had sales greater than \$750 million, and one had sales of less than \$100 million. Research and development as a percentage of sales exceeded 9 percent for most of the sample; the exceptions were the chemical and materials companies.

Two visits were made to most of the firms. The primary objective of the first trip was to identify the most important tax and nontax factors that firms consider when making location and sourcing decisions. Managers from several functional areas were interviewed, usually including the chief financial officer and high-level managers from manufacturing, treasury, and strategy. For each firm, I began by asking managers to identify the important issues in location and sourcing decisions. Follow-up questions queried whether managers had made sacrifices when their company elected to locate a facility in, or source from, a low-tax country. I soon discovered that I learned more when I asked managers to discuss recent decisions. Invariably, these discussions revealed important issues that had not surfaced earlier and were not covered in my preplanned questions. Seven of the firms were revisited to resolve open issues.

For the nine sample firms, sixty-eight location decisions were considered in some detail, and approximately thirty of these were discussed extensively. Although the years in which these decisions were made were not recorded in all cases, at least seven decisions were made during the 1960s, seven during the 1970s, four from 1980 through 1985, and twenty after 1985. Forty-seven decisions concerned manufacturing facilities, fourteen administrative, financial, or distribution centers, one R&D facility, and six marketing centers. These facilities are spread throughout the world, including the United States, Puerto Rico, and twenty-four other countries. Thus, while the sample firms were initially chosen because they have some facilities in low-tax countries, this geographic dispersion indicates that taxes do not dictate all of their location decisions.

6.3 Location Decisions

This section uses examples to demonstrate how the sample firms make location decisions within the framework discussed in section 6.1. Section 6.3.1 is a lengthy examination of manufacturing location decisions, the issue that dominated most of the interviews. Section 6.3.2 and 6.3.3 briefly consider marketing and administrative centers. Research and development (R&D) is not examined separately because these decisions were discussed infrequently during the interviews.

6.3.1 Manufacturing

The examples in this subsection demonstrate how coupling frictions, gross margins, and country frictions, restrictions, and tax and financial incentives affect manufacturing location decisions.⁷ In the first part, I consider location decisions in the pharmaceutical industry. In this industry, gross margins are extremely high because operating risks are high, because the harvest period is short—patents expire shortly after products are launched—and because most costs have been incurred and expensed before manufacturing commences. For the pharmaceutical industry, manufacturing coupling frictions are relatively minor, while government restrictions profoundly influence location and sourcing decisions. Next I consider decisions in the semiconductor industry. In this industry, gross margins (for microprocessors) are higher than in most industries but lower than the pharmaceutical industry, harvest periods are short because of technological obsolescence, and government coupling restrictions are important but typically not binding. Manufacturing costs are higher for semiconductor than for pharmaceutical companies, primarily because wafer fabrication facilities (fabs) are so expensive to build and operate. But, as in pharmaceuticals, the bulk of the expenses are incurred prior to the start of manufacturing. Also, manufacturing facilities require a more sophisticated infrastructure. Thus, in the semiconductor industry, country frictions play an important role in fab location decisions. I consider a single location in the chemical industry, where gross margins are relatively low compared to pharmaceuticals and semiconductors. Thus, tax considerations are less important in location decisions. Then I examine a software company where coupling, coordination, and country frictions and foreign government restrictions are essentially nonexistent. Here, taxes are the driver for location decisions and U.S. tax restrictions are a counterbalancing force. The other extreme—a materials company where coupling frictions force manufacturing facilities to locate in close proximity to customers and taxes are relatively unimportant consideration—is discussed last.

7. Section 6.4.1 contains an explanation for why firms with larger gross margins typically have more flexibility in setting transfer prices.

Pharmaceuticals

Success in the pharmaceutical industry depends on a company's ability to discover effective new drugs, get them through the regulatory approval processes in various countries, and market them quickly to harvest profits before their patents expire. Although manufacturing costs have been increasing recently, they are small for most drugs, compared to the estimated \$200 million to \$350 million required to get a drug through R&D and regulatory approval. Likewise, manufacturing costs pale in comparison to the forgone revenues when patents expire. For blockbuster drugs, with peak sales approaching a billion dollars a year, the lost revenues from delaying a product launch can be staggering. As one sourcing manager noted, "Manufacturing can never afford to be the bottleneck, because the relative costs of manufacturing are too low." Notwithstanding these relatively low manufacturing costs, the location of manufacturing facilities is still important for regulatory, duty, and tax reasons. Regulatory considerations are broadly defined in this paper. They include product approvals, government price approvals, and, increasingly, environmental and safety issues.⁸

Price approval is a particularly important consideration in location decisions because, unlike the United States, most governments regulate drug prices. Industry sources indicate that companies frequently negotiate price increases in exchange for local manufacturing. In this regard, price increases substitute, albeit imperfectly, for tax benefits as incentives to lure manufacturing sites. Similarly, lower prices substitute for higher taxes and duties as the admission price that some countries command for access to attractive markets. Perhaps countries prefer prices to taxes as a policy instrument because it is easier to target preferential treatment for specific drugs by using product prices. Alternatively, tax breaks may not be as valuable to multinationals, such as the sample firms, that are in excess foreign tax limitation.

Timing the grants of regulatory approvals across different countries is also important. Ultimately, pharmaceuticals must secure price and product approvals in all of their markets, but the approval processes differ dramatically across countries. Countries that approve a drug quickly, for example, might offer a lower price in exchange for a longer harvest period.⁹ However, it is not always advantageous to push for quick approval in those countries. Because other countries peg prices to those set elsewhere, it can be costly to get a drug

8. In the pharmaceutical industry, environmental and safety considerations are becoming more important in explaining location and sourcing decisions. Some countries, especially in Europe, do not allow intermediate chemicals to be transported in large quantities unless they pass stringent, time-consuming, and costly safety tests. This creates a coupling restriction (manufacturing is fused to markets) and helps explain why pharmaceutical companies are consolidating their European manufacturing operations.

9. Strictly speaking, countries do not explicitly trade off quicker product approvals for lower prices. Product and price approvals are negotiated separately with different authorities in each country. However, the outcomes from these negotiations are consistent with such a trade-off.

through product approval quickly in a low-price country. Accordingly, companies strategically select the countries where they get early approvals.

Approval in the United States by the Food and Drug Administration (FDA) is usually the most difficult and time consuming to secure of all countries.¹⁰ Also, until recently, a drug could not be exported from the United States until it was approved here, even if it was approved elsewhere. This meant that, historically, American companies had a strong incentive to manufacture abroad. Recent legislation that allows an American company to export to one of twenty developed countries where the drug is approved has partially mitigated this incentive. Now, pharmaceuticals have an incentive to quickly get approval in at least one of these twenty countries, either to start manufacturing in the United States for the U.S. market before they get U.S. approval or to manufacture abroad for approved countries.

During the regulatory approval process, pharmaceutical companies decide where they are going to produce the drug.¹¹ They can readily split production into distinct steps because coupling frictions within the manufacturing stages are relatively small. For dry products, such as the drug exemplified in figure 6.1 (discussed shortly), the manufacturing stages include bulk chemical production (developing standard inorganic compounds), active ingredient production (further developing the chemical compound specific to a drug), dispersion (diluting the active ingredient by granulation and mixing), tablet production (forming and coating the tablets), and fill/finishing (bottling, labeling, boxing, and palletizing). Except for the chemical stages, country frictions associated with manufacturing are also relatively small; once the active ingredient is produced, the remaining manufacturing stages do not require a sophisticated infrastructure.¹²

Figure 6.1 shows a representative sourcing pattern for a successful drug distributed by one of the sample firms. The subsequent discussion illustrates

10. In the United States, the three-phased process starts when a new molecule, referred to as a new chemical entity (NCE), is discovered and patented. Phase I generally takes about three years and emphasizes safety tests on lower species such as mice. Phase II, which can be done simultaneously with Phase I, focuses on whether the product works. After these phases are complete, extensive documentation is submitted to the FDA as part of an investigative new drug application (IND) to get permission to try the drug on humans. Extensive clinical tests on humans, carefully monitored by the FDA, are conducted in Phase III. At the end of Phase III, a new drug application (NDA) is submitted to the FDA along with a "truckload" of supporting data. The entire approval process typically takes eight to thirteen years.

11. Traditionally, these location and sourcing decisions were made toward the end of the product approval process. However, because of recent changes in the U.S. product approval process, these decisions must now be made considerably earlier. Currently, manufacturing sites must be operating and pass strict regulatory hurdles before a product is approved.

12. Although the sample firms have made numerous location decisions during recent years, they have not established new chemical sites. Nevertheless, they did indicate that the decision process for bulk chemical facilities was considerably more thorough than for new drugs and that taxes and financial incentives play a larger role in these decisions. From what I learned in casual discussions, these bulk chemical decisions resemble those discussed later for the bulk chemical and semiconductor wafer fabrication manufacturing facilities. Accordingly, the remainder of this section considers the nonchemical manufacturing stages only.

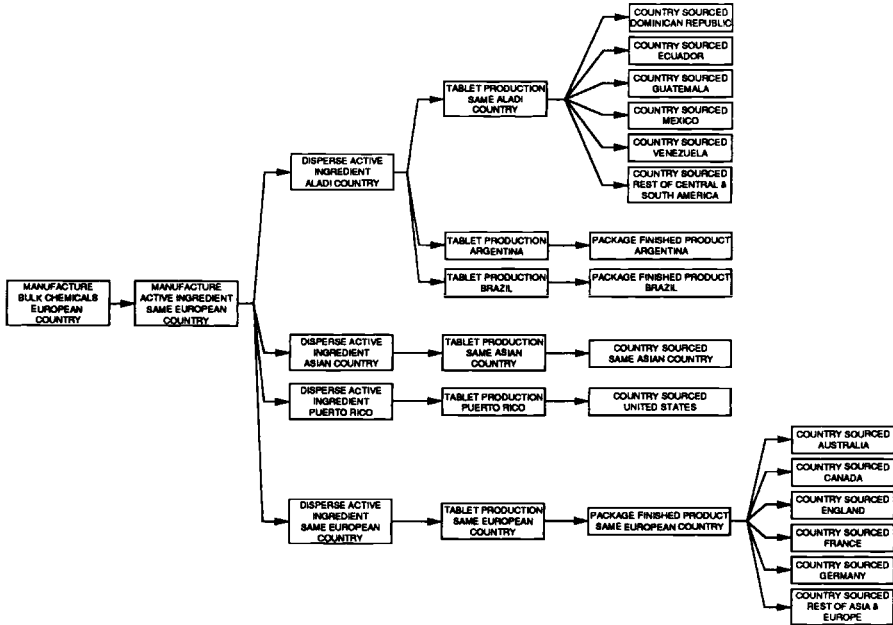


Fig. 6.1 A representative sourcing pattern for a successful drug

how regulatory, duty, and tax considerations influenced where the company located various manufacturing stages. Manufacturing starts in a major European country, where a bulk chemical facility that supports several other drugs produces the initial compound. This is subsequently converted to the active ingredient in a new facility that cost over \$40 million. The new facility has an annual output of 150 to 200 kilos which, when diluted in a stabilizer for transporting, yields twelve to fifteen metric tons. Because the output from the existing bulk chemical plant is potentially unstable and could cause environmental or safety problems if transported and because the required infrastructure to support the new and existing plant are similar, the new facility was located adjacent to the bulk chemical plant. More generally, coupling frictions in the production of the active ingredient are typically too large to justify multiple locations. However, the company could have located the new facility adjacent to a bulk chemical facility in the United States. They chose the European site for regulatory approval reasons. By producing outside of the United States, they were able to extend the harvest period on non-U.S. sales by one year. As noted earlier, the marginal revenues from a longer harvest period can dwarf all other considerations. The original decision to locate the bulk chemical facility in this particular European country was, however, influenced by both tax benefits and country frictions.

By the time the drug is in pill form, the twelve to fifteen metric tons of

stabilized active ingredient will be further diluted by a factor of one thousand. As indicated in figure 6.1, dispersing, tablet production, and fill/finishing have been decoupled, and multiple facilities are used for each stage. As we shall see, the benefits from this arrangement exceed the related coupling frictions, including transportation costs and forgone economies of scale. Moreover, this company has reduced the transportation costs by locating the dispersing facilities close to the tablet production facilities. Taxes, duties, and a desire to service particular markets from a single location explain the remaining manufacturing sites in figure 6.1.

The top box in the third column of the figure represents a dispersion facility in a major ALADI country. The ALADI is a trade agreement among several Latin American countries that reduces duties on trades among members. There is, for example, a 102 percent import duty on tablets entering Brazil from the United States but only a 10 percent duty if the product is partly manufactured in an ALADI country.¹³ The ALADI agreement largely explains why tablets for Latin America are manufactured and subsequently distributed as indicated in figure 6.1. Again, country restrictions rather than frictions or taxes are dictating a site location.

The “Asian country” dispersion, tablet, and packaging facilities that start in column 3 and the Argentinian facilities that start in column 4 were largely tax motivated. However, the sourcing manager for this company cautioned that the company had paid dearly for these tax benefits and, given the same opportunities, would probably not repeat these decisions. Duties are high in the Asian country so, absent tax benefits, the company had an incentive to locate facilities there. Nonetheless, they now regret the decision to locate in a tax-favored zone. “The location is physically beautiful but it is located in the middle of nowhere.” The labor pool is “totally inadequate,” and the company cannot get executives to live there even though they have built homes at the site. The \$7 million facility, which produces other drugs besides the one in figure 6.1, runs at only 20 percent capacity. Similarly, the sourcing manager said that the company recently had sold the Argentinian facility because it was too inefficient. “When I finally arrived at the plant, I thought that I had reached the edge of civilization.” When queried as to why these manufacturing inefficiencies were not identified earlier by a location team, the sourcing manager indicated that historically the decision process was very informal for these relatively minor manufacturing facilities. “Local management in both Argentina and the Asian country heard about tax breaks, and corporate management trusted their judgment.” He also indicated that the company had learned some valuable lessons from these experiences, noting that in the future they will scrutinize country frictions more carefully before they jump at tax breaks. This example demonstrates that even though country frictions are minor for these facilities, they are important and must be identified prior to

13. Thus, the duty savings is on the value added in Mexico.

the location decision. Other sample firms also reported that they have learned to identify and carefully scrutinize country-specific factors (frictions) before they jump at tax breaks.

The Puerto Rican facilities that start in the third column were also largely tax motivated, but the country frictions in the Asian-country and Argentinian tax-favored zones are not present.¹⁴ More generally, the sample pharmaceutical companies agree that the country frictions (opportunity costs) of manufacturing in Puerto Rico are relatively low. Although, they would probably not “put any new roofs” in Puerto Rico absent the tax breaks, the incremental costs of producing there (rather than in the next-best location) are small. In particular, during the past twenty years, the Puerto Rican infrastructure has improved significantly. Modern four-lane highways have replaced two-lane roads clogged with farm machinery; the labor force is more sophisticated because the educational system has improved dramatically; and the managers, who are now Puerto Ricans rather than expatriates, have twenty years of experience managing people and operations.

Because there are no duties on imports from Puerto Rico to the United States and there are generous tax breaks for producing there, it is not surprising that most prescription drugs sold in the United States are at least partially produced in Puerto Rico. Indeed, some drugs are completely produced in Puerto Rico, including the active ingredients. However, as indicated in figure 6.1, U.S. pharmaceutical companies also have significant manufacturing presence outside of Puerto Rico. Why? Because other countries, with large or potentially large markets, impose coupling restrictions, including duties and the threat of lower selling prices. These restrictions, not taxes, frequently explain why manufacturing facilities are located outside the United States and Puerto Rico.¹⁵ Taxes are still considered when U.S. pharmaceutical firms must decide where to manufacture. Their short list of site alternatives usually includes a low-tax country such as Puerto Rico or Ireland, and they have significant manufacturing capacity in both of these countries. But frequently the tax benefits are not sufficient to compensate for the costs associated with the

14. The Tax Reform Act of 1976 included §936, which has two major provisions. First, it grants U.S. corporations a 100 percent credit equal to (and therefore fully offsetting) the U.S. tax both on income earned in the active conduct of a trade or business in a possession and on qualified possession source investment income (which is nonbusiness income earned and invested within the possession). Second, §936 exempts the corporation from U.S. tax on any dividends remitted to the U.S. parent. Before 1982, there were no explicit statutory guidelines on the proper allocation of costs and profits between a U.S. parent and its possession subsidiaries. Under the Tax Equity and Fiscal Responsibility Act of 1982, Congress provided two alternative methods for allocating profits from intangibles. In the example in this paper, the pharmaceutical company uses the profit-split method that allocates 50 percent of the profit to both the parent and subsidiary. Apparently, this method is popular because it reduces the risk of litigation.

15. For expositional convenience, lower prices are considered restrictions that countries use to promote local manufacturing. The intent here is not to argue that these prices are lower than those that would obtain in a competitive market. Rather, they are lower than those that would obtain if the company had a local manufacturing facility.

coupling restrictions. The ALADI duties provides an example of these government coupling restrictions. The price approval process considered next is another coupling restriction that has a major impact on location decisions.

Several factors explain the fill/finishing facilities in figure 6.1. To gain price and regulatory approval, some countries require that fill/finishing activities be done locally, and independent of this restriction, foreign sales offices prefer this local presence for marketing purposes. In addition, sample firms indicated that many of their tablet and fill/finish facilities are obtained when they acquire foreign companies to gain access to local markets.

Note that for the drug in figure 6.1 all manufacturing stages for the European market take place in a single European country. Recent regulatory emphasis on manufacturing and safety and increased pressure on profit margins from competitive forces in Europe have encouraged firms to consolidate operations to capture economies of scale. Ten years ago, the European sourcing pattern would have looked quite different. In particular, there might have been multiple dispersion and tablet facilities and multiple fill/finishing facilities spread throughout Europe for this one drug. At that time, companies completed the final stages of production for several drugs in each European country. The number of stages located in each country was largely determined by the country's negotiating position.

What has caused this change in manufacturing strategy? With the establishment of a common European market, coupling restrictions, in the form of duties and import restrictions, have been removed. Relaxing these restrictions allows pharmaceuticals to consolidate operations to capture economies of scale. Recall, however, that there is another coupling restriction that fuses manufacturing and markets; countries can threaten lower drug prices to lure manufacturing. Historically, companies responded by locating minor manufacturing stages for each drug in several European countries. Now, some countries offer price increases for several products in exchange for an agreement to establish a single-drug facility that will serve all of Europe. This compensates for lower prices a pharmaceutical might receive in other countries. Furthermore, as European markets expand and pharmaceuticals assume a global perspective, American companies want to have a local presence. In addition, regulatory authorities both in the United States and abroad are imposing strict manufacturing requirements that can be met more efficiently in single-purpose facilities.

In summary, both tax and nontax factors influence most pharmaceutical manufacturing location decisions. Government restrictions, including duties, local-content rules, and regulatory approval, are the most important nontax factors. To a lesser extent, coupling frictions, such as transportation costs and environmental and safety considerations, and country frictions, such as infrastructure quality, also matter. Likewise, tax benefits influence these decisions, particularly in Puerto Rico, where coupling restrictions are minor (there are no duties or price approvals for U.S. sales) and country frictions are relatively

low. Pharmaceuticals also locate facilities in Ireland, although to a lesser extent than in Puerto Rico, to get both tax benefits and a stronger European presence. However, as illustrated in the example, nontax factors also explain many site selections. Furthermore, during the past twenty years, the relative importance of various nontax factors has changed, and nontax factors overall have assumed greater importance in decisions. As one manager noted,

In the past, taxes were the primary driver, but as we become more global we are paying more attention to three other factors: (1) our desire to have a manufacturing presence in our key markets, (2) price breaks that we get in exchange for locating facilities in specific countries, and (3) economies of scale that can be gained either in a tax haven or in another country but not in both. Nevertheless, there are big bucks in tax, and these other considerations must be quite large to offset the tax benefits.

Semiconductors

Semiconductor products include both high-volume commodity chips, where the competitive emphasis is on minimizing production costs, and microprocessors, where the emphasis is on product innovation.¹⁶ Successful microprocessors have relatively high gross margins. Like pharmaceuticals, the business is risky and the harvest periods are short. The short harvest periods, however, are due to product obsolescence rather than patents expiring. Still, semiconductor companies have lower gross margins than pharmaceuticals, partly because they sell more low-margin products such as memory chips but also because their sales and marketing expenses, which do not affect gross margin calculations, are lower and their cost of goods sold, which does affect gross margin calculations, is higher.¹⁷ Nevertheless, there are important differences between semiconductor and pharmaceutical firms: the semiconductor industry experiences more extreme fluctuations in demand; success depends more on manufacturing innovation and expertise; the manufacturing learning curve is steeper; and the transfer of this learning from high-volume to proprietary products is more important.¹⁸

16. This description of the semiconductor industry is highly simplified. For additional details, an excellent reference is Yoffie (1987).

17. Semiconductor innovation depends on costly advancements in manufacturing equipment that must be upgraded frequently. This translates into high depreciation charges and, thus, high cost of goods sold. In contrast, while bulk chemical facilities for pharmaceuticals are costly, the upgrade costs are considerably less.

18. Yoffie (1987, 6) discusses the importance of learning in semiconductor manufacturing: "One of the reasons that learning produced such dividends was that semiconductor manufacturing routinely yielded more defects than sound products. For new products, yields as low as 10 percent for inexperienced manufacturers, and 25 percent for experienced manufacturers were quite common. For more mature products, however, yields could be as high as 90 percent. The need to raise yields led firms to manufacture high-volume products that could act as 'technology drivers.' It was generally believed that skills learned in manufacturing large volumes of a simple product could be transferred to lower-volume and higher-value-added devices and help 'drive' the firm down a very steep learning curve."

Semiconductor manufacturing has three stages: wafer fabrication (fab), where millions of electronic building blocks are embedded in a small silicon wafer using highly advanced technology; assembly, where the wafers are “diced” into chips and mounted onto a frame; and testing, where the chips are checked for accuracy (Carolin et al. 1984). The coupling frictions across these manufacturing stages are minimal. For example, at all stages, the output is very light and can be easily transported. “Our products have a lot of mileage on them,” stated one manager, explaining that wafers are produced in the United States, shipped to one Asian country where they are converted to chips, sent to a more developed Asian country for testing, returned to the United States for packaging, and finally distributed worldwide.¹⁹

Until very recently, assembly and test location decisions have been largely determined by labor costs and taxes. Assembly required relatively low skilled labor and basic materials that were both available in many countries. Asian sites were chosen because they offered the best labor at the lowest price and very attractive tax incentives. Similarly, test facilities were located in Asia but in more developed countries such as Singapore because testing requires medium-skilled labor. Taxes were very important in these decisions, but generally they were not pivotal. Commonly, a firm might negotiate for and receive very generous tax benefits including an eight-year tax holiday that would start when production reached a specified level; an agreement that pre-holiday losses could be offset against postholiday gains; a reduction of the postholiday tax rate in exchange for locating in a specified zone; an accelerated depreciation schedule and generous investment credits that would also offset postholiday gains; and permanent exemption for all other taxes. Some of the sample firms stated that they plan to extend these tax holidays in the future by adding additional facilities. In addition to these tax benefits, the company often received training allowances, exemptions from duties, flexibility in setting their legal and financial structures, capital allowances, and a generous financing package. Notwithstanding all of these tax and financial incentives, the company’s choice was largely based on nontax considerations, essentially because comparable tax benefits were available in competing countries. Also, semiconductor managers emphasize that the most important considerations for their test and assembly decisions have been the technical knowledge of the local work force; available local raw materials, especially chemicals and indirect materials, political stability; and, more generally, low operating costs. Recently, automation has become more important for test and assembly, and firms are beginning to consider single locations for all three manufacturing stages. If this becomes a trend, fab location choices will dictate where companies locate manufacturing.

Fabs, in contrast to assembly and test, require resources found in relatively few countries. These resources include a highly educated and stable work

19. Recently, the sample semiconductor firms began combining assembly and test facilities.

force to achieve and maintain high yields, political stability to ensure that the large capital outlays are not expropriated, a strong legal system to defend against technology transfers, local support from vendors to maintain the sophisticated equipment, large quantities of pure water, and consistent electricity. Countries with the requisite resources typically have relatively high statutory tax rates. For most manufacturers, these taxes can be viewed as the rental rates they pay for the sophisticated infrastructure. Yet, many countries compete aggressively, using tax benefits and other financial incentives to lure fabs.

The decision process for locating a fab is similar for all of the sample semiconductor firms. More generally, these fab decisions illustrate the way most of the sample firms make location decisions requiring large capital expenditures. Each of the sample semiconductor firms has built at least one fab in the United States during the past ten years after giving serious consideration to foreign sites. As one manager said, "We prefer to keep fabs close to home because they require a lot of nurturing." Nevertheless, all three have either recently built or have plans to build fabs abroad. The following is a representative composite discussion about how these decisions are made.

The location decision is generally sparked by capacity requirements rather than marketing considerations. In this example, a European division informed the international semiconductor group during the 1980s that it needed additional capacity and suggested building a fab in Europe to avoid a 17 percent duty. Because the company is highly decentralized, the European division, under the guidance of the International Group, began the search process for a European site. After considerable deliberation, to be discussed shortly, the European division recommended a specific European country to the International Group. Shortly after the International Group recommended this site to the sector level, a U.S. semiconductor division began lobbying vigorously for an American site. At this point, a contest ensued between the U.S. and international groups.²⁰

When the European division started their site search for this \$250 million facility (estimated replacement cost in 1990 was \$500 million), they quickly narrowed their short list to West Germany, France, Scotland, and Ireland. Each site had tax and nontax benefits, and country officials aggressively sold their advantages. Ireland offered generous tax and financial benefits,²¹ but management was concerned at that time that Northern Ireland might be too unstable politically and that Southern Ireland might lack the requisite infrastructure, including equipment vendors. Like Ireland, Scotland had a lower tax rate than West Germany or France and offered other tax and financial ben-

20. In many respects, this example is representative of how large capital outlay decisions are made. However, the smaller centralized firms do not conduct these contests. Rather, corporate managers serve on the location teams and are actively involved at all stages of the decision process.

21. Management did not specify whether these benefits were offered by Northern or Southern Ireland, or both.

efits. More important, both Ireland and Scotland were deemed to have a flexible labor force and lower wage rate. A manager commented: "We wanted to feel comfortable, and governments are easy to work with in the United Kingdom. The semiconductor business is cyclical, and when business turns down it is easier to adjust in Scotland and Ireland than in other European countries." These advantages for Scotland and Ireland had to be weighed against higher productivity in West Germany and France. At this point, the European group made its recommendation.

The contest between the U.S. and European sites centered on differences in technology bases, proximity to customers, and financial considerations including duties, grants, and taxes. The financial considerations weighed heavily in favor of Europe. The European country offered generous incentives, including a large cash rebate on fixed asset expenditures, a training grant, and a discretionary grant that was added as a sweetener. As indicated earlier, the 17 percent duty rate (on European sales) also put the U.S. site at a major disadvantage. Aside from these financial advantages, the European site was favored because management felt that European customers would be more comfortable buying from a local supplier. The U.S. site had one major advantage. Its technology base and local infrastructure were superior to the European site. As a result, management felt that it would achieve higher yields more quickly.

How were these considerations weighed? Like most of the sample firms, this company uses a blend of science and art in such a process. They begin with a sophisticated quantitative analysis—actually several spreadsheets. Given estimated demands for several products, the spreadsheets account for equipment requirements and related expenditures, a time series of yield projections, local labor requirements and costs, local duties, local utilities, transportation costs to get the product to market, taxes, and grants.²² The output, an internal rate of return (IRR) for each site, reflects the firm's transfer pricing policy and the duration of the tax benefits.²³ Although the quantitative analy-

22. Some of the sample firms were asked whether they preferred grants, investment tax credits, or lower tax rates at all levels of income. A semiconductor firm responded that they prefer lower tax rates because, "If you use investment incentives, then your marginal tax rate depends on how much you continue to invest." In contrast, the chemical company prefers grants and tax incentives. "Grants in the form of cash from the government or investment tax credits are perhaps more important in making location decisions because, on a net present value basis, the grants may lower the cost of the plant sufficiently to offset a lower tax rate. In determining which is more important, the cost of the plant and profitability of the product are significant factors. If the product is more capital intensive, grants generally are more important. If the product is a high value added product because of technology, tax rates would be more important." Finally, a pharmaceutical company stated, "Because our foreign plants are not capital intensive, we prefer low rates to capital incentives. We are also very concerned about the duration of the low tax rates."

23. A tax manager emphasized that the transfer prices do not depend on the location. "We use uniform transfer prices for all location decisions." Also, even though this firm has been very successful at extending tax holidays, they do not include possible extensions in their IRR calculations.

sis plays a role in the decision process, it is best viewed as a vehicle for anchoring the discussion. Qualitative considerations, including concerns about political stability, potential to penetrate a market, availability of vendors, and other infrastructure issues mentioned earlier, often dominate the quantitative analysis.

What was the role of taxes in this decision? One manager emphasized that even though taxes are an important consideration, tax benefits are short lived: "In the long run, tax incentives and government grants go away, but your factory stays in place. We prefer to base our location decisions on our long-term business objectives in a country. We try to consciously look at a decision to make a major investment in a country, especially a high-tech investment such as a fab, without considering tax incentives." Nevertheless, taxes and duties were the critical advantages favoring the particular European site chosen. More generally, once the list of alternative sites is narrowed to locations with comparable country frictions, taxes and duties frequently become tie-breakers. Thus, taxes and duties are important in fab location decisions, even though managers claim that they are not as important as nontax considerations. A corporate vice president made a typical comment: "First we decided to go to Europe to avoid duties (more recently, local-content requirements), and then, given the decision to go to Europe, we located in the lowest-cost country (including taxes) where business requirements were satisfied."

The contest between the location teams facilitates planning in general, but tax planning in particular. For example, consider the role of the corporate tax office in the decision. A manager at the International Group said that, while they kept the corporate tax office informed of their plans and occasionally received corporate advice, they relied largely on their own tax staff and their European counterparts. The European managers, including tax, did the early negotiations with various countries and the International Group managers did the final negotiations with government officials in the European country. Although the corporate tax office participated little in the decision (relative to more centralized firms), the corporate vice president for tax indicated that his office spends considerable effort communicating the corporate tax position (e.g., their foreign tax credit position and their tax profile in various countries) and the corporate tax strategy to foreign and sector-level tax managers. Also, because location teams compete for sites, each team is motivated to negotiate aggressively with local authorities for tax and other benefits and to demonstrate how their site benefits overall corporate tax planning. Nevertheless, the corporate vice president of tax indicated that the company might get more generous tax benefits if he, like his counterparts in more centralized firms, were involved in country negotiations.

In summary, until recently, location decisions in the semiconductor industry have been strongly influenced by country frictions and tax considerations, while coupling frictions have been much less important. Prior to the early 1980s, most fabs (for U.S. firms) were in the United States, and most test and

assembly operations were in Asia. More recently, foreign governments have imposed local-content restrictions that have encouraged U.S. companies to build fabs closer to their major markets. Coupling frictions are also becoming more important as customers press for local manufacturing. Finally, this section demonstrates that larger decentralized firms use location team contests to coordinate more efficient planning.

Chemicals

The sample chemical company has significantly lower gross margins than the pharmaceutical and semiconductor firms do. Historically, it has concentrated production in world-scale plants that each cost approximately \$400 million to \$500 million (in 1991 dollars) and has competed in commodity markets as a low-cost producer. More recently, it is also seeking to gain competitive advantage by specializing in more advanced chemicals tailored to customers' needs. As a result, some of their new plants are smaller, with costs in the \$100 million range. In this industry, unlike pharmaceuticals and semiconductors, transportation costs are large. Thus, although companies must consolidate operations into a few world-scale plants to be competitive, they must locate these plants close to their major markets and suppliers to minimize transportation costs. Thus, coupling frictions are a major consideration for chemical companies.

Taxes are less important for chemical company location decisions than they are for pharmaceutical and semiconductor firms. Although chemical facilities, like fabs, require large capital outlays, they are not as attractive to host countries. Generally, chemical facilities demand large quantities of water and electricity, are considered an environmental risk, and have relatively small medium-skilled work forces. As a consequence, although some countries offer limited tax incentives in the form of rapid depreciation and favorable financing, these benefits are thought to be considerably smaller than the ones countries offer to lure fabs. Collectively, these modest financial and tax benefits, the earlier arguments that tax benefits increase as gross margins increase, and the large coupling frictions related to transportation costs and economies of scale explain why nontax considerations frequently dictate location decisions for major chemical facilities. Nevertheless, as the following example illustrates, even when taxes do not dictate the outcome they are still an important consideration in the decision process. This example also underscores the advantages of expanding an existing location versus starting a new greenfield site. This greenfield disadvantage was a factor in many of the location decisions studied.

Recently, the sample chemical firm began a search for a site to produce an existing product using a new and cheaper process to serve the North American market. Transportation costs quickly focused attention on a Canadian and U.S. site. The U.S. site had an advantage because it was an expansion, whereas the Canadian site was a greenfield. Existing sites often have excess

infrastructure capacity (sewage, parking lots); their local management has a working relationship with local government, contractors, and suppliers; and they have an experienced work force. Furthermore, expansions can be completed more quickly than greenfield sites: the infrastructure is in place, building permits are easier to acquire, and building contracts can be completed sooner. The higher costs of a greenfield site are typically too large for any single division to absorb.²⁴ When existing sites are not in low-tax countries, these costs effectively increase the opportunity cost of locating in low-tax countries and, thus, increase tax-haven country frictions. In addition to these greenfield disadvantages, the Canadian site could not capitalize on a manufacturing synergy available at the U.S. site.²⁵ The Canadian site offered financial and tax benefits that were modest compared to those used to lure a fab but significant enough to make the decision close.²⁶

Several rounds of meetings were conducted that included representatives from the competing location teams and corporate managers. During each round, according to the vice president of tax, the location teams upgraded their information and renegotiated with local authorities for more benefits. As a result, they continually changed the assumptions underlying their net present value calculations (which were based on detailed procedures documented in a company manual). At these meetings, the vice president of tax served as a referee who attested to the soundness of the tax assumptions underlying these calculations. He did not meet with local tax authorities, but tax managers at both locations, who report functionally to him, operated on his behalf. Also, as indicated earlier, the competitive spirit of the geographic teams partly compensated for his not participating directly in local tax planning.

The net present value calculations were comparable for the two sites. In these situations, "the tiebreaker is to go to the country where operations are most efficient," said the chief strategist. "The tax benefits are generally short run, while the operating benefits continue," he stated, suggesting, once again, that the net present value calculations are not precise enough to capture qualitatively the differences between the locations. The decision to locate in the

24. In some companies, successful greenfield sites must be promoted by the corporate office in conjunction with a corporate strategic initiative. Also, divisions with considerable autonomy over location decisions will not usually choose a greenfield site unless the corporate office absorbs part of the start-up costs associated with the infrastructure. For example, the corporate office could charge a fee based on the ratio of the division's requirement to the planned capacity for the entire site. Although I did not pursue this issue as part of my interview protocol, the chemical sample firm is just now considering this type of fee arrangement. The reason why these fee schedules may not be common and, thus, why there is such a first-mover disadvantage to greenfield sites is that many firms probably do not or cannot anticipate future expansions. Rather, they expand in a piecemeal fashion over an extended period of time.

25. The new production process uses the heat released in the manufacturing process to produce steam that can produce electricity or be used to heat facilities. At the U.S. site, the new facility would produce enough of these utilities to service existing operations (that have a net utility demand). Because there were no immediate plans to add operations that would benefit from these utilities at the Canadian site, the U.S. site had an advantage.

26. The company did not provide the details of these financial and tax benefits.

United States resulted in tax benefits being left on the table because the opportunity costs of operating in Canada (country frictions) were too large relative to the United States. More generally, because many U.S. firms are just beginning to expand globally and have excess infrastructure at existing U.S. sites, this greenfield friction (associated with foreign sites) probably encourages U.S. firms to expand at home.

Software

The sample software company, the smallest firm in the study, is a recent start-up with annual sales approaching \$100 million.²⁷ Because manufacturing costs are very small compared to R&D and marketing costs and because software is a risky business, the company's gross margins are very large. All of their software is developed in the United States. The Puerto Rican facility transcribes the code to floppy disks and packages the disks for sale. The manufacturing process is straightforward, so there are virtually no coupling, country, or coordination frictions associated with these Puerto Rican operations. Not surprisingly, the chief financial officer (CFO) stated that taxes are the primary driver in location decisions. In fact, when the firm decided to expand operations, it chose a short list of sites by requesting a list of low-tax countries from an outside tax advisor. The CFO stated that "we decided to go to Puerto Rico to get the product with the highest gross margin in the country with the lowest tax rates."

Scholes and Wolfson predict that, absent frictions, restrictions will be imposed to curb overly aggressive tax planning. But what is considered overly aggressive? The company uses strict statutory rules to split profit between Puerto Rico and the United States, so their transfer prices per se are acceptable to the U.S. taxing authorities. However, the U.S. Treasury argues that many Puerto Rican software operations do not constitute legitimate manufacturing.²⁸ This is a grey area, but although managers at the sample company agree that software firms have taken an aggressive tax position, they also believe that Puerto Rican operations do constitute manufacturing. A current court case is considering the validity of this claim. If the courts rule in favor of the taxing authority, transfer prices will have to be set using a cost-plus formula, regardless of where the facilities are located outside the United States. Considering the low manufacturing costs, this will greatly reduce the benefits of locating in a low-tax country.

Materials

The materials company competes by specializing in niche markets. Its competitive advantage is that its engineers spend so much time at their customers'

27. Although the focus here is on software, the company also sells related hardware that is produced in Asia by third parties. These hardware sales are part of the \$100 million figure.

28. Income that is not derived from manufacturing is deemed subpart F and taxed immediately in the United States. Regulation §1.954-3(a)(4) provides general guidelines as to what constitutes manufacturing.

facilities that they know the material engineering aspects of their customers' businesses better than the customers do. When customers' processing changes, because of slight variances in operating conditions or materials, the sample company must quickly modify its products as needed. Of all the sample firms, the materials firm had the largest coupling friction between marketing and manufacturing. In fact, it feels compelled to locate manufacturing facilities as close as possible to its customers. Thus, taxes are a relatively minor consideration in location decisions.

The chief financial officer stated that they are more inclined to minimize tax barriers among a list of countries that satisfy business conditions than they are to go for the tax benefits. For example, the company went to Singapore because it wanted to be near customers that were locating facilities in Malaysia and Singapore. Once there, it applied for pioneer status for its manufacturing operations.²⁹

6.3.2 Marketing and Distribution Centers

This subsection briefly describes two examples of marketing and distribution centers that were largely motivated by tax or duty considerations. In the first, a sample firm recently established a marketing center in Belgium to shift income from high-tax-rate European countries to the United States without changing the income's foreign-source character. The Belgian operation was set up as a branch of the U.S. parent. The European manufacturing sites pay the U.S. parent for marketing services that are rendered in Belgium, and the branch pays a small Belgian tax that is based on their administrative expenses. The company tries to set the marketing fees as high as the European taxing authorities will tolerate.

In the second example, another sample firm recently established a European distribution center in the Netherlands, primarily to minimize duties. As with the above marketing center, nontax considerations were minimal.³⁰ Figure 6.2 illustrates how goods were invoiced both before and after the new center was set up. Previously, the American parent (AP) invoiced Italy directly. Duties were based on the transfer price and the relatively high Italian duty rate for American imports. The company established a new American subsidiary, AP-International, that in turn established a branch in the Netherlands (NB). After the distribution center was set up in the Netherlands, goods were invoiced from AP-International to the Netherlands and then to Italy. Under the new structure, duties were based on the transfer price between AP and AP-International (not the transfer price between AP-International and

29. Pioneer status refers to special tax treatment for firms starting operations in Singapore. This firm recently abandoned pioneer status because its manufacturing operations were not profitable and because it wanted to average these losses with other Singaporean operations (which do not have pioneer status) and carry forward their losses (not allowed under pioneer status).

30. Logistical concerns were the most important nontax requirements, and they were easily satisfied.

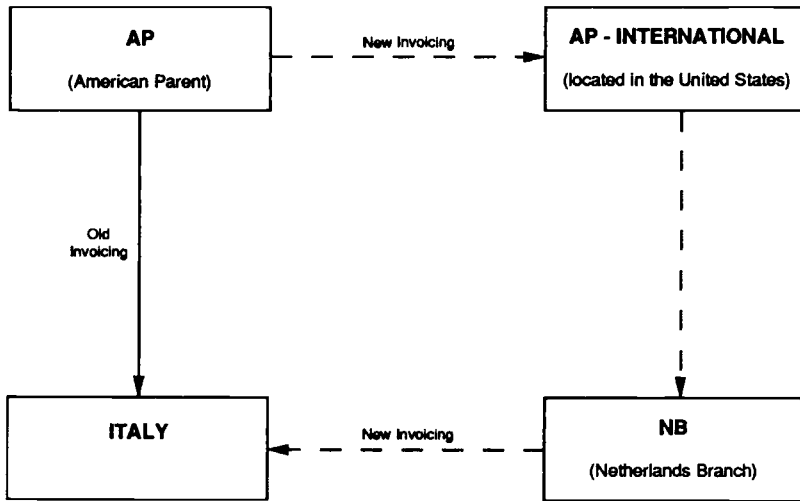


Fig 6.2 Distribution center invoicing patterns

NB) and the relatively low Dutch duty rate for U.S. imports. Importantly, after the change, AP's European corporate-support expenses were moved from AP to AP-International, justifying a lower transfer price and thus lower duties from AP to AP-International.

6.3.3 Administrative Centers

With the recent removal of exchange controls and intra-European duties and withholding taxes, firms are starting to consolidate European administrative activities, largely for tax reasons. Apparently, Belgian coordination Centers (BCCs) are a particularly attractive way to shift income and related economic activities from high-tax European countries to Belgium. The income shifted may be taxed immediately in the United States but retains its foreign-source character for the purpose of determining foreign tax credit limitations.³¹ Also, because less taxes are paid in high-tax countries, companies reduce the likelihood of being in an excess foreign tax credit position. A small Belgian tax is incurred, based on the administrative costs of running the center.

A sample company recently selected Belgium over the Netherlands, another popular site for an administrative center. The Belgian facility purchases receivables at a discount (the shifted profit) from other European sites and centralizes hedging activities that were previously conducted separately by each country manager. All countries involved have agreed on a discount-rate

31. Under section §954(d), this income is deemed subpart F and is taxed immediately in the United States.

formula based on the economic activity in Belgium. The formula has two components representing the normal interest rate and a hedging charge. In principle, country and coupling frictions affect the amount of activity that is centralized. For example, the sample firm elected not to centralize credit functions, because the local managers have superior information. This coupling friction fuses sales and distribution to the credit function. Also, in this case, the foreign tax credit benefit of shifting credit risk is smaller because credit risk income would be assigned to the related party-factor income basket, whereas the hedging and normal interest fall in the general basket. When queried about how aggressive they were in negotiating the discount rate, the CFO responded, "There is some room here, but you can't be overly aggressive. Eventually, you have to deal with the European tax authorities when you are audited. Bears and bulls can both make money, but pigs never do."

This firm also considered embedding the BCC in a legal structure involving its Dutch and Swiss operations but eventually abandoned this idea in favor of establishing the BCC as a subsidiary of a U.S. operation. However, the proposed legal structure has features common to those established by other sample firms. Currently, the Swiss operation is a branch of a Dutch parent, and the plan was to establish the BCC as another Dutch branch. The resulting structure would have had several advantages. First, it would have allowed the Swiss operation to serve as a banking center for all of Europe, a common practice for the sample firms. Second, it would have allowed access to the Dutch treaty network. Third, it would have also taken advantage of the low Swiss-Dutch combined tax rate on interest income generated from investing the Belgian profits. The sample firm ultimately abandoned the plan because it divested a manufacturing operation in Holland and, as a result, no longer qualified for the favorable tax rates on interest income.

6.4 Sourcing Decisions: Transfer Pricing and Performance Evaluation

Sourcing decisions, like location decisions, are affected by both tax and nontax considerations that frequently conflict. Location decisions involve trading off coupling and country frictions (and restrictions) for tax benefits. Several mechanisms, including evaluation and control systems and transfer prices, are used to coordinate sourcing decisions. As we have seen, nontax considerations (e.g., factor availability) can be viewed as frictions that frequently impede tax planning related to location decisions. Similarly, the design of transfer prices and evaluation systems to coordinate dispersed activities can result in coordination frictions that impede tax planning related to ongoing operations. Management's challenge is to identify situations where conflicts between tax and nontax considerations are prominent and either to make a trade-off or to mitigate the frictions by creating alternative coordination mechanisms.

Firms can shift profit from high- to low-tax countries by sourcing more product from the low-tax country (while keeping transfer prices constant), by changing transfer prices (while holding sourcing decisions constant), or by combining these alternatives. Thus, the tax benefits associated with sourcing derive from two activities: (1) setting tax transfer prices and (2) setting the quantities that will be sourced from various locations. For the sample firms, setting tax transfer prices is a corporate responsibility that typically requires less coordination with noncorporate managers (including sector, group, and divisional managers) than does setting quantities. Less coordination is required partly because the sample firms' tax transfer prices do not affect operating decisions or performance evaluations.³² In contrast, sourcing quantities do affect, and are affected by, performance measures and, unlike transfer prices, can be easily adjusted to account for changes in economic circumstances during a tax year. Also, for the sample firms, there frequently are sourcing (quantity) situations where managers' performance measures are in conflict with the corporate objective of maximizing after-tax worldwide income.³³ The extent of these conflicts varies depending on whether the firm uses a pretax or after-tax performance measure. In this section, I consider separately how tax transfer prices and performance measures affect sourcing decisions. In contrast to the previous section, where the primary focus was on location *decisions*, the discussion here centers more on the mechanisms (tax transfer prices and performance measures) that influence sourcing decisions than on the decisions *per se*.

In subsection 6.4.1, I examine the role of transfer prices in sourcing decisions. First I consider differences in firms' abilities to transfer price aggressively when there are no frictions or restrictions to impede this behavior. I then discuss a coordination friction that involves the conflict between setting transfer prices to reduce taxes and setting them to motivate managers. Specifically, the coordination friction associated with setting transfer prices for tax reasons is the forgone operating efficiencies (from not using the optimal transfer prices for managerial purposes). The discussion then turns to the two ways that the sample firms cope with this friction. Some use separate transfer prices for tax and managerial purposes, while others use performance measures that are not affected by tax transfer prices. Presumably, the choice of whether to explicitly use two sets of transfer prices depends on whether the cost of explicitly maintaining a separate set of managerial transfer prices exceeds the

32. Nevertheless, some coordination is required when setting tax transfer prices, because foreign managers must defend these prices when they are audited locally.

33. In principle, a performance measure could be designed to ensure the correct distribution of quantities to maximize after-tax worldwide income. For such an ideal performance measure, there would be no situations where managers' actions would conflict with corporate objectives. Whether such an ideal performance measure exists and can be cost-effectively implemented is beyond the scope of this research.

forgone coordination benefits (or friction) of using an evaluation system that does not depend on tax transfer prices. The discussion then proffers a reason why these coordination frictions might be particularly small for some of the sample firms. Interestingly, the argument concludes that the firms that have the most flexibility in setting transfer prices also face the smallest coordination friction. This absence of frictions, it is further argued, explains recent transfer pricing restrictions including more extensive audits and more stringent enforcement penalties.³⁴ The transfer pricing discussion closes by illustrating how these restrictions have curbed aggressive transfer pricing. In fact, tax managers now say that they are on the defensive and there is some evidence presented later to back this claim.

Subsection 6.4.2 illustrates how sourcing decisions are coordinated differently by firms that use pretax and after-tax performance systems. Because tax transfer prices do not influence these performance measures, the relevant managers must communicate regularly to ensure better sourcing decisions. This communication travels in both directions. Local managers are encouraged to pursue local tax planning opportunities and to communicate these opportunities to the corporate tax office. The corporate office communicates the corporate tax profile and corporate tax strategy to the local managers and motivates them to use this information appropriately. Importantly, this communication is less critical for firms that use after-tax performance measures, suggesting that there must be reasons why firms use before-tax performance measures. One explanation is that after-tax measures are costly to develop and implement. Determining the “correct” tax rate for these after-tax performance measures is a complex, if not impossible, problem that requires considerable coordination between corporate and foreign tax planners.³⁵ Section 6.4.2 contains a brief discussion of how firms that use pretax performance measures

34. In the United States, §6662 sets the penalty for §482 adjustments in excess of \$20 million at 40 percent of the contested amount. However, §6664 provides an exception. Specifically, no penalty is imposed if the taxpayer can show reasonable cause and demonstrate that it acted in good faith. One of the sample firms views the “defensive” transfer pricing strategies discussed in subsection 6.4.1 as evidence of reasonable cause and good faith. Japanese tax officials are also scrutinizing transfer prices more carefully recently. On March 31, 1986, the Japanese taxing authority received statutory authority to enforce transfer prices on foreign transactions.

35. It requires knowledge about the company’s repatriation strategy, its forecasts of future profitability at various locations, and a host of other tax planning considerations. When foreign managers are evaluated after-tax, using such a rate, they will essentially share tax benefits with other facilities. Corporate tax rates on worldwide income are reduced because foreign tax credits of various foreign subsidiaries and gains and losses (within the same country) are averaged when corporate taxes are determined. More generally, corporate tax rates are reduced because corporate tax managers coordinate the separate activities of foreign tax managers. The reduction in corporate taxes due to synergies resulting from this coordination, like the benefits of foreign tax credit averaging, cannot be attributed to a specific foreign location. Viewing tax as another cost, the challenge is to determine the correct marginal cost of an action that is affected by and affects others’ past, current, and future actions. From the cost accounting literature, we know that this is a tough challenge, both theoretically and practically.

manage tax versus nontax conflicts related to sourcing decisions. Another subsection illustrates, in general, how a large multinational firm coordinates worldwide tax planning and, in particular, how the budgeting process and after-tax performance measures influence sourcing patterns.

6.4.1 Transfer Pricing

Flexibility

Subject to restrictions imposed by tax authorities throughout the world, tax transfer prices can be set so that profits are shifted from high- to low-tax locations. Why do opportunities to transfer price aggressively differ across firms? The magnitude of the tax transfer price benefit depends on the firm's repatriation policy, the dispersion of its tax rates across different countries, the size of its gross margin, its ability to decouple activities in its value chain and locate them in low-tax countries, and the extent of government restrictions. If profits are repatriated immediately from all worldwide locations, then the tax transfer price benefit is reduced. There is still an incentive to shift profits to avoid high foreign taxes and to manage foreign tax credits. But, without deferral, the lowest tax rate possible on worldwide income is the American rate. Several of the sample firms' managers claim that firms with high gross margins are in the best position to transfer price aggressively. This may be true, because gross margins are typically high for products that have no comparable unrelated-party prices (cups). Gross margins are high, for example, when there are barriers to entry, when operating risks are high, and when firms have large investments in intangibles such as R&D and marketing. Products with these traits have fewer comparable products, and as one manager indicated, "their correct transfer prices are almost impossible to determine." Gross margins alone, however, do not provide the opportunity to transfer price aggressively. Firms must also be able to decouple their business activities and disperse them to low-tax countries. As we shall see in section 6.4.2, aggressive transfer pricing has been curbed recently. However, in some industries, transfer pricing is still an important tax planning consideration.

In addition to managerial and tax considerations, duties and (in the pharmaceutical industry) price approvals reduce the flexibility in setting transfer prices. In the pharmaceutical industry, price approvals are frequently based on cost-plus formulas, so companies have a strong incentive to increase transfer prices on intermediate products. Because most sales are in high-tax countries, the tax and regulatory incentives are concordant. Specifically, firms want to transfer goods into high-tax countries at higher transfer prices. However, if there is pressure to lower transfer prices because of duties, the prices of goods sold are also lowered. This duty-price trade-off probably explains, at least partially, why duties are so high for pharmaceuticals; countries can use duties to help regulate prices. It also explains why pharmaceutical firms' transfer

pricing committees have members from more functional areas than the other sample firms do. Nevertheless, both tax and nontax managers at the sample firms generally agreed that tax “has the loudest voice” when it comes to transfer pricing.³⁶

Coordination Frictions

Transfer prices can also be used for nontax reasons, including motivating foreign tax managers to source more efficiently. When firms use the same transfer prices for tax and managerial purposes, they will be less inclined to let tax considerations dictate how these prices are set if the nontax benefits are large. The nontax benefits associated with transfer prices (coordination frictions) differ across firms. Smaller centralized firms rely less on mechanisms such as transfer prices to coordinate activities. For example, a manager at one of the more centralized sample firms stated, “We do not view ourselves as a company with several independent businesses around the world, just plants and sales offices. Thus, transfer prices, as devices to motivate efficient decision making, are not important.” In contrast, the potential benefits from designing transfer prices and evaluation systems to meet nontax objectives are substantial for the decentralized sample firms that have multiple strategic business units (SBUs). One of the sample firms uses transfer prices to facilitate long-run strategic initiatives. In particular, it transfers additional profit (on its managerial books only) to compensate for large start-up losses in countries where it envisions tremendous growth potential in the next century. The objective is to motivate local managers.

In addition to firm size and the extent of decentralization, companies that have unique intermediate products benefit less from the nontax advantages associated with transfer prices. Specifically, a major nontax benefit of transfer prices is that they can motivate managers to source intermediates from the lowest-cost supplier. Thus, when intermediates are not available from outside vendors, the forgone coordination benefits associated with using transfer prices are relatively small. Interestingly, firms that sell blockbuster products that are very unique at all stages of manufacturing have both the most flexibility in setting tax transfer prices and the smallest coordination frictions.

How Firms Cope with Coordination Frictions

When the coordination frictions associated with transfer pricing become large, firms have an incentive to develop alternative mechanisms to motivate managers. To this end, they can establish separate transfer prices for tax and managerial purposes or use performance measures that do not depend on transfer prices. All of the sample firms use one of these alternatives.

36. This does not necessarily mean, however, that tax has the most clout because they can shift profits and increase after-tax cash flow. Tax managers must defend their transfer prices to taxing officials around the world, and some tax managers indicated that, left on their own, nontax managers would set transfer prices that would not pass a tax audit.

A common view is that taxing authorities will challenge two sets of transfer prices. Presumably, the argument is that tax transfer prices must pass a business purpose test and that they cannot possibly do so if the business is using alternative prices. The fallacy with this argument is that transfer prices can serve multiple business purposes. Taxing authorities expect tax transfer prices to assign an “appropriate” amount of profit to each location, and there clearly are situations where tax transfer prices will also meet firms’ nontax incentive objectives. But firms with both cost and profit centers have no managerial reason to assign profit to the cost centers. Indeed, some of the sample firms assign all profit to the managers who set customer sales prices, presumably to protect gross margins. Also, some take losses on their corporate office managerial books to motivate subsidiary managers. In these situations, the total profit assigned to subsidiaries exceeds the company profits. For example, as indicated earlier, one sample firm’s managerial transfer prices are used to facilitate the long-term corporate strategy. Additional profit is assigned to foreign managers, to compensate for start-up losses, in a location where the firm is trying to “get in early,” and an offsetting loss is recorded at the corporate office.

Besides using different transfer prices for tax and performance evaluation purposes, firms reduce coordination frictions that impede tax planning by designing performance evaluation measures that do not depend on transfer prices. The resulting performance systems may not be optimal from a nontax perspective, but they allow the firm to base transfer prices on tax considerations. For example, some of the sample firms evaluate manufacturing facilities as cost centers but only include costs related to transactions outside the firm. Thus, transfer prices do not affect these performance measures. By excluding transfer prices, as mentioned earlier, the company might be sacrificing an opportunity to increase foreign managers’ incentive to control costs. Implicitly, these firms are using different transfer prices for tax and managerial purposes. These implicit managerial transfer prices assign zero profit to the manufacturing facilities and all of the profits to the distribution centers.

Current Strategies: Offensive or Defensive?

The pressure on tax transfer prices from authorities throughout the world has significantly checked aggressive transfer pricing. This subsection examines more closely why managers’ ability to set transfer prices to reduce taxes has been curbed. It closes with an example that illustrates reinvoicing, a common way to assign profit. This example demonstrates how the collective pressures from taxing authorities are causing transfer prices to converge closer to economic reality—to assign profit commensurate with the economic value added.

How aggressively do sample firms set transfer prices? Tax managers uniformly agreed that even if there are “correct” transfer prices, they are virtually impossible to estimate (for products that have no comparable unrelated-party

prices). As a result, managers have tremendous discretion in setting them. They also agree that the taxing authorities, especially those in the United States, are making it very difficult for firms to exercise this discretion as freely as they once did. Some firms are more aggressive than others, but most concur that the grey area for setting transfer prices has narrowed and that firms need to develop a comprehensive transfer pricing policy and apply it consistently. A vice president of tax emphasized the trend toward a defensive transfer pricing strategy:³⁷

There are two strategies—offensive or defensive. An offensive strategy is simply shifting income to the lowest tax jurisdiction under the darkness of night approach—essentially hoping the taxing authorities will not find it. A defensive strategy views a corporate taxpayer more like a stakeholder; that is, the company is going to pay taxes somewhere in the world, thus what the company wants to do is avoid costly and time-consuming price disputes by putting into place a pricing policy that will withstand scrutiny by all taxing authorities. These are not necessarily either/or strategies and can be used selectively in tandem. In the past, my personal view was that most taxpayers were offensive. However, a number of things are changing, such as better and tougher audits both here and overseas and substantial penalties for being overly aggressive. As a result, I think that most multinationals are shifting to a defensive mode.

The following example illustrates how a sample firm modified its transfer pricing policy to reflect their more defensive posture. This example also illustrates that transfer pricing can be somewhat more complicated than just setting the price between two locations to reduce worldwide taxes. The firm uses re invoicing (explained below) to get the “right” profit into two countries. The company assembles in a low-tax Asian country a product that is sold in numerous locations, including Australia. Although the product is physically shipped from the low-tax Asian country directly to an Australian sales and distribution center, the invoices follow one of two triangular routes: either from the low-tax Asian country to Hong Kong and then to Australia or from the low-tax Asian country to the United States and then to Australia. Hong Kong is also a low-tax location for this firm, and the Australian and American operations are taxed at approximately the same higher rate.

The product in this example is very profitable. The re invoicing objective is to put profit in the low-tax Asian country, Australia, and the United States in such a way as to satisfy all of the taxing authorities and, presumably, still reduce worldwide taxes. Without re invoicing, the company believes that too much profit, relative to the value added, would be split between the low-tax Asian country and Australia. One tax manager suggested that the collective profit was too large because historically royalty payments back to the United

37. On reading this quote, tax managers at one of the sample firms emphasized that the offensive strategy described is “too strong.” They agreed that many firms had been more offensive in the past but emphasized that none would have dared use this “darkness of night” strategy.

States were probably too small. The vice president of tax was particularly interested in having the Australian profit be consistent with the economic value of the distribution center because of concerns about future tax audits. Although the Australian taxing authority would not object to having too much Australian profit now, it might object to large losses later if the market experiences a downturn. According to the tax manager, "It is better to get the right amount of profit there in the first place and to be consistent." Also, the tax managers were concerned that the Australian authorities might mistakenly interpret the re invoicing as an effort to shift profit from Australia to a low-tax country (and to the United States because the income is subpart F):

We used Hong Kong rather than a low-tax country such as the Cayman Islands because our Hong Kong operation deserved the profits (on their local-legal books) and because we were concerned about Australian audit exposure. In the event the Australian authorities challenge the transfer prices, we want to be in a position to argue business purpose; the Hong Kong operation is the heart of our regional operations, and sales between the low-tax Asian country and Australia are facilitated by the Hong Kong office. Also, the Hong Kong operation was already paying royalties on other products, so they could conveniently start royalty payments on the new product.

Under the re invoicing arrangement, a cost-plus transfer price is used for product leaving the low-tax Asian country, a common pricing approach for manufacturing facilities, and a resale-minus transfer price is used for product entering Australia, also a standard approach for sales and distribution centers. Consistent "plus" and "minus" percentages are used throughout the world for comparable products, even if costs and sales prices differ. Regardless, of whether the re invoicing goes through Hong Kong or the United States, the residual profit is taxed immediately in the United States and is characterized as foreign-sourced for the purpose of determining the foreign tax credit limitation.

6.4.2 Performance Measures

Pretax Performance Measures

Many of the sample firms evaluate managers below the rank of the vice president using pretax measures that are not influenced by transfer prices.³⁸ In some, manufacturing centers are evaluated as cost centers, and sales offices are evaluated based on companywide profit, defined as sales price less total costs at all locations. Thus, although transfer prices are influenced by duties,

38. Although I did not systematically ask managers why they did not use an after-tax performance measure, a few offered reasons. One claimed that foreign managers did not control transfer prices, and their impact on foreign taxes swamped other planning considerations. Another emphasized the difficulty of allocating the benefits of foreign tax credits and other items to various divisions. They speak from experience; they make these allocations at the SBU level.

taxes, and regulatory issues, they are not designed to coordinate activities or align effort.

How do corporate managers ensure *after-tax* profit maximization when sourcing managers are evaluated *pretax*? A potential conflict occurs, for example, when the tax savings from producing in a lower-tax country exceed the operating cost savings from producing in a higher-tax country. When there is a downturn in worldwide sales, corporate managers would prefer that production be reduced in the higher-tax country. However, their choice conflicts with that of the sourcing manager—presuming the sourcing manager is motivated strictly by pretax profits. How is this situation managed? Typically, the sourcing managers communicate their concerns about not making their production targets to the corporate managers. In some of the sample companies, corporate managers convey this concern to their bonus committees, and informal adjustments are made. In others, an explicit adjustment is made on the managerial books to protect the sourcing manager's profits. The corporate office absorbs a loss equal to the marginal operating costs of producing in the lower-tax country.³⁹

After-tax Performance Measures

Two of the firms are very decentralized and use after-tax evaluation systems. Tax transfer prices do not affect evaluations for reasons discussed earlier. The following example illustrates how one firm coordinates worldwide tax planning, how its after-tax performance measure is determined, and how sourcing targets are established as part of the budget process.

The company is organized both by strategic business units (SBUs) and by geographic regions. As in the other sample firms, the vice president of tax reports directly to the CFO, as do the vice presidents of treasury, control, and international finance. A domestic tax manager and international tax manager each report directly to the vice president of tax, along with several other managers not relevant to this example. The international tax manager coordinates international operations with geographic tax managers located throughout the world, who report indirectly to the vice president of international finance. None of the above managers are in the SBU organizations. The SBU general managers report directly to the chief executive officer (CEO), as does the CFO. Each SBU organization has a finance staff at its sector offices in the United States and financial managers spread throughout the world. The SBU country financial managers control the local operating entities and convey important information that is used for annual tax planning.

39. Some would argue that taxes distort real economic activity in this situation; production is shifted to the higher-cost location. A fallacy in this argument is that it ignores operating benefits related to public goods that are priced in tax rates. For example, the higher-operating-cost country might have toll roads (which are reflected in the operating costs), while the lower-operating-cost country might recoup these costs through taxes.

Each year, an annual worldwide tax plan is developed following a procedure similar to the one used to develop nontax budgets. Besides establishing guidelines, this process facilitates worldwide communication. The local offices convey the specific information needed to develop the worldwide tax plan, and the corporate office in turn communicates the company's tax profile to local managers to encourage them to keep a companywide perspective when executing the plan.

To see how the process works, consider the United Kingdom, where the company has several SBU offices. The U.K. financial manager is responsible for tax, treasury, and statutory accounting and is part of the geographic organization managed by the vice president of international finance. He or she coordinates finance, recruiting, and training for the SBUs and files a consolidated U.K. tax form. Tax planning starts during the second fiscal quarter, immediately after the tax office completes compliance for the prior year. The U.K. financial manager collects profitability projections and other vital tax planning information from the SBUs. This information is incorporated into the first draft of the U.K. tax plan that is submitted to the European tax manager, along with similar plans from all of Europe. Next, the first stage of sourcing coordination starts, with the European tax manager serving as a liaison between the international tax manager at the corporate office and the country financial managers. For example, after a negotiation with the country managers, a decision might be made to source more of a specific intermediate product from France and less from the United Kingdom. These country sourcing targets are the basis for the SBU budgets that are subsequently used to establish the after-tax performance measures discussed later.

Throughout the next year, when the plan is executed, the international and geographic tax managers communicate regularly to adjust for unexpected events and to exchange information required for setting tax policies. The international tax manager—who, along with the general tax attorney, the vice president of tax, and the vice president of international finance, is part of the transfer pricing committee—ensures that transfer price policy is applied consistently and collects information that is used to amend it. Country financial managers, for example, voice concerns about local audit pressures. Also, the international tax manager helps regional and country managers interpret transfer price policy and coordinates sourcing adjustments similar to the one in the re invoicing example given above.

Evaluations for all managers responsible for outside sales, including those that manage a single product line, are largely based on return on net assets, with most business units using after-tax return on net assets.⁴⁰ The denominator of this measure, net assets, is assets less liabilities for the unit being evaluated. The numerator depends on market profit and loss statements that have

40. The exceptions are business units that do not influence taxes, and situations where corporate tax allocations would be too arbitrary.

several incentive features and are based on managerial, rather than tax, transfer prices. These transfer prices change over time as the corporate office changes managerial emphasis.⁴¹ As was the case for the example in the previous section, when the profit at a specific site differs from the legal-entity profit (reported for local tax, financial reporting, and duty considerations), a corporate account picks up the difference. Note that return on net assets does not provide individual managers with a direct incentive to coordinate activities such as sourcing. Thus, the tax planning and ongoing communication considerations, discussed earlier, work in tandem with return on net assets to facilitate planning.

6.5 Summary and Conclusions

This field study examines how taxes influence nine firms' location and sourcing decisions. A conceptual framework is introduced to help organize salient industry and business activity characteristics that determine the role of taxes in location decisions. It proposes three categories of nontax considerations (or frictions): coupling frictions, which tend to fuse activities together in a firm's value chain; country frictions, which are the opportunity cost of locating a specific activity, or collection of activities, in a particular country; and coordination frictions, which are associated with incentive and communication mechanisms that impede tax minimizations. Firms assign facilities in their product value chains to countries where the maximum value is added at a minimum after-tax cost. To this end, they must first identify spots in their value chains where coupling frictions are small and then locate these separate facilities, taking account of country and coordination frictions and local taxes. Given existing facilities, firms must also utilize existing capacity in response to unexpected changes in demand, operating conditions, and tax circumstances. Several mechanisms, including evaluation and control systems and transfer prices, are used to coordinate these sourcing decisions. The design of these mechanisms can result in coordination frictions that impede tax planning related to these ongoing operations. A field study is a particularly useful way to identify both nontax and tax factors that managers consider when making these location and sourcing decisions.

The results are based on interviews with chief financial officers and high-level managers from manufacturing, treasury, tax, and strategy, about sixty-eight location decisions that were made during the past twenty-five years.

41. This is the sample firm that uses managerial transfer prices as a mechanism to achieve strategic objectives. For example, the company is in an Asian country for long-term strategic reasons, especially for marketing reasons (to get a foothold) and for technology exchange considerations. Although it eventually expects to realize profits, it is currently operating at a loss (in the sense that current-period revenues do not cover the current-period "true" economic costs). Because no one enjoys working for an unprofitable firm, the firm sets transfer prices that make the Asian operation appear profitable when reasonable operating targets are met.

These interviews suggest several conclusions related to location decisions. First, tax considerations largely dictate location decisions for business activities where these frictions are small, such as administrative and distribution centers. The examples in sections 6.3.2 and 6.3.3 illustrate how taxes frequently dominate the decision to locate administrative and distribution centers in countries where these activities are tax favored. Second, nontax considerations are very important for all manufacturing location decisions, including those where the final decision is to locate in a low-tax country. Moreover, while taxes are an important consideration in locating manufacturing facilities, they rarely dominate the decision process. Even when taxes prevail, the decisions are typically close. Depending on the industry, these decisions are also influenced by operating requirements, marketing issues, or, more generally, global strategic considerations. The examples in section 6.3.1 underscore the importance of nontax considerations, even for basic manufacturing such as assembly operations in the semiconductor industry and dispersion and fill/finish manufacturing in the pharmaceutical industries.

Transfer prices affect both sourcing and location decisions and the sample firms' managers claim that firms with high gross margins are in the best position to transfer price aggressively. This follows because firms with high gross margins usually have no comparable unrelated-party prices (cups) that can be used as transfer price benchmarks. The Scholes and Wolfson framework suggests that nontax frictions should prevent these firms from transfer pricing too aggressively (relative to taxing authorities' assessments) or, absent these frictions, that government restrictions should be forthcoming. The findings suggest that the coordination frictions commonly thought to curb aggressive transfer pricing do not affect the sample firms. The standard argument is that transfer prices can facilitate efficient local decisions, effort alignment, and communication, and firms thus will be reluctant to distort transfer prices for tax reasons. Central to this argument is the presumption that the same transfer prices are being used for tax and managerial purposes. For the sample firms, this assumption is not valid; either they use separate transfer prices for tax and managerial purposes, or transfer prices do not affect performance measures. Instead, the interviews suggest that managers' ability to transfer price aggressively has been considerably curbed recently by the threats of hefty penalties and extensive audits in many countries including the United States, Germany, and Japan. These restrictions seem to have been very effective. While some of the interviewed managers claim to push transfer prices toward the boundaries of the gray area that defines acceptable practice, most of them agree that the gray area has shrunk dramatically. Indeed, some now employ a defensive transfer pricing strategy; they have developed comprehensive transfer pricing policies that they use consistently throughout the world. Thus, while the sample firms' tax managers are very sophisticated and prefer not to "leave tax benefits on the table," they are also sensitive to government restrictions.

The findings also indicate two reasons why common concerns about ineffi-

cient resource allocations related to overly aggressive tax planning may be exaggerated. First, the amount of real economic activity in low-tax countries seems to be commonly understated. The argument that drug companies simply put pills in bottles in Puerto Rico grossly underestimates both the sophistication and amount of manufacturing activity in Puerto Rico. Moreover, while Puerto Rico continues to offer attractive tax benefits to pharmaceuticals, the amount of these benefits is not influenced by transfer prices for many firms (because they currently use the profit-split method discussed in footnote 14). This demonstrates that taxes can influence location and sourcing decisions in situations where managers are not aggressively setting transfer prices. Second, even when large tax benefits are required to compensate for nontax considerations and firms locate in low-tax countries, it does not necessarily follow that taxes are distorting efficient resource allocations. In making location decisions, managers consider differences across country infrastructures that (among other things) are partially reflected in tax rates. For example, they consider the quality of education systems, communication systems, transportation systems, and other public goods that are generally subsidized by taxes. Thus, because tax rates reflect infrastructure differences and infrastructure demands vary across industries and activities, *efficient* resource allocations can, at least in principle, depend on taxes.

The results also suggest that the role of taxes and the relative importance of various nontax considerations in location and sourcing decisions have changed dramatically during the sample period. First, twenty years ago, firms were primarily looking for low-cost labor in low-tax countries to manufacture for the U.S. market. These location decisions were, in part, a response to foreign competition in U.S. markets. Today, many U.S. companies' markets are global, and their location decisions are motivated by regional marketing considerations. They want a manufacturing operation in Europe or Asia because their marketing departments believe that sales will increase if they are perceived as a local company or because they need to meet local-content requirements. Having made the decision to locate a manufacturing facility in one of these economic zones, they then minimize after-tax costs. Second, automation in manufacturing has resulted in a dramatic decline in direct labor costs as a proportion of total manufacturing costs, especially for low-cost unskilled labor. As a consequence, firms are less inclined to locate offshore to reduce labor costs than they were previously. Third, with the opening of global financial markets and the removal of exchange controls, financial operating costs have declined. As a result, firms are beginning to locate financial centers in low-tax countries. Fourth, tax benefits are not as plentiful in Asia as they were ten years ago. Japanese firms have made large investments throughout Asia recently. This has caused countries to decrease tax concessions. Fifth, and more of a conjecture, if tax rates in Europe harmonize more slowly than drug prices, pharmaceuticals will begin to locate major facilities in Ireland and other low-tax European countries. Currently, price approvals,

not taxes, determine pharmaceuticals' site choices in Europe; but if prices are harmonized, these choices will more closely resemble those in the semiconductor industry.

A sequel to this paper will examine how firms coordinate tax and treasury planning. In particular, it will examine how the sample firms used in this study move cash and finance new foreign facilities.

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Comment R. Glenn Hubbard

Peter Wilson's paper differs from the standard offering in the literature on international aspects of taxation. It offers descriptive evidence from careful case studies, as opposed to econometric analysis of existing firm-level data or aggregate time-series data. The goal of the research agenda begun in this paper is to identify and characterize *nontax* benefits and costs in order to formulate better economic models of location, investment, transfer pricing, and financial policy decisions.

An analogy to studies of corporate debt by specialists in public finance or corporate finance is instructive. We know a great deal about tax incentives for alternative financial structures. We know much less about nontax benefits and cost of leverage. Understanding the latter is nonetheless important for understanding connections between tax factors and capital structure. Financial economists can use case studies to improve modeling of nontax benefits and costs of corporate debt.

Wilson's paper is offered in this spirit. There is an immediate problem confronting such an approach, however. If tax factors in international decisions are often complicated and confusing, nontax factors can be even more so. It is certainly possible to list nontax considerations. Field studies such as Wilson's

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are definitely useful for identifying tax and nontax considerations in various corporate decisions. The more difficult and interesting task is to organize these considerations in such a way as to guide the development of economic models. It is this more ambitious agenda that he has in mind.

Building on the approach in Scholes and Wolfson (1991), he categorizes nontax factors as “restrictions” (government rules) or “frictions” (costs associated with meeting other business purposes. I think it is simplest to think of these as “institutional factors” or “nontax benefits and costs.” Straightforward industrial organization considerations suggest that plausible subcategories include product- or industry-specific characteristics (e.g., production process, importance of distance to market, economies of scale or entry strategies), country-specific characteristics (e.g., regulation or presence of particular infrastructure), and firm-specific characteristics (e.g., intrafirm coordination issues and information and incentive problems).

The usefulness of field interviews depends in part, of course, on the sample. Wilson conducted detailed on-site interviews with chief financial officers and their staffs in nine U.S. multinational corporations. The industrial mix is three pharmaceutical firms, three semiconductor firms, one chemical firm, one materials firm, and one software firm. The overrepresentation of pharmaceuticals and semiconductors reflects the perceived importance of international tax planning in those industries.

The interviews gathered information on sixty-eight location decisions in twenty-five countries; the decisions spanned the decades of the 1960s, 1970s, and 1980s. Wilson was also able to obtain some information on transfer pricing and compensation policy. The primary focus of the study is an examination of tax and nontax factors in location (capacity expansion) and sourcing (capacity utilization) decisions.

Wilson’s conclusions are intuitive but nonetheless important, given the paucity of information about the role of tax planning in multinationals’ decisions. First, for manufacturing location decisions, nontax considerations are very important. In particular, part of the apparent insensitivity to tax considerations could reflect the link between taxes paid and the provision of important infrastructure (e.g., in education and transportation support). Second, where nontax considerations are not particularly important (e.g., for administrative or distribution centers), tax considerations are paramount. Third, the effectiveness of transfer pricing in reducing multinationals’ worldwide tax burdens is limited by nontax factors. Interestingly, government restrictions dominate problems in intrafirm coordination in this respect. In principle, firms’ use of transfer pricing for tax planning could be reduced by the need to evaluate managers for compensation or other purposes. Wilson finds that firms can effectively use information from multiple accounts to guide tax planning on the one hand and managerial evaluation and compensation on the other.

Perhaps the most useful information in this stage of the research is the analysis of differences across industries and stages of production within an indus-

try in the importance of nontax considerations. Again, one can straightforwardly think of these as product- or industry-specific, country-specific, or firm-specific.

One would expect country-specific considerations (e.g., the availability of skilled workers) to be important in stages of production in which there are high fixed costs for research and development or regulatory approval. These fixed costs figure prominently in the pharmaceutical and semiconductor industries. For those industries, tax considerations are not as important as location-specific nontax benefits and costs in the early stages of product development. On the other hand, in the production stage, both pharmaceutical and semiconductor products have low marginal costs of production and can be manufactured in many places. Country-specific nontax factors are much less important, and tax considerations are correspondingly more important.

Where infrastructure and product regulation concerns are not significant, one would expect tax planning to be important in high-margin lines of business. Software manufacturing is a good example in which high margins reflect the value of intangible assets and the manufacturing process is simple. Aggressive use of transfer pricing should be important in the software business, subject to limitations arising from firm-specific concerns (e.g., intrafirm coordination problems) or government restrictions. Wilson finds that the latter, government restrictions, provide the principal discipline against aggressive transfer pricing. That is, firm-specific considerations do not appear to limit tax incentives to the same extent that country-specific considerations do.

In the case of the chemical industry, for which margins and the value of research and development intangibles are low, distance to market (a country-specific factor) is the principal consideration in location and sourcing decisions. Because chemical manufacturing facilities arguably generate fewer nontax benefits and more nontax costs for host countries than would, say, pharmaceutical or semiconductor facilities, fewer tax incentives are offered. As a result, tax considerations are more likely to be important in expansion decisions than in greenfield investment decisions.

Similarly, industry- and country-specific nontax factors are most important for firms in the materials industry. Product characteristics and individual customer needs place geographic limits on location. As a result, tax considerations are significant only among geographically close jurisdictions that offer the desired nontax benefits for the business.

Wilson's analysis of possible tensions between tax-motivated transfer pricing and firm-specific requirements for evaluation and control is very interesting. From a tax planning perspective, the principal factors governing the usefulness of transfer pricing include the dispersion of tax rates across countries in which the parent has operations, gross margins and the importance of intangibles, and government restrictions. Tax-motivated transfer pricing is most beneficial for firms with high gross margins as a result of intangible assets with few comparable unrelated-party prices (e.g., pharmaceutical manufac-

turers), as long as government restrictions are not too severe. Tax considerations are not the only motivation, however. Noting "multiple business purposes," Wilson's interviews document firm-specific plans to shift profits for nontax reasons to motivate managers.

A priori, one might imagine that the need to evaluate and motivate managers would reduce a corporate parent's willingness to "relocate" profits across its foreign subsidiaries to minimize its worldwide tax burden. According to Wilson, firms are generally able to reduce nontax costs that impede tax planning by designing measures for performance evaluation that do not depend on transfer prices. How do corporate managers ensure *after-tax* profit maximization when managers are evaluated on a *pretax* basis? Wilson notes that "informal adjustments are made." Interviews and case studies are useful for describing these adjustments. Much more detail here would be instructive.

I have a related concern with the paper's analysis of effects of tax planning on real resource allocation—a question critically important to economists. Wilson argues that "the amount and sophistication of real economic activity in low-tax countries seems to be commonly understated." Much more specific discussion would be useful. Returning to the discussion of country-specific factors, for example, to the extent that cross-country heterogeneity in tax rates reflects differences in infrastructure or other benefits, there may be little distortion of real resource allocation.

Finally, three avenues for further research seem particularly promising. First, for the current sample, an analysis of shifts in firms' decisions before and after the Tax Reform Act of 1986 would be instructive. Second, multinationals' *financial policy* decisions (e.g., repatriation or capital structure decisions) offer a good laboratory for analysis. In contrast to the decisions studied in the present paper, country-specific and product- or industry-specific factors should be less important, and firm-specific factors should be more important. As a result, one could study trade-offs between tax factors and firm-related nontax factors. Finally, at the "extensive margin," detailed interviews and case studies for non-U.S. parents would facilitate our discrimination among alternative tax and nontax factors in affecting multinational firms' decisions.

These suggestions are more easily offered than executed. Wilson's paper is a difficult and important first step in our using case study evidence to shape economic models of multinational firm decisions.