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The Interaction of Managerial and Tax Transfer Pricing

The authors examine the differences between transfer prices used for tax and for management purposes, emphasizing the need to explain the differences to tax authorities who may question the company's motives.

By Shannon Anderson, Bin Zhou, Rand Ghayad and Michael Cragg

In vertically integrated multinational companies, transfer pricing is used for two purposes: compliance with countries' tax rules and internal management and control. To comply with tax regulations, the price for transfer of goods and services between a multinational's affiliates in two tax jurisdictions must meet the arm's-length standard; for internal purposes, the managerial transfer price aligns the incentives of managers in different divisions to jointly maximize the multinational's overall profits.

While the tax transfer price may coincide with the managerial transfer price, often this is not the case. When there is a difference between the two transfer prices, the multinational must determine how to balance the objectives of tax compliance and incentive alignment, and explain this difference to the relevant taxing authorities because it could be misunderstood and misinterpreted as evidence of conflict with nefarious motivations.[1]

Shannon Anderson is a professor at the University of California Davis's Graduate School of Management. Bin Zhou, Rand Ghayad and Mike Cragg are consultants at The Brattle Group.

The interaction of managerial and tax transfer prices has received scant attention in the transfer pricing literature despite that the conflict between the two prices could arise whenever there is a transfer of goods or services across tax jurisdictions and operating divisions. This article explains the circumstance under which managerial transfer prices may deviate from tax transfer prices, discusses how firms may develop a dual rate transfer pricing system to address the conflict, and illustrates the implications of dual rate transfer pricing for financial accounting, managerial accounting and tax reporting.

Managerial Transfer Prices

Large modern corporations tend to grow as a collection of related businesses, capturing economies of scale and scope that accrue to shared activity. To effectively manage the firm's operations in multiple locations and through multiple product lines, firm management relies

[1] While this article sheds light on the dual role that transfer prices play when valuing intercompany transfers of tangible products, it is also common for vertically integrated firms to de-couple the tax transfer price from management transfer price when dealing with intangibles.

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on the management accounting system. Distinct from financial accounting that serves external audiences such as investors or creditors, and tax accounting used for determining tax obligations, management accounting focuses on providing accounting information to assist managers in running the operations of the firm. Management accounting practices are driven by management's desire to gather timely and relevant information in order to make the most efficient use of a firm's resources and meet profit performance goals. Of particular interest to this article are decentralized organizational forms and the use of managerial transfer prices as a mechanism of management control and efficient coordination of resource use.

Intercompany transfers

The practical challenge of management accounting is to design management controls that mitigate risks of dysfunctional decision making by affiliated business units. In multi-divisional firms, mismanagement may be caused by misaligned incentives, as for example when a manager intentionally advances personal interests at the expense of the larger enterprise. However, an equally important source of dysfunctional decision making stems from local managers making what they believe to be good decisions to maximize firm profits, when they are acting from a position of incomplete information.

Large decentralized firms typically delegate responsibility and authority for decision making to lower-level operating divisions. The business unit may be designated as a profit center, with the local management team responsible for the full income statement of the business unit (both revenue growth and cost control), or as a cost center, with responsibility for only cost control (taking revenue as given, does the business unit meet cost budgets?). Aside from the designation of business units' responsibilities, firms often provide direct rewards to managers (contingent compensation) or indirect rewards to business units (for example, reinvestment of centrally controlled firm resources) for achieving profit or cost control targets depending on what those managers can control.

When two business units transact with each other, managerial transfer pricing policy is another control mechanism to address problems of both incentive misalignment and dysfunctional decision making caused by incomplete information. Just as a price in a competitive market acts as the ''invisible hand'' coordinating the optimal allocation of resources between buyers and sellers, the transfer price is intended both to coordinate the local production decisions of decentralized business units and to advance the broader objective of maximizing firm profits. Importantly, transfer prices established for purposes of management control are not governed by financial accounting standards or by taxation authorities.

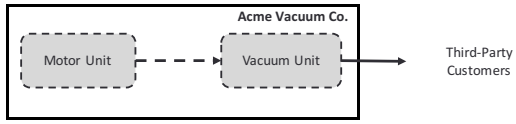
Consider the price setting between two divisions in the example below (Figure 1).

Figure 1. Example of Managerial Transfer Prices

Assume Acme Vacuum Co. has a unit that makes motors (Motor Unit) and a unit that makes vacuums with the motors (Vacuum Unit). Assume it costs Motor Unit $75 to make a motor. The motor could be sold to a third-party buyer at a market price of $125. This would generate a profit of $50 ($125 sales revenue less $75 in costs). The motor could also be sold to Vacuum Unit, which would incorporate it into a vacuum that could be sold to a third party for $250. To make the vacuum, Vacuum Unit would have an additional cost of $50 for material and labor. Selling a vacuum would generate a profit of $125 for Acme ($250 sales revenue less $75 of Motor Unit's costs less $50 of Vacuum Unit's costs). Under the assumptions, selling the vacuum is more profitable than selling the motor for Acme: the profit margin for the motor is 67 percent ($125/$75 − 1), whereas the profit margin for the vacuum is 100 percent ($250/($75 + $50) − 1).

Assumptions:

1. The Motor Unit manufactures a motor at a cost of $75.
2. The Vacuum Unit combines the motor with $50 of other product and labor costs and sells the vacuum at $250.



A. Motor Unit Sells the Motor at Market Price of $125

Revenue	$125	→	$250
Product Cost	$75	→	$125
Other Product Cost	$0	→	$50
Gross Profit	**$50**	→	**$75**

B. Motor Unit Sells the Motor at Internal Price of $100

Revenue	$100	→	$250
Product Cost	$75	→	$100
Other Product Cost	$0	→	$50
Gross Profit	**$25**	→	**$100**

Panels A and B in Figure 1 illustrate two scenarios that Acme Vacuum Co.'s management can use in setting the managerial transfer price of the motors that Motor Unit sells to Vacuum Unit. In Scenario A, the managerial transfer price for the motors is set so that it matches the price at which a third party would purchase the motor, $125. Overall, Acme Vacuum Co. still makes $125 when it sells a vacuum, but the profit is split so that $50 is associated with Motor Unit while $75 is associated with Vacuum Unit. Under Scenario B, management sets the managerial transfer price at $100 rather than the market price of $125. Acme Vacuum Co. still makes $125 total profit when it sells a vacuum. But now less of this profit, $25 instead of $50, is associated with Motor Unit.

The example assumes that the market prices and demand for both motors and vacuums are given—that is, not affected by the internal allocation of the firm's overall profit between the two units. More realistically, the headquarters do not have all the necessary information to make informed decision to maximize firm profits, and the incentives and behaviors of the managers respond to the internal profit allocation. Thus, the objective of Acme Vacuum Co., when the incentives of both managers are important for the joint maximization of firm profits, is to determine a managerial transfer price that is high enough to allow Motor Unit to earn some ''book profit'' when it produces efficiently, but low enough to motivate Vacuum Unit to order more motors and sell more vacuums.

Aligning managerial incentives in firm profit maximization

Determining the ''best'' managerial transfer price—one that from the company's perspective optimizes the incentives of each manager—is a critical issue for a

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company's management, and has been studied extensively in economics and management accounting literature.[2] Seminal work by Hirshleifer (1956) demonstrates that under certain restrictive circumstances, the best managerial transfer price is the marginal cost of production.[3]

The example in Figure 1 illustrates the basic intuition for why marginal cost is the theoretical optimal managerial transfer price. If both the motor and vacuum units face a downward sloping demand curve, and they have some product pricing power, then each of the two units has the incentive to mark up their product's price above its marginal cost. Acting on their own incentives, the vacuum price will include two successive markups (double marginalization), leading to fewer vacuums being sold to the market and fewer motors ordered from Motor Unit. In the example above, under Scenario B, Vacuum Unit's marginal cost of a vacuum is $175 ($125 + $50), where the $125 motor cost includes a markup from Motor Unit. If the motors were sold to Vacuum Unit at $100 (Scenario B), the marginal cost for the vacuum would be lower. Because the demand is downward sloping, a lower price implies more units of vacuums to be sold to external customers. At this internal price, the hazard of double marginalization is reduced and the two units act together to maximize the firm's joint profit. Under Hirshleifer's restrictive conditions, and assuming that accounting costs are a reasonable approximation of Motor Unit's marginal cost, joint profit maximization dictates that the motors should be sold at $75.

More generally, Hirshleifer argues that the optimal transfer price for efficient resource allocation is defined by the sum of the variable costs of production (an approximation of the marginal cost) of the upstream unit and the opportunity cost of that unit selling to the downstream unit (profits forgone from potential outside sales).[4] There are many different ways of implementing the managerial transfer prices for incentive alignment. For example, when learning by doing matters for the motors, holding fixed the transfer price (sales price for the motors) creates incentives for the manager of Motor Unit to reduce costs. In this case, Motor Unit should be designated as a cost center with managers rewarded for cost reduction. Likewise, if Vacuum Unit has some market power so that it is pricing off its own elasticity of demand, it should be designated as a profit center, and its manager should be given the correct marginal costs of making both motors and vacuums so that it can set the vacuum price to maximize the vacuum sales.

At times, the internal transfer price that provides the best incentives for the upstream business unit does not coincide with the internal transfer price that provides the best incentives for the downstream business unit. In this case, firms may adopt an approach known as ''dual rate transfer pricing'' in which the sale of the product is recorded at one price for the upstream business unit but the purchase of the product is recorded at a different price for the downstream business unit. This approach to transfer pricing has the desirable effect of motivating the upstream unit to work hard to improve efficiency. It further provides incentives for the downstream business unit to concentrate orders within the firm because the transfer price is typically set lower than an arm's-length market price. Thus the downstream business unit also starts with an expectation of earning positive returns on the portion of its added value made up of these transferred material inputs, and is motivated to improve its ''profit'' further by increasing material usage efficiencies as compared to production costs.

Notwithstanding the compelling analysis by Hirshleifer, it can be very difficult to put his rules for optimal transfer pricing into effect. As Holmstrom and Tirole (1991) note, ''The economist's first instinct is to set the transfer price equal to marginal cost. But it may be difficult to find out marginal cost. As a practical matter, marginal cost information is rarely known to anybody in the firm, because it depends on opportunity costs that vary with capacity use.''[5] Thus, given the difficulty of measuring the true marginal cost that should be used in efficient transfer pricing, managers commonly employ surrogate figures that create incentives that push toward the revelation and achievement of true marginal cost. Depending on the circumstances, these surrogates include measures such as market price, variable production cost, full cost, full cost plus a negotiated margin (that is, cost-plus pricing), or some other transfer price that is negotiated by the involved parties. Reflecting on the second-best solutions adopted in response to difficulties implementing economists' prescriptions, Zimmerman concludes ''a transfer pricing scheme that measures opportunity cost less accurately but is less subject to managerial discretion may produce a higher firm value than a transfer pricing scheme that more closely approximates opportunity costs.''[6]

Dual-Rate Transfer Prices as a Compromise

As mentioned above, transfer prices have important consequences for taxation when the upstream and downstream business units reside in different tax jurisdictions. The taxing authorities require firms to formulate the price at which they would sell products if selling to an independent counter-party, and to use that ''arm's length'' price as the transfer price. At issue, then, is the extent to which the management control and the taxation roles of transfer pricing are at odds with one another. Research has shown that ''transfer prices as applied by tax authorities to intra-group dealings diverge in many cases from the transfer prices meant to enhance efficient decisions in multi-divisional firms.''[7] While few countries preclude firms from main-

[2] Lanen, W., S.W. Anderson, and M. Maher (2014), *Fundamentals of Cost Accounting*, 4th ed. McGraw-Hill/ Irwin, pp. 217-218 and 415-417.

[3] Hirshleifer, J. (1956) ''On the Economics of Transfer Pricing,'' *Journal of Business*, pp. 172-184. The marginal cost will not only cover the production costs but also provide a market return on investment.

[4] This result is modified somewhat in the presence of upfront investments by the upstream unit in specific assets or by demand or technological complementarities between the upstream and downstream business units.

[5] Holmstrom, B. and J. Tirole (1991) ''Transfer pricing and organizational form,'' *Journal of Law, Economics, & Organizations*, 7, pp. 201-228.

[6] Zimmerman, J.L. (1997), ''Accounting for Decision Making and Control,'' 2nd Edition, Irwin/McGraw-Hill (Boston, MA), p. 208.

[7] Schon, W. (2012) ''Transfer Pricing – Business Incentives, International Taxation and Corporate Law.'' In Schon, W. and K.A. Konrad (eds.), *Fundamentals of International Transfer Pricing in Law and Economics*, MPI Studies in Tax Law and Public Finance 1, Springer-Verlag Berlin Heidelberg, p. 50.

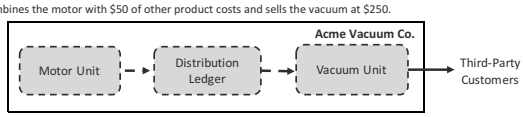
taining two sets of accounting books corresponding to potentially different tax and managerial transfer prices, it appears that a minority of firms do so. For example, according to a survey of 641 parent companies and 200 subsidiaries in 22 countries, Ernst & Young found that ''over 80 percent of parent [companies] use a single set of transfer prices for management and tax purposes.''[8]

This means that multinational firms often adopt the tax transfer prices as a compromise. However, if the compromise is too great and induces dysfunctional behavior, the firm may instead adopt ''dual-rate transfer pricing.'' In firms that use dual-rate transfer pricing, the sale of the product is recorded at one price for the upstream business unit, but the purchase of the product is recorded at a different price for the downstream business unit. This is illustrated in Figure 2. Assume that Motor Unit resides in a foreign tax jurisdiction, and Vacuum Unit is in the U.S. Both the U.S. and OECD tax laws would typically require that the transaction price for the motor be at the market price of $125. Rather than using the same managerial transfer price for both Motor Unit and Vacuum Unit as in Scenarios A and B, two separate prices are used in Scenario C. This is implemented with the introduction of an intermediate accounting ledger.

Figure 2. Example of Dual-Rate Transfer Prices

Assumptions:

1. The Motor Unit manufactures a motor at a cost of $75.
2. The Vacuum Unit combines the motor with $50 of other product costs and sells the vacuum at $250.



A. Motor Unit Sells the Motor at Market Price of $125

Revenue	$125		$250
Product Cost	$75		$125
Other Product Cost	$0		$50
Gross Profit	**$50**		**$75**

B. Motor Unit Sells the Motor at Internal Price of $100

Revenue	$100		$250
Product Cost	$75		$100
Other Product Cost	$0		$50
Gross Profit	**$25**		**$100**

C. Dual-Rate Transfer Prices

Revenue	$125	$100	$250
Product Cost	$75	$125	$100
Other Product Cost	$0	$0	$50
Gross Profit	**$50**	**($25)**	**$100**

With this intermediate ledger, Motor Unit sells its product at the market price of $125, and thus its income statement is identical to the income statement under Scenario A (identical to the same scenario in Figure 1). At the same time, Vacuum Unit purchases the motors at $100 each, the desired internal price, and its income statement is identical to that under Scenario B. The price difference for the motors is absorbed by the intermediate ledger. For tax purposes this ledger is consolidated with Vacuum Unit; however, for managerial accounting purposes, it is consolidated with Motor Unit. Thus, the use of an intermediate ledger ensures that the value of transfers from Motor Unit matches that of market transactions, while at the same time Vacuum Unit is charged only the lower managerial transfer price.

Accounting Implications of Dual-Rate Transfer Pricing

One should note that the intermediate ledger in this example has a $25 accounting loss by construction: it purchases the product at a price higher than that at which it sells. However, this ledger cannot be evaluated in isolation. Instead, it should be consolidated with Motor Unit for management accounting and with Vacuum Unit for the tax reporting, and it is eliminated entirely in Acme Company's financial consolidation. The dual-rate method allows a multinational to achieve both management accounting and tax reporting objectives when consolidating the ledgers that are relevant to the management accounting, tax reporting, and financial accounting purposes.

Management accounting

For internal purposes, the vacuum unit manager should be responsible for the performance of Vacuum Unit, and the motor unit manager should be responsible for the performance of the consolidated motor unit and the intermediate ledger. Note that the motor unit manager is responsible for two ledgers, one in each country. The book used to manage Motor Unit business is the consolidated motor ledger which uses the internal, managerial transfer price.

Table 1 presents transactions described in Figure 2 from the management accounting perspective. Upon consolidation, the tax transfer price, $125, is eliminated and the motor unit manager is treated as if he or she receives the managerial transfer price of $100 for sales of the motors to Vacuum Unit. This is the desired result at the managerial transfer price for Motor Unit (Scenario B in Figure 1). The same can be said for the vacuum unit manager.

[8] Ernst & Young, Transfer Pricing 2003 Global Survey, 2003, pp. 2, 17.

Table 1: Illustration of Management Consolidation

	Motor Unit	Intermediate Ledger	Elimination	Consolidated Motor	Vacuum Unit
Internal Sales	$125	$0	($125)	**$0**	
External Sales	$0	$100		$100	250
Total Revenues	$125	$100		**$100**	$250
Less:					
Cost of Internal Sales	$0	$125	($125)	**$0**	$100
External Product Costs	$75	$0		**$75**	$50
Total Product Costs	$75	$125		**$75**	$150

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Table 1: Illustration of Management Consolidation — Continued

	Motor Unit	Intermediate Ledger	Elimination	Consolidated Motor	Vacuum Unit
Net Profit (Loss)	$50	($25)	$0	**$25**	$100

Note: Both ''internal'' and ''external'' are in reference to the level of consolidation. For example, if two parties are in the consolidation, they are internal sales or costs.

Tax reporting

For tax reporting purposes, the intermediate ledger should be consolidated with Vacuum Unit, as they both are assumed to reside in the U.S. When Acme Vacuum Co. consolidates these ledgers to determine its taxable income, it must eliminate the internal transaction in which Vacuum Unit pays $100 to Motor Unit. If the company did not eliminate this internal transaction, it would incorrectly appear as if the company made $350 in sales revenue: $250 from a third-party customer and $100 from Motor Unit's revenue. This would inaccurately represent the true financial and economic effects of the company's business.

Table 2: Illustration of Tax Consolidation

	Foreign Entity (Motor Unit)	Intermediate Ledger	Vacuum Unit	Elimination	Consolidated U.S.
Internal Sales	$0	$100	$0	($100)	**$0**
External Sales	$125	$0	$250		**$250**
Total Revenues	$125	$100	$250		**$250**
Less:					
Cost of Internal Sales	$0	$0	$100	($100)	**$0**
External Product Costs	$75	$125	$50		**$175**
Total Product Costs	$75	$125	$150		**$175**
Net Profit (Loss)	$50	($25)	$100	$0	**$75**

Note: Both ''internal'' and ''external'' refer to the level of consolidation. For example, if two parties are in the consolidation, they are internal sales or costs.

As demonstrated in Table 2, this ensures that with consolidation of ledgers, the transactions recorded at the managerial transfer price, $100, are eliminated and have no impact on reported U.S. income. In other words, the managerial transfer prices play no role in determining taxable income. Any internal transactions within a business do not reflect the actual financial or economic performance of the business.

Financial accounting

For Acme Vacuum Co.'s external financial reporting, all three accounting ledgers must be consolidated. As shown in Table 3, the purchases of the intermediate ledger are eliminated against Motor Unit's sale of $125, and the sale of the intermediate ledger for $100 is eliminated against Vacuum Unit's purchase. Correspondingly, the total external sales are $250, and total costs are $125, for a joint profit of $125.

Table 3: Illustration of Financial Consolidation

	Motor Unit	Distribution Ledger	Vacuum Unit	Elimination	Consolidated
Internal Sales	$125	$100		($225)	**$0**
External Sales	$0	$0	$250		**$250**
Total Revenues	$125	$100	$250		**$250**
Less:					
Cost of Internal Sales	$0	$125	$100	($225)	**$0**
External Product Costs	$75	$0	$50		**$125**

Table 3: Illustration of Financial Consolidation — Continued

	Motor Unit	Distribution Ledger	Vacuum Unit	Elimination	Consolidated
Total Product Costs	$75	$125	$150		**$125**
Net Profit (Loss)	$50	($25)	$100	$0	**$125**

Note: Both ''internal'' and ''external'' refer to the level of consolidation. For example, if two parties are in the consolidation, they are internal sales or costs.

Conclusion

Dual transfer prices serve an internal management control function of providing incentives and information to decentralized managers to optimize profits of the firm. When the managerial objectives for the upstream and downstream units are in conflict, dual rate transfer prices, in conjunction with an intermediate ledger, may be used to achieve both aims without compromise.

The same dual rate transfer pricing can also naturally arise in the international tax accounting, where the market price is required for tax compliance but a lower price is preferred for managerial purposes. If such an arrangement is used, the accounting leger for the intermediate account has no independent meaning. It has to be combined with the upstream unit's ledger in the foreign country for management accounting. For tax purposes, it has to be combined with the downstream unit.

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