

# TRANSFER PRICING WITH DIFFERENTIAL TAXATION

by

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The problems of transfer pricing are generally well known to most business school graduates and managers of vertically-integrated and multinational corporations, but may be a bit unfamiliar to some academic and forensic economists. The subject is typically relegated to later chapters of standard managerial economics textbooks, where microeconomic models of optimal transfer prices suggest that the problem is largely solved.

But the transfer-pricing problem is not solved. Increased globalization of production has not only made the subject more difficult, but has also generated more situations where forensic economists must come to grips with it in order to perform calculations necessary for certain tax, valuation, and litigation-related tasks.

The purpose of this paper is to introduce the reader to the subject of transfer prices, the reasons why they can present problems for litigation economists, and some general methods for dealing with those problems. Part I defines transfer prices, provides a brief historical overview, and explains the renewed interest in the subject in our era of multinational business. Part II reproduces two common theoretical models of optimal transfer prices and lists transfer-pricing policies commonly used in practice. The possibility of manipulating transfer prices to lower overall corporation tax liability is demonstrated. This manipulation is the source of most of the problems confronting forensic economists wrestling with transfer-pricing policies of clients and adversaries. Part III reviews IRS and OECD transfer price guidelines for multinational enterprises. These guidelines serve equally well for analysts and consultants striving to adjust recorded transfer price, cost, and profit data so as to measure values and damages in ways that are realistic, fair, and acceptable to the courts. Part IV summarizes the paper.

## I. Introduction to Transfer Pricing

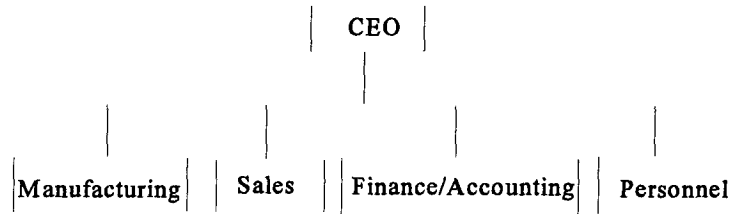
### A. Corporate Structure

The Coasian view of a firm pictures a hierarchical organization within which authority flows from the top down. Internal contracting and market-type transactions are replaced by routine procedures and "bureaucratic" operating rules, yielding efficiencies from smoother information flows, avoidance of strategic behavior, and the possibly easier evaluation of the firm's managers and component parts.

By the late 1800s, a typical corporation had adopted a centralized unitary structure,

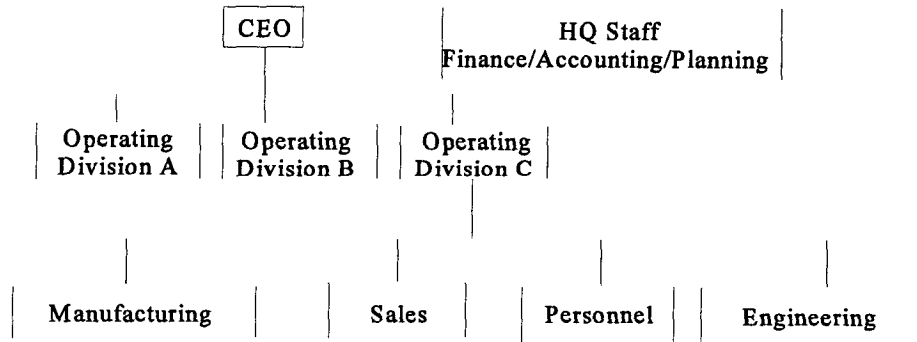
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or "U-form"<sup>1</sup> of organization, built around functional departments:



Although suitable for medium-sized single-product firms, the U-form became unwieldy as firms expanded into multiple products and markets. It was hard to measure efficiency or productivity in each department, and department managers might not cooperate to ensure maximum profit. Diseconomies of scale set in.

By the second decade of the 20th Century, larger multi-product corporations were experimenting with a decentralized multi-divisional structure, the "M-form," organized around semi-autonomous operating divisions:



Each operating division is a "profit-center" with sufficient local authority to maximize divisional profit, much like an independent single-product firm. Managers are closer to operations for which they are responsible, and evaluation of the company's component parts can now be based on recorded divisional profits. Corporate headquarters focuses on long-range planning and investment, handles administrative overhead costs of the divisions, and provides rules for how divisions should relate to one another.

#### B. Transfer Pricing

The M-form structure posed new management and control problems as firms

<sup>1</sup> The nature and history of U-form and M-form business structures are analyzed in Williamson (1975), ch. 8.

integrated forward from manufacturing to distribution or backward into resource extraction and materials supply. Now one operating division is supplying some or all of its output as an intermediate good input to another division. At what price or charge should this internal transfer of product take place? If the decision is left to negotiation by divisional managers and there is no external market for the product in question, a bilateral monopoly situation results, with the supplying division insisting on a high transfer price and the receiving division equally adamant in favoring a low one. Corporate headquarters can avoid the well-known conflicts and uncertainties of bilateral monopoly by dictating the transfer price, but this reduces divisional autonomy and may result in disgruntled divisional managers and a sacrifice of M-form efficiencies.

Typically, the umbrella corporation establishes a policy whereby transfer prices can be chosen and altered when necessary, perhaps by the divisional managers. Ideal transfer-pricing will be feasible and easy to implement, and will yield the following desirable results:

- Internal coordination -- the receiving division wants the same quantity of transfer product that the selling division wants to provide;
- Profit -- the agreed-upon quantity of transfer product is the amount that maximizes overall corporate profit; and
- Evaluation and fairness -- divisional managers, being evaluated for promotion and bonuses based on divisional costs and profits, do not see the transfer price as being unfair.

As one might suspect, ideal transfer-pricing policies are not easy to come by, and most M-form firms struggle to find merely satisfactory ones. Information requirements and disclosure problems are substantial, and conflict often arises between the profit and evaluative fairness *desiderata*. Richard Eccles, a student of the subject, writes that the "transfer pricing problem is a difficult and frustrating one...many managers regard it as unsolved or unsolvable."<sup>2</sup>

### C. Differential Taxation

Increased globalization of corporate production added a new twist to the transfer pricing problem that made the subject of greater importance to forensic economists. Many modern transnational corporations are M-form with semi-autonomous subsidiaries located in different nations. Subsidiary profits are often subject to different tax laws, and this fact will influence the umbrella corporation's transfer prices and after-tax profit:

Nearly all nations tax profits of subsidiary companies, but they do so at different rates. A corporation may use transfer-pricing policy as a means of concentrating profits in subsidiaries operating in low-tax areas. A subsidiary operating in a low-tax country will have its profits enhanced by charging a high price on transfers to subsidiaries in other countries and/or

<sup>2</sup> Eccles (1985), p. 1.

by paying a low price on transfers from other subsidiaries.<sup>3</sup>

Tax authorities do not always catch or challenge such tax-avoidance practices, especially if the practice raises the taxable base of subsidiaries in their jurisdiction. Furthermore, tax rate differentials may influence transfer-pricing even when transfers are not across international borders. Operating divisions in the U.S. are subject to state business taxes, which vary dramatically from one state to the next. And if the transfer product is a mineral or energy substance subject to *ad valorem* state severance taxes, there is again a clear incentive to fix a lower transfer price.<sup>4</sup>

If a corporation's transfer-pricing policy artificially raises or lowers subsidiary profit, use of subsidiary financial and accounting records by analysts becomes problematic. Business appraisers will have difficulty in using such data to arrive at a subsidiary's fair market "stand alone" value; forensic economists will be equally confounded in determining realistic revenue and profit losses in breach of contract and business interruption litigation.

#### D. History<sup>5</sup>

DuPont instituted a variant of the M-Form structure in 1921, and General Motors had done likewise by 1925. Such companies encountered the transfer-pricing problem from the outset. The accounting profession first explicitly addressed the special circumstances of M-Form structures, including transfer pricing, in 1925. Surveys summarized by Eccles suggest that perhaps 85 percent of large manufacturing firms confront the transfer-pricing problem today.

In nations where business profits were taxable, tax codes kept pace with business developments. The possibility of using transfer prices and other M-form management policies for tax avoidance was recognized in the U.S. as early as 1917. By 1921, the IRS could reallocate taxable income among affiliated companies and subsidiaries. The "Arm's Length Principle," the standard favored by the federal government for altering artificial transfer prices and profit distribution among subsidiaries, was adopted in 1935.<sup>6</sup> Initially, IRS transfer price regulations were applied mostly to domestic M-form corporations, but by the 1960s, the focus was changing to subsidiaries of multinational enterprises. Current

<sup>3</sup> Yunker (1982), p. 13.

<sup>4</sup> About 45 states have corporation profit taxes. Three states tax corporation gross receipts; Michigan uses a value-added "single-business tax." Severance taxes are important in Texas and Wyoming. States also differ in the formula used to calculate the state profit tax liability of multinational corporate subsidiaries doing business in the state. See Fisher (1996), ch. 17.

<sup>5</sup> This material is drawn from Eccles (1985), ch. 2, and *U.S. Transfer Pricing Guide* (1995), §115.

<sup>6</sup> This principle is the basis for the transfer price guidelines for forensic economists discussed in Part III.

IRS transfer pricing regulations, in Code Section 482, were issued in 1968. Revisions of Section 482 in 1994 to incorporate the latest interpretation of the arm's length standard have also been adopted by the OECD.

## II. Setting Transfer Prices -- Theory and Practice

Optimization methods used in microeconomic theory can be used to derive optimal (profit-maximizing) transfer prices for various internal and external market scenarios. This section presents models for two such scenarios. It then shows how strategic manipulation of the transfer price can increase after-tax corporate profit when the buying and selling divisions are subject to different corporate tax rates. A brief review of transfer-pricing rules commonly employed in actual business practice appears at the end of this section.

### A. The Setting for Analysis

Assume that a vertically-integrated firm consists of two divisional profit centers, S and B. Selling division S supplies product X. Buying division B uses input X to produce final product Q, which is sold to the company's external customers. Corporate HQ generates no revenues of its own, and its own costs are independent of divisional operations.<sup>7</sup> It will be helpful to adopt the following notation:

$X_s$  = total quantity of product X produced by S  
 $X_t$  = quantity of X transferred from S to B  
 $X_e$  = quantities of X sold or bought in external market  
 $X_b$  = total quantity of X purchased by B  
 $P_t$  = internal transfer price of  $X_t$   
 $P_e$  = external market price of  $X_e$   
 $Q = f(X_b)$  = quantity of final output produced by B  
 $C(X)$  = total cost of producing X in S division  
 $R(Q)$  = total final sales revenue to B division  
 $N(Q)$  = net cost (excluding X) of producing Q in B division  
 $t_s$  = corporate tax rate on S profits  
 $t_b$  = corporate tax rate on B profits

The models below are first derived under the assumption of no taxation, then later modified to incorporate the effects of tax differentials.

### B. Model 1 - No External Market for X

With no external market for X,  $X_e = 0$  and  $X_s = X_t = X_b = X$ . In this rather typical

<sup>7</sup> HQ costs are set at zero in the two models which follow. These models represent opposite ends of a spectrum of possibilities regarding an external market in the transfer product. Models like these are standard fare in managerial economics textbooks. See Mansfield (1996), pp. 495-502, for examples and useful discussion of potential complications.

case, the selling and buying divisions are captive to one another in a bilateral monopoly setting where corporate HQ will have to resolve disagreements about the "optimal" equilibrium.

Selling division profit and the first-order condition for divisional profit maximization are as follows:

$$\pi^s(X) = P_t X - C(X)$$

$$\pi^s(X) = P_t - C'(X) = 0 \Rightarrow P_t = MC_x$$

The manager of S division will want to supply a level of product X where the transfer price equals the marginal cost of producing X.

Buying division B's profit and the first-order condition for divisional profit maximization are as follows:

$$\pi^b(Q) = R(Q) - N(Q) - P_t X$$

$$\pi^b(X) = [R'(Q) - N'(Q)]f(X) - P_t = 0 \Rightarrow P_t = NMRP_x$$

The manager of B division will want to purchase a level of X where the transfer price equals the net marginal revenue product of X.

Corporation headquarters is assumed to set the transfer price to maximize total profit for the corporation as a whole. The relevant profit function and first-order condition are as follows:

$$\pi^{hq} = \pi^b + \pi^s = R(Q) - N(Q) - P_t X + P_t X - C(X)$$

$$\pi^{hq}(X) = [R'(Q) - N'(Q)]f(X) - C'(X) = 0$$

HQ wants a level of X which equates the marginal cost of producing X with the net marginal revenue product of X. By appropriate choice of  $P_t$ , this will be the level resulting from independent decisions by S and B, and the divisional conflicts are thus avoided.

Consider a simple numerical example with  $C(X) = X^2$ ,  $R(Q) = 140Q$ , and  $N(Q) = 12Q$ , where  $Q = 2\sqrt{X}$ .

$$\pi^{hq} = 140Q - 12Q - X^2$$

$$\pi^{hq}(X) = 128/\sqrt{X} - 2X = 0$$

Profit maximization results in  $X = 16$  and  $Q = 8$ . HQ sets  $P_t = \$32$ . In division S,  $MC_x = 32$  at  $X = 16$ , while  $NMRP_x = 32$  at  $X = 16$  in division B. Profits are  $\pi^s = \$256$ ,  $\pi^b = \$512$ ,  $\pi^{hq} = \$768$ .

### C. Model 2 - Perfectly Competitive External Market for X

If there is a competitive external market for X with going price  $P_e$ , then S division

can transfer product to B division or sell to the market, and B division can buy from S division or from the market:  $X_s = X_t + X_s^s$  and  $X_b = X_t + X_b^b$ . With divisional autonomy, the only transfer-pricing policy is to set the transfer price at the market price ( $P_t = P_e$ ), since S division will not voluntarily transfer X at less than  $P_e$ , while B division will not voluntarily accept transfers at more than  $P_e$ .

Using the Model 1 numerical example, but with  $P_e = \$26$ :

$$\pi^s(X_s) = 26X_s - X_s^2$$

$$\pi^b(X_b) = 140Q - 12Q - 26X_b, Q = 2\sqrt{X_b}$$

Independent choices by S and B result in approximate solution values of  $X_s = 13$ ,  $X_b = 24.2$ , and  $Q = 9.8$ . B buys 13 units of X from S and 11.2 units in the market.  $\pi^s = \$169$ ,  $\pi^b = \$630$ , and  $\pi^{hq} = \$799$ .

#### D. Strategic Transfer Pricing Induced by Differential Tax Rates

There are possibilities for strategic manipulation of  $P_t$  in the presence of differential corporate profit tax rates. Suppose divisions S and B are in separate tax jurisdictions with rates  $t_s$  and  $t_b$ , respectively. If corporate headquarters is willing to reduce divisional autonomy, transfer prices can be set to shift profit artificially from one division to the other in order to reduce overall corporate tax liability. This possibility can be illustrated by the numerical examples for the two models above, with  $t_s = 10\%$  and  $t_b = 20\%$ .

In Model 1, with  $X = 16$  and  $P_t = \$32$ , after-tax divisional profits were  $(1-t_s)\pi^s = \$230$  and  $(1-t_b)\pi^b = \$410$ , with after-tax total profit of  $\$640$ . HQ could mandate that  $X = 16$ , then raise  $P_t$  to shift profit from B to S. At the extreme, where  $P_t = \$64$ ,  $\pi^b = \$0$ , and total corporate net profit rises from  $\$640$  to  $(1-t_s)\pi^s = \$691$ .

This policy deprives the S and B managers of some of their previous autonomy. Nevertheless, if both are evaluated in terms of divisional profit at a (possibly unpublished) transfer price of  $\$32$ , management incentives for cost efficiency can be retained, while the company as a whole will enjoy a substantial gain in after-tax profit.

In Model 2, original divisional net profits were  $(1-t_s)\pi^s = \$152$  and  $(1-t_b)\pi^b = \$504$ , with after-tax total profit of  $\$656$ . Suppose that HQ mandates that S produce 13 units of X for transfer to B and that B continue to produce  $Q = 9.8$  while accepting 13 units of X from S at a fixed transfer price  $P_t$ . At the extreme, where  $P_t = \$74.47$ ,  $\pi^b = \$0$  and total net profit rises from  $\$656$  to  $(1-t_s)\pi^s = \$719$ .

In the situations just depicted, it was possible for the corporation to find a profitable set of quantity decisions, then rig the transfer price to further reduce tax exposure. Doing so encroaches on some of the efficiency-inducing autonomy of divisional managers, at least one of whom will view the resulting transfer-pricing policy as manifestly unfair! The extent to which artificial pricing takes place depends on internal corporate tradeoffs and on the astuteness of the relevant tax authorities. In the cases illustrated, the tax administration with jurisdiction over the S division, whose profits are inflated, would not challenge the practice. By the same token, the accounting records of the B division would be highly misleading to an appraiser or forensic economist trying to use them.

### E. Transfer Pricing in Practice

Except in cases where a competitive external market sets the transfer price, theoretical models like those above are of little practical use to managers. Firms do not have the luxury of continuously differentiable functions and seldom have accurate knowledge of the relevant marginal quantities. Nor have mathematical programming methods and other "academic" approaches been of much help. Most companies make do with suboptimal -- but simple -- rules of thumb to arrive at usable transfer prices.

In summarizing corporate practices, Eccles divides transfer-pricing policies into cost-based and market-based methods. Cost-based methods build the transfer price from supplying division variable or full unit cost. The particular formula may be based on actual cost or standard cost, and may or may not add a fixed markup to match the company's current or target return on investment. Market-based methods start from an external price of transactions comparable to the internal transfers, perhaps discounted for estimated selling expenses not incurred on internal transactions.<sup>8</sup> Penelope Yunker's survey of multinational corporation transfer-pricing policies found that market-based methods were by far the most widely used, followed by markups on standard full and actual full unit cost. Allowing divisional managers to negotiate the transfer price between them is also common.<sup>9</sup>

Of course, consulting economists encountering transfer pricing in litigation-related contexts need not determine if a firm's transfer-pricing policy is optimal. For them, the problem is whether recorded transfer prices reflect economic realities in ways acceptable to the courts and taxing authorities, or are accounting artifices to reduce over-all corporate tax exposure. In this vein, it is disturbing to note that Eccles found a number of instances of "dual pricing" policies where, typically, average total or variable cost was charged to the buying division and a market-based price was credited to the selling division.<sup>10</sup> As seen above, some sort of dual transfer pricing is exactly what would be indicated by Models 1 and 2 when the HQ corporation wants to reduce tax exposure without penalizing one or more profit center managers during the evaluation process.

Thankfully, the practice of artificially manipulating transfer prices as part of tax-avoidance or other corporate strategies may be relatively rare. Yunker writes:

Multinational companies are generally conscious of the potential

<sup>8</sup> Eccles (1985), ch. 2 and Table 2-2. Standard costs are projections of what actual costs would be if a firm or division operates at some defined "efficient capacity."

<sup>9</sup> Yunker (1982), Table IV.C.2. Use of negotiation, given the problems of bilateral monopoly, is practically a decision to have no transfer price policy at all. The finding that perhaps 42 percent of M-form firms use full (average total) cost as a base for transfer prices is perplexing, since one useful contribution of economic theory to this subject is to show that this policy is never optimal. [See Eccles (1985), pp. 40-42, and Tang (1979), ch. 2, 5.] An explanation could be that full-cost pricing is both simple and allowable by U.S. and OECD tax authorities.

<sup>10</sup> Eccles (1985), pp. 8-9, 77.

opportunities that exist for the enhancement of corporate goals through active manipulation of transfer prices, but they are also strongly cognizant of the obstacles to successful manipulation in the legal and regulatory environment.... There is certainly some utilization of transfer prices for instrumental purposes in the real world, but the indications are that this is not considered one of the principal instruments of business policy by most corporations.<sup>11</sup>

### III. Tax Guidelines for Adjusting Transfer Price Data

The essential problem of transfer prices for forensic economists is the possibility that they reflect corporate tax reduction or other strategies rather than underlying economic realities and true opportunity costs. This issue, which goes beyond routine product transfers from one division to another to include one-time transfers of tangible and intangible property, is clearly recognized by taxation authorities:

Transfer pricing is the term used to describe the prices that related parties set for goods, services, loans, intangibles, and property rentals when engaged in transactions among themselves. Because these prices are not negotiated in a free, open market, it is possible that they may deviate from prices agreed upon by non-related parties in comparable transactions under the same or similar circumstances. In addition, multinational enterprises sometimes attempt to use transfer prices to subject as much profit as possible to tax in low-tax jurisdictions.<sup>12</sup>

#### A. The Arm's Length Principle

Tax administrations of many nations have given themselves authority to reallocate taxable profit among profit centers and subsidiary corporations in instances where initially reported profits appear to be the result of artificial internal pricing and property transfer policies. Developed nations, including the United States and those of the European Common Market, have also reached wide agreement on a standard, the Arm's Length Principle, to be used for such profit reallocation:

Where business is transacted between two persons, one of whom controls the other or both of whom are controlled by a third person, the arm's length principle requires that the prices and terms of the transaction

<sup>11</sup> Yunker (1982), p. 40. Note also that Eccles (1985), in a small survey, found infrequent use of dual-pricing policies.

<sup>12</sup> *U.S. Transfer Pricing Guide* (1995), §100. Unless otherwise noted, all material on tax guidelines herein is taken from this Commerce Clearing House publication, which explains Internal Revenue Code Section 482 and provides sample calculations for many of the adjustment methods discussed below.

should not differ from the prices and terms which would prevail in transactions between unrelated parties. An arm's length price is simply the price independent parties would charge each other under the same or similar circumstances.<sup>13</sup>

Similar wording is found in Article 9 of the OECD Model Tax Convention. OECD tax guidelines go on to say that "the arm's length principle follows the approach of treating the members of [multinational enterprises] as separate entities rather than as inseparable parts of a single unified business."<sup>14</sup> This points to the common alternative to the arm's length standard, called "formulary apportionment":

Despite international consensus on the applicability of the arm's length approach to transfer pricing, some dissenters, most notably certain states within the United States, have chosen to approach the issue of transfer pricing through formulary apportionment, also known as unitary taxation. Under formulary apportionment, the profits of various branches of an enterprise or the various corporations of a group are not calculated as if the branches or subsidiaries were distinct and separate entities dealing at arm's length with each other, but rather the entire group is regarded as a unity.<sup>15</sup>

Arm's length has been the standard of choice by the IRS since 1935 (and is now also the rule in Europe) whenever transfer-pricing policy necessitates adjustments to corporate income and financial records. Unless a specific local court dictates otherwise, the arm's length standard should equally serve as the guiding principle for forensic economists:

- Federal and international acceptance of the arm's length standard suggests that any profit adjustments in accordance with its principles should be acceptable (if not mandatory) in most courts;
- The philosophy of the arm's length standard is that of efficient market dealings between independent parties, and adjustments to profit records based on the standard are more likely to reflect the true economic positions and opportunity costs of corporate subsidiary plaintiffs and defendants than formulaic adjustments based on local unitary tax regulations;
- The formulas used by unitary tax jurisdictions differ from one another in somewhat arbitrary ways and enjoy no domestic or international consensus.
- Litigation economists and business appraisers, who are accustomed to revising business accounting records in the normal course of their work, will undoubtedly be familiar with the types of revisions approved by tax authorities in conjunction

<sup>13</sup> *U.S. Transfer Pricing Guide* (1995), §105.

<sup>14</sup> OECD (1995), p. I-3.

<sup>15</sup> *U.S. Transfer Pricing Guide* (1995), §110.

with the arm's length standard.

#### B. Arm's Length Adjustment Methods

IRS and OECD regulations list a number of transfer pricing methods which can be used by firms preparing tax records in accordance with the arm's length standard, but do not mandate any particular one. Section 482 establishes the Best Method Rule which, "at its heart, merely requires the use of the pricing method which provides the most reliable measure of the arm's length result."<sup>16</sup> In practice, two or more of the methods should be used to cross-check reasonableness and accuracy.

Tax codes recognize five categories of internal transfer activities:

1. Transfers of tangible property;
2. Transfers of intangible property;
3. Provision of services for related parties;
4. Intercompany loans or discounts;
5. Intercompany property rentals.

Allowable transfer pricing methods for property transfers are divided into transactions-based and profit-based methods. Transactions-based methods consist of comparable uncontrolled price (CUP), comparable uncontrolled transaction (CUT), resale price method (RPM), and cost-plus. Profit-based methods include comparable profit method (CPM) and profit-split.<sup>17</sup>

The economist or analyst who is engaged in revising a client corporation's financial data and transfer pricing records will clearly be concerned with what is or is not a comparable external (uncontrolled) transaction. The tax guidelines list five categories of factors to be considered in judging the comparability of an external transaction to an internal transfer:

1. Property or service -- the nature of the transferred commodity. An issue is whether certain intangibles are embedded in tangible property being transferred.
2. Function -- the economically significant activities of parties pursuant to the transaction, including R&D, transportation, and administrative functions.
3. Risk -- the level of market, foreign exchange, credit and liability risk exposures of

<sup>16</sup> *U.S. Transfer Pricing Guide* (1995), §240.

<sup>17</sup> CUP, RPM, cost-plus, and profit-based methods are appropriate for tangible property transfers; CUT and profit-based methods for intangible property transfers. With suitable modification, these methods can be applied to internal transactions involving provision of services, loans, and property rentals. CUP and CUT are considered the most reliable when applicable. See *U.S. Transfer Pricing Guide* (1995), §235. Paulsen (1989), pp. 112-13, discusses a Financial Model Method (FMM) which is usable for determining arm's length patent royalty rates and intangible property transfer prices.

- parties to the transaction.
4. Contract terms -- credit, warranty and payment clauses governing the transaction.
  5. Economic conditions -- geographic market factors and business cycle conditions which influence transaction price or cost.

Comparable uncontrolled price (for tangible property transfers), and comparable uncontrolled transaction (for intangible transfers) are, when applicable, the preferred transfer price adjustment methods. Both are predicated on the existence of an external market for the transfer product, with available transactions data either between unrelated agents in that market or between the market and one of the subsidiary profit centers. IRS comparability standards are higher for CUP and CUT than for any of the other arm's length transfer-pricing methods listed.

For transfers of tangible property, either the resale price or cost-plus method may be used to reallocate subsidiary profits when sufficiently comparable data for external transactions in the transfer product itself are not obtainable. Consider our buying division B and selling division S from Part II above, where B sells or distributes to the market at large. Assume that corporate transfer-pricing policy makes division B and S profits unrealistically high or low. RPM adjusts taxable B profit to the point where B's gross profit margin is approximately equal to that of similar unrelated firms, and adjusts taxable S profit commensurately. If it is easier to find firms comparable to S than to B, the cost-plus method builds a transfer price based on S division unit costs with an arm's length markup added, then recomputes taxable B and S profit accordingly.

Profit-based methods may be something of a last resort:

As transfer pricing has grown in prominence, the need for profit-based methods has become more and more apparent. It is readily agreed by almost all practitioners that transaction-based methods are preferable because they are more likely to produce arm's length results. However, a similar consensus agrees that, for many transactions, few or no suitable comparables are available to serve as the basis for applying a transaction-based method.<sup>18</sup>

The comparable profit method adjusts subsidiary profits to correspond to the profit rates of similar uncontrolled companies in the external market. CPM attempts to achieve an arm's length equivalent operating profit, as measured by EBIT/Sales or return on assets.<sup>19</sup> The method is highly criticized because of the difficulty of assessing the operating efficiencies of firms being compared, but the focus on financial ratios and rates of return will be familiar to most economists.

<sup>18</sup> *U.S. Transfer Pricing Guide* (1995), §500. A lack of suitable comparables may arise with unique products, or because the external market is itself dominated by M-form vertically-integrated multi-national companies.

<sup>19</sup> Note the contrast with RPM, which is couched in terms of gross profit.

The profit split method is by far the least favored of the adjustment methods allowable in transfer pricing cases. The *U.S. Transfer Pricing Guide* reports that the "IRS has been loath to approve use" of the method, and that:

...the profit split method is highly likely to produce a result that is not arm's length. Its primary selling point seems to be its simplicity as well as the fact that application ... relies entirely on data internal to [the firm], rather than on comparable transactions.<sup>20</sup>

The tax guidelines mention two profit split models. The seldom useful "comparable split" approach finds two independent companies that stand in the same relationship to one another as the B and S divisions in the controlled firm. Relative profit shares between the independent firms are used as a guide to reallocating profit between S and B. The more common "residual split" first estimates profits the S and B divisions would likely earn based on their functional activities (manufacturing, transportation, marketing, and so on). This amount is subtracted from total corporation profit, and the residual is then split between S and B based on their relative estimated contributions of intangible assets to the firm's operation.

#### IV. Summary and Conclusions

Many large corporations, including perhaps most multinational enterprises, have chosen an M-form structure in which the company is divided into two or more semi-autonomous divisions or subsidiaries called profit centers. When one profit center transfers product or property to another, a transfer price is charged to one as a cost and credited to the other as revenue. If the profit centers are located in different tax jurisdictions, the company policy may be to manipulate transfer prices so as to report a lower taxable base by the subsidiary in the higher tax area. Such strategic manipulation of transfer prices generally produces the result that the accounting profits and financial records of the individual subsidiaries do not reflect their true opportunity costs, income potential, or fair market values.

With increasing frequency, practitioners in the field of litigation economics are finding themselves in the position of working with divisional profit centers as if they were stand-alone companies.<sup>21</sup> This can be problematic if a substantial proportion of the division's costs or revenues are dictated by an umbrella corporation's transfer-pricing policy and the transfers routinely cross international boundaries or the boundaries of different domestic tax jurisdictions. If the transfer prices have been set to reduce over-all corporate

<sup>20</sup> *U.S. Transfer Pricing Guide* (1995), §525. Actually, the comparable split method does require data from external sources.

<sup>21</sup> Lynde (1996) details a number of instances where this situation might arise in cases involving patent damages, including the possibility that "a wholly-owned foreign subsidiary may be the sole plaintiff in that foreign country against either the infringer's wholly-owned subsidiary or against the subsidiary and the parent combined."

tax liability, then the records of the profit center may require extensive adjustment before good estimates of sale values or economic damages can be calculated.

The forensic economist might deal with transfer pricing problems by first answering a series of preliminary questions:

- First, does the business in question engage in product, property or service transfers with another subsidiary or profit center under the same umbrella or headquarters corporation?

If the answer is yes, then:

- Do the transfers cross from one relevant tax jurisdiction to another?
- What transfer-pricing policy is currently in use? In particular, does the company use dual pricing?
- Has the transfer pricing policy in use been challenged by tax authorities in the subsidiary's jurisdiction or in the jurisdiction where the courts will try the case?

At least two problems may surface. One is that the transfer prices have been set with tax avoidance in mind. The other is that the transfer-pricing policy is in complete accordance with tax regulations, but is based on some full cost formulation. In either case, the accounting data of the company may need substantial revision if an accurate picture of the company's true economic prospects is to be derived. In both cases, the analyst will want to recompute costs, revenues and profits using a transfer-pricing scheme which is not only permitted by the tax authorities and/or courts, but which is likely to produce economically meaningful and defensible results.

If the relevant jurisdiction is in the United States or any nation of the European Economic Community, then the allowable methods of revision of transfer prices are listed and explained in the *U.S. Transfer Pricing Guide* and the OECD's *Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations*. Any revisions undertaken by the forensic economist should satisfy the "arm's length" principle. There seems to be both a theoretical and an administrative preference for using the comparable uncontrolled price or transaction (CUP or CUT) methods where possible. Second choice would be the resale price or cost-plus methods. With the latter, something other than full costs should be used; average variable costs are usually closer to the marginal costs suggested by economic theory. Profit splitting methods, whereby the economist simply recomputes what the subsidiary's profits should have been but for artificial transfer pricing, are to be avoided except as a last resort. They are deceptively simple to apply, but the results are essentially arbitrary. Splitting methods are often challenged in tax courts, and might not hold up well in civil courts.

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