

## Transfer Pricing

(Relevant to Paper II – PBE Management accounting and finance)

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Transfer pricing is a popular topic in management accounting. It is concerned with the price when one department (the selling department) provides goods or services to another department (the buying department). That is, one department generates revenue from the sales of goods or services and the other department incurs expenses from the purchases of goods or services. Transfer pricing is closely related to responsibility accounting in which each department is responsible for its cost, revenue, expense or investment return depending on the type of centre it is. Thus, transfer pricing effectiveness is essential to the success of the overall company. The related key issue is the determination of a transfer price which brings goal congruence to the company, and to the buying and the selling departments, as all parties want to make a profit.

A department like the sales department which purchases goods and services may compare the prices of similar products in the external market before making its purchasing decision. If external prices are more attractive than internal prices, it may purchase from outside rather than from an internal department like the production department. Similarly, the production department may refer to prices of similar products before it decides to sell to the sales department since selling to the external market may be more attractive. This is the basic idea of market-based transfer prices.

Market-based transfer prices generally result in optimal decisions provided that there is a perfectly competitive market for the intermediate product being transferred and there is minimal interdependence between subunits. Also, there are no additional costs or benefits from buying or selling to the external market instead of selling the items internally.

In cost-based transfer pricing, the transfer price is decided by the cost of goods or services concerned. The cost calculation formula may involve variable costs, fixed costs, full costs or some other variation. Cost-based transfer pricing models are appropriate when market prices are not available or are inappropriate or are even costly to get. This could be the case when the intermediate product being sold is unique or differs from the products available externally. In fact, many companies use transfer prices based on full cost or full cost plus a markup to approximate market price.

The use of cost-based transfer prices can result in sub-optimal decisions because the full-cost transfer price is higher than the external product price, so the departmental operating

profit is maximized by purchasing the product externally. However, purchasing the product from external sources results in a lower total company profit because the other divisions still incur fixed costs included in the full-cost transfer price, and the external price is higher than the variable cost of producing the product.

Cost calculation is also somewhat subjective. Dual pricing is used to describe the situation in which the selling and buying departments use different transfer pricing methods. For example, the selling department may use full cost pricing while the buying department may use market pricing.

Another common transfer pricing method is the negotiated transfer price. In this method, departments negotiate between themselves to arrive at a transfer price. Quite often this involves some form of bargaining. For example, a powerful department may be able to get a better price from a small department.

Consider the following example. Suppose AAT is a company producing chairs. The company's production department produces 100,000 chairs a year and its annual capacity is 150,000. The variable cost of each chair is \$300 and the annual fixed cost for the production plant is \$9,000,000. The chair can be sold for \$400 in the open market.

Within the company, the administration department plans to buy 50,000 chairs at \$280 from the production department, but the production department refuses this order as the offered price is below the variable cost, as can be seen by calculating the contribution margin:

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Sales price	\$280
Variable cost	(\$300)
Contribution margin	(\$20)

The minimum transfer price should therefore equal the variable or incremental costs incurred by the transferring department plus the opportunity costs resulting from transferring the products or service internally instead of selling them to external customers.

Transfer price  $\geq$  variable cost per unit + unit contribution margin on lost sales

Unused capacity within the selling department affects the opportunity cost of an internal transfer. If there is unused capacity within the selling department, no opportunity costs are involved in an internal transfer price. The transfer price will likely be in the lower range, covering only the variable cost involved in the production of the product but not the fixed cost,

because the fixed cost will be incurred regardless of the production volume. The transfer price must be great than or equal to \$300 or otherwise the selling department (in this case, the production department) incurs a loss.

If there is limited capacity, say 100,000 chairs, acceptance of the order from the administration department means that the production department needs to reduce its production volume from 100,000 to 50,000 chairs. The unit contribution is \$100 ( $\$400 - \$300$ ). An ideal transfer price is at least equal to the variable cost per unit + unit contribution margin on lost sales =  $\$300 + \$100 = \$400$ .

Back to the unlimited capacity case, the administration department's manager thinks that the order could bring the fixed cost per desk from \$90 to \$60. In addition, it also takes the production department to its maximum capacity of 150,000. This case can be strengthened by the fact that the department is able to sell the chair at \$420 though an additional cost of \$100 per chair is incurred.

From the company's perspective, the transfer price of \$280 is acceptable because the overall profit of the company is increased by \$1,000,000 [50,000 chairs x ( $\$420 - \$300 - \$100$ )]. A possible way to solve this situation is to either a dual pricing system to allow the production department to gain the market transfer price and to allow the administration department to pay a cost-based price. Another solution is to have the two departments to negotiate an agreed transfer price.

In another example, PBE Ltd is a chain store cake business. It produces cakes and it has two departments: the production department and the sales department. The variable costs of the production and sales departments are \$3 and \$10 respectively, and the fixed costs \$2 and \$12. Due to refrigeration issues, the sales department has a daily capacity of 40,000 cakes; it usually purchases 25,000 cakes from the production department and 15,000 cakes from other vendors for \$20 each.

Now, if the formula of 180% of variable cost is used as the transfer price from the production department to the sales department, the transfer price between departments is \$5.40 ( $\$3 \times 180\%$ ). If management decides to use another formula, 110% of the full cost, the transfer price would become \$5.5 [ $(\$3 + \$2) \times 110\%$ ]. This is a good deal as the price is much lower than the price of \$20 paid to external vendor.

Now assume that 200 cakes are transferred from the production department to the sales department at a transfer price of \$6 per cake. The sales department sells the 200 cakes at a price of \$40 each to customers. This would bring the profit of both divisions up to \$2,600.

	Per unit	<u>Production</u>	Per unit	<u>Sales</u>
Revenue	\$6	\$1,200	\$40	\$8,000
Expenses				-
Variable	3	600	16	3,200
Fixed	2	<u>400</u>	12	<u>2,400</u>
Profit		<u>200</u>		<u>2,400</u>

Many factors affect transfer pricing. Management efforts, especially between the departmental and senior level; departmental performance; and autonomy all need to be taken into consideration as well as calculations.

Transfer prices often have tax issues when the intermediate product is being sold or transferred between departments operating under different tax jurisdictions. The company's total profit will be maximized when the transfer price results in the departments with the lowest tax rate realizing the largest profits. Many tax regulatory bodies restrict companies "shifting" profit from locations with higher tax rates to locations with lower tax rates. Thus companies need to be aware of the impact of tax rates and transfer prices on total company profits.