

# Financial Measures of Performance

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## THE NATURE OF FINANCIAL CONTROL

Control refers to the tools and methods that organizations use to keep on track toward achieving their objectives. The process of control usually involves setting a performance target, measuring performance, comparing performance against that target, computing the difference (variance) between measured performance and the target, and taking action, if necessary, in response to the variance.

In this chapter, we will discuss some of the principal tools in financial control, including profit variance analysis, profit centers, transfer pricing, and productivity measures.

Central to the process of control is a target level of performance. Performance measures can be financial or nonfinancial. However, financial measures of performance have traditionally been, and continue to be, the most widely used. This chapter discusses the most common approaches to financial control.

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## CONTROL IN THE AGGREGATE USING FINANCIAL MEASURES

There are two main reasons for the widespread use of financial performance measures. First, financial performance measures, such as profit, articulate directly with the organization's long-run objectives, which are almost always purely financial. Second, properly chosen financial performance measures provide an aggregate view of an organization's performance.

An aggregate financial performance measure, such as corporate or division profitability, is a summary measure of the success of the organization's strategies and operating tactics. Profit results that are below expectations provide a signal that the organization's strategies or tactics are not achieving their intended results and may be inappropriate. Such

a signal will trigger a study that will uncover the reason for the unfavorable profit variance. Historically, these studies investigate whether the sales group achieved its sales volume and revenue targets and whether the manufacturing group achieved its cost targets. Now the focus has changed. In the 1980s, interest centered on discovering the drivers of organization costs—a process that came to be called activity-based costing. As we saw in Chapter 4, the role of activity-based costing is to uncover the organization's cost behavior so that the organization can manage and predict its costs. In the 1990s, managers also wished to discover the drivers of revenue (such as customer satisfaction and employee innovation)—a process widely called strategic performance measurement or the Balanced Scorecard discussed in chapters 5–8 and 10. When an organization understands what drives its revenue levels, it can take steps to manage the factors that create sales.

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## CONTROL IN THE SMALL USING NONFINANCIAL MEASURES

Although organizations traditionally practiced control in the large, that is overall organization performance, using financial measures, they practiced control in the small, that is control of processes, using nonfinancial measures to supplement financial measures. For example, the performance of a manufacturing unit might be measured in terms of both cost per unit produced and number of defects. In general, interest in nonfinancial measures of performance reflected an understanding that financial measures of performance are, by their nature,

1. Short-run measures of results
2. Neither familiar nor intuitive ways for people to manage operations

Nonfinancial measures, such as quality, not only provide an explanation of current sales levels but also are potentially a predictor of future sales levels. Unfortunately, few organizations have undertaken a systematic consideration of how nonfinancial measures such as quality or productivity rates affect profitability levels<sup>1</sup>. Therefore, nonfinancial measures have mostly been used as relative measures of performance—the invocation to workers being to increase quality or productivity with the expectation that, somehow, doing so would result in higher profits. The key, as we saw in the discussion of the Balanced Scorecard, is to develop a systematic performance measurement system that allows the organization to identify the drivers of its long-run financial performance.

Despite the important and exciting insights offered by strategic performance measurement systems such as the Balanced Scorecard, financial control—that is, organization control driven by the use of financial measures—will continue to be an important management tool because of its aggregate nature and its direct relationship to the primary objectives of profit-seeking organizations.

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## OPERATIONS CONTROL AND MANAGEMENT BY EXCEPTION USING VARIANCE ANALYSIS

A longstanding and widely used financial control tool is variance analysis. Variance analysis is the process of comparing a target level of revenues or costs with the realized level to compute a variance. The variance is a signal that the assumptions underlying the



financial plan were not realized. Analysts investigate variances (typically unfavorable variances) deemed to be material to understand why expectations were not met and what course of action should be taken in light of the variance.

### An Example: Jersey River Book Publishing Company

The process of variance analysis is best illustrated by an example. The following example provides the basis for understanding the scope and nature of conventional variance analysis in financial control.

Jersey River Book Publishing Company publishes academic books. Emma Barker, the editor in chief, is studying the financials for an existing textbook. The analysis will help decide whether to offer a new edition. Jersey River not only publishes books but also prints the books, a practice that is unusual in the publishing industry, which usually contracts with outsiders for printing and distribution services.

Marketing and development people expected the textbook to sell 160,000 copies over its three-year life at an average price of \$55. The book actually sold 180,625 copies at an average price of \$52 (because of the unexpected release by a competitor of a new book). To manage total inventory-related costs, which include both setup costs and inventory carrying costs, Jersey River produces books in batches. The batch size planned for this text was 4,000 units per batch. The actual batch size realized was 5,000 books per batch because the production people believed that larger batch sizes would reduce salesforce complaints that there were too few books in the warehouse. Batch-related costs include equipment setup costs, which were planned to be \$1,200 per batch but were actually \$1,225 per batch because of chronic problems with the printing machines; work-in-process moving costs, which were planned to be \$400 per batch but were actually \$390 per batch because of improvements in the printing plant layout; and inventory holding costs, which were planned to be \$32 per average unit held (average unit held equals one-half average batch size since demand is expected to be uniform during the life of the book) but were \$34 per average unit held because of increases in insurance for inventory and water damage to some of the books.

Jersey River recognized seven types of unit-related costs per book. These costs were: paper—planned was \$9.80 but actual was \$10.20 reflecting the use of a higher grade of paper when complaints were received about the quality of paper in early batches; ink—planned was \$0.95 but actual was \$0.80 when the purchasing group found a new supplier; printing plant supplies—planned was \$1.35 but actual was \$1.30 because of unexpected price decreases in items such as electricity; sales commissions—5% of selling price and fixed by contract; royalties—15% of selling price and fixed by contract; binding costs—planned was \$1.50 but costs increased to \$1.63 when a new binding machine was purchased to deal with problems in applying glue and in early batches; and shipping costs—planned was \$0.50 but actual was \$0.44 with reductions in carton costs and a new agreement with the courier.

Product-related costs for the book were related to: the cost of the editorial staff—budgeted costs were \$875,000 but were actually \$825,000 because a staff vacancy occurred that was not immediately filled; the cost of preproduction—budgeted at \$750,000 but actually \$950,000 because of unanticipated graphics and demonstration software development costs; and promotion costs—budgeted at \$475,000 but actually \$540,000 (along with the price cut, in response to the competitor's new book).

Jersey River allocates its printing plant (factory) sustaining costs to each book using a complicated formula involving book size and production complexity. The rate used for this text was \$8.00 per unit. Jersey River allocated its general and administrative (capacity-sustaining) costs to each product. The rate is based on the wages paid to editorial staff on the grounds that this figure reflects the long-term cost driver for these costs. The rate used is 75% of the salaries paid to editorial staff working on the book.

Exhibit 9-1 summarizes these events.<sup>2</sup> Note that the planned (master budget) profit was \$619,750 for this book and that actual profit was \$394,914, a difference of −\$224,836. Emma Barker was very unhappy with the results. She wanted to know why profits were lower than planned given that unit sales were 20,625 more than expected.

## The Role of Variance Analysis

As illustrated in Exhibit 9-1, the variance analysis focuses exclusively on financial numbers that may suggest, but do not explicitly state, the cause of the variance. The variance analysis triggers a search to determine the underlying cause of the variance. The narrative for this problem suggested why costs differed from plan. These causes most likely would have been discovered in an investigation triggered by the variance.

## The Planning Variance

Conventional variance analysis decomposes the total variance between the budgeted and actual profit into the underlying components of the variance. In this case, the variance to be explained, the difference between master budget profit of \$619,750 and actual profit of \$394,914, is −\$224,836. By convention, planners compute variances by subtracting the plan from the actual. Therefore, a positive variance for revenues is favorable—that is, revenue was more than planned—and a positive variance for costs is unfavorable—that is, cost was more than planned.

The first step in the reconciliation is to remove the effects of volume from the variance by recasting the master budget to targets that reflect the level of volume actually achieved. This step is done in the flexible budget. As shown in Exhibit 9-1, when the plan is recast to reflect the achieved level of sales of 180,625, the profit expectation rises from the master budget level of \$619,750 to the flexible budget level of \$1,062,638. Therefore, if the organization kept prices constant and achieved all its planned unit revenue and cost levels, with only volume changing, profits should have increased by \$442,888 to reflect the increase in volume. Planners call this variance the **planning variance**, and it reflects the financial consequence of operating at an actual activity level different from that assumed in the master budget. Note that Exhibit 9-1 shows the planning variance for all revenue and cost items.

## The Flexible Budget Variance

Accounting for the volume effect has not explained the −\$224,836 difference between planned and actual profits. In fact, the volume effect predicts further a profit increase of \$442,888, whereas actual profits fell below the profit target in the original plan. The question is: What happened to the \$667,724 of lost profits? This variance, called the **flexible budget variance** is explained by reconciling the flexible budget targets with actual results. Recall that the volume effect has been removed. Therefore, the remaining differences reflect variances that are due to the price or use of the budgeted items.



# EXHIBIT 9-1 Jersey River Book Publishing Company

	MASTER BUDGET	PLANNING VARIANCE	FLEXIBLE BUDGET	FLEXIBLE BUDGET VARIANCE	ACTUAL RESULTS
<b>Target Values</b>					
Unit sales	160,000		160,000	20,625	180,625
Selling price	\$55		\$55		\$52
Units per batch	4,000		4,000		5,000
Revenue			\$8,800,000	\$1,134,375	\$9,392,500
<b>Unit-Related Costs</b>					
Paper	9.80		1,568,000	202,125	1,842,375
Ink	0.95		152,000	19,594	171,594
Supplies	1.35		216,000	27,844	243,844
Sales commissions	2.75		440,000	56,719	496,719
Royalties	8.25		1,320,000	170,156	1,496,158
Binding	1.50		240,000	30,938	270,938
Shipping	0.50		80,000	10,313	90,313
Unit carrying cost	32.00		\$4,016,000	\$517,688	\$4,533,688
<b>Batch-Related Costs</b>					
Setup	1,200.00		48,000	3,600	51,600
Moving	400.00		16,000	1,200	17,200
Inventory holding			64,000	4,000	68,000
<b>Product-Related Costs</b>					
Editorial staff	875,000		875,000	0	875,000
Book development	750,000		750,000	0	750,000
Promotion	475,000		475,000	0	475,000
<b>Facility-Sustaining Costs</b>					
Factory related costs	8.00		1,280,000	165,000	1,445,000
General and administrative	75%		656,250	0	656,250
<b>Total</b>					
Unit sales					
Selling price					
Units per batch					
Revenue					
Paper					
Ink					
Supplies					
Sales commissions					
Royalties					
Binding					
Shipping					
Unit carrying cost					
Setup					
Moving					
Inventory holding					
Editorial staff					
Book development					
Promotion					
Factory related costs					
General and administrative					
<b>Total</b>					
Unit sales					
Selling price					
Units per batch					
Revenue					
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Supplies					
Sales commissions					
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Promotion					
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Binding					
Shipping					
Unit carrying cost					
Setup					



## Flexible Budget Variances for Unit-Related Costs—Price and Quantity Effects

Recall that the numbers reported in the budget are the product of price and quantity elements. Therefore, in general, a variance, whether it is a cost or revenue variance, will have two components: a cost component and a quantity component.

One explanation for the revenue variance at Jersey River Book Publishing Company is the lower-than-planned revenue per book. The revenue variance was \$3 per unit on 180,625 units: a total of \$541,875 unfavorable. Note that the price variance identifies the effect of a price change but not the cause of the price change. This is the common feature of financial control tools; they identify the financial effect of a change but not its cause. This variance would trigger an investigation into the cause of the price decrease: marketing's response to competitive pressures or perhaps discounting to achieve the higher sales volume.

Note also the variances for the individual unit-related costs. These variances would trigger investigations that would result in the explanations mentioned in the narrative. Small variances, favorable or unfavorable, would not trigger an investigation. Most plans are subject to small variances because of uncertainties in estimating costs. An organization should investigate a variance only when the variance is large enough to suggest that something significantly different from what was planned happened and that something needs to be reconsidered to improve future planning.<sup>3</sup> For example, setup costs will vary because of the random nature of machines and the people who set them up. However, a large variance will signal more than a random event; there was something that systematically differed from plan.

To understand the meaning of a flexible budget variance, consider the variance for paper. The standard allowance for paper is \$9.80 per book. The allowance will include both a price and a quantity component. Suppose that each book requires 20 units of paper at \$0.49 per unit. Therefore, the target allowance of \$1,770,125 in the master budget could be written either as

$$\text{Target allowance} = 180,625 \text{ books} * \$9.80 \text{ per book} = \$1,770,125$$

or as

$$\text{Target allowance} = 3,612,500 \text{ units of paper} * \$0.49 \text{ per unit of paper} = \$1,770,125$$

The actual results show that \$1,842,375 was spent on paper. Suppose that further investigation reveals the following price and quantity components of total cost: 3,500,000 units of paper used at an average cost of \$0.526 per unit. The excess use of paper reflects the problem that arose with the original paper and the decision to switch to a higher grade of paper—which is reflected in the higher average unit cost of the paper purchased. This example illustrates the standard elements of variance analysis; part of the variance is attributable to excess use (the quantity component), and part of the variance is attributable to the cost of the raw material (the price component).

Note that flexible budget variances are controllable by two groups of people in the organization. The price variance is related to the activities of the purchasing group, whereas the quantity variances are related to efficiencies in the production operations group. Variances may not be easily assignable to a responsibility center. For example, a purchasing group might purchase materials of a lower grade than planned in order to gen-

erate favorable price variances. However, the lower-grade materials might cause excess use in production because of defects. Therefore, the price variance must be conditioned on the quality of input (material, labor, supplies) envisioned in the plan, and the investigation should ensure that the variances were not caused by unplanned shifts in input quality.

### Flexible Budget Variances for Batch-Related Costs— Batch Size and Batch Cost Effects

The flexible budget called for production of 180,625 units in batches of 4,250, or 43 batches. The actual production took place in batches of 5,000 units, or 37 batches. Therefore, batch setup costs will fall by \$7,200 (6 batches \* \$1,200 per batch) to \$44,400 because production took place in larger-than-planned batches. However, batch setup costs were \$45,325, meaning that the cost per batch was about \$1,225 ( $\$45,325/37$ ) instead of the planned \$1,200. Therefore, the setup cost per batch was \$25 higher per batch than planned. Again, note the approach of decomposing the total flexible budget variance into a quantity and a price component. The same type of analysis would be applied to decomposing and investigating the flexible budget variance related to materials moving costs.

### Flexible Budget Variances for Product-Related Costs

Whereas flexible budget variances for unit-related costs and batch-related costs are deemed controllable in the short run by either purchasing (materials prices) or production (quantity) personnel, flexible budget variances for product-related costs have a very different nature. Unit-related costs are often called **engineered costs** because they have an engineered, or designed, relationship with the number of units made. For example, each automobile will have one steering wheel, one motor, one alternator, and so on. Engineered costs have a specified relationship with the number of units made. The role of the production personnel is to manage production so that the expected relationship between units produced and inputs consumed is achieved.

Product-related costs are quite different. Product-related costs arise from periodic decisions and are not directly tied to the number of units made. For example, the cost of editorial staff and the cost of preproduction development reflect the amount of work done getting the book ready and are not based on the number of units sold. For this reason, these costs are usually called **discretionary costs** to distinguish them from engineered costs. Discretionary costs are controlled by ensuring that the required amount of work was done and comparing the actual cost with the planned cost.<sup>4</sup> Therefore, actual discretionary costs that are higher or lower than planned amounts do not necessarily reflect either poor or good management; they may simply reflect the fact that less than the planned amount of discretionary work (that is, work that is not driven by the number of units made) was done.

### Facility-Sustaining Costs

The facility-sustaining costs in this example are assignments of the organization's facility-sustaining costs to products. They are intended to be an estimate of the increments to long-run costs caused by the production of the book. Therefore, these are not costs that production personnel can control or manage in the short run. Improved production methods can, in the long run, lead to decreases in these costs, but the lower costs of the improved production methods may not be reflected in the cost allocations.



## Summary

Exhibit 9-1 summarizes the elements of the flexible budget variance that provide insights into why the target level of profit in the flexible budget was not achieved. In general, these flexible budget variances reflect price or quantity variances in the use of the components of unit-related and batch-related costs and discretionary spending variances underlying product-related and facility-sustaining costs. For batch-related costs, in this example, the variances reflect the difference between the standard (flexible budget) and actual use of the deemed cost driver of the costs.

The variance analysis<sup>5</sup> is a classic example of financial control. It involves comparing an actual financial value with a target financial value to compute a variance. A variance deemed to be material indicates that some planning element (a price or a quantity) has not been realized. The variance is a warning signal that triggers an investigation to determine why the planned result was not realized.

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## ORGANIZATION CONTROL USING PROFIT MEASURES

### Using Profits to Assess Organization Unit Performance

Profit is the most widely used measure of performance for a business firm. By evaluating the performance of decentralized units with a profit measure, senior managers hope to promote goal congruence between decentralized units and the firm by focusing attention on profitability.

Many definitions of a profit center have been proposed. At a purely descriptive level, one could define a profit center as any organizational unit for which some measure of profit is determined periodically.<sup>6</sup> But this definition fails to capture one of the major purposes behind the use of profit centers: to encourage local decision making and initiative. Merely measuring the profit generated by some organization unit does not make that unit autonomous or independent.

For our purposes, then, a **profit center** is a unit for which the manager has the authority to make decisions on sources of supply and choice of markets. In general, a profit center should sell most of its output to outside customers and should be free to choose the sources of supply for most of its materials, goods, and services. With this definition, it is unlikely that manufacturing or marketing divisions will be profit centers, even though many firms attempt to simulate local authority by assigning transfer prices to products transferred between manufacturing and sales divisions. This practice creates pseudo-profit centers since the company can now report a profit figure for these divisions even though they have limited authority for sourcing and pricing decisions.

Many managers of profit centers are evaluated not just on profit but also on the level of profit related to the fixed investment for their units. In this case, we refer to the unit as an **investment center**. Return on investment and residual income (also known as economic value added) are the most common performance measures used for investment centers. In this chapter, we will restrict our attention to profit measurement, deferring discussion of investment centers and their performance measures to Chapter 10. A profit center (as opposed to an investment center) is an appropriate structure for evaluating the performance of a unit manager if the quantity of plant and equipment is stable from year to year or is not controllable by the profit center manager. For example, if all



major capital expenditure decisions are made at the top management level, then the local profit center manager is not controlling the level of investment and should not be held accountable for the past decisions on plant and equipment. Thus, the performance of the manager must be differentiated from the performance of the organization unit, especially when the best managers are assigned to problem or failing units in an attempt to revive those units.

Problems encountered in measuring profit include (1) choosing a profit index, including the allocation of jointly incurred costs and jointly earned revenues to the center, and (2) pricing the transfer of goods between profit centers.

### Choosing a Profit Index

Consider the following data from a division of the Easler Corporation:

Revenue from division sales	\$15,000
Costs that vary with capacity use	10,000
Costs that vary with the level of capacity that are avoidable in the short run	800
Costs that vary with the level of capacity that are avoidable in the long run	1,200
Allocated G&A expense of corporation	1,000

We can construct a structured divisional income statement as follows:

Revenues	\$15,000
Costs that vary with capacity use	10,000
1. Short-run operating margin	\$ 5,000
Other costs controllable in the short run	800
2. Controllable contribution	\$ 4,200
Other costs controllable in the long run	1,200
3. Divisional segment margin	\$ 3,000
Allocated corporate expenses	1,000
4. Divisional profit before taxes	\$ 2,000

We have a choice of at least the four indicated measures to evaluate the division's performance.

### Short-Run Operating Margin

The division short-run operating margin of \$5,000 may be important for understanding the ability to control revenues and cost that vary with capacity use within the division, but it is not useful for performance evaluation. The division manager has control over other costs not included in this performance measure and has the option of trading off costs that vary in proportion to capacity use (for example, labor hours) for costs that are proportional to capacity acquired (for example, machine time). Therefore, the performance evaluation of the division manager should include, as a minimum, controllable costs that vary in proportion to capacity acquired.

## Controllable Contribution

The controllable contribution of \$4,200 is the total division revenues less all costs that are (1) directly traceable to the division and (2) controllable by the division manager. This measure includes costs of providing capacity such as indirect labor, indirect materials, and utilities. The division manager can reduce these costs by streamlining operations or reduce complexity and diversity in product lines and marketing channels.

Controllable contribution is perhaps the best performance measure of division managers' performance because it measures managers' ability to use effectively the resources under their control and authority. An important limitation of this measure is the difficulty of distinguishing between controllable and noncontrollable capacity-related costs. For example, depreciation, insurance, and property taxes on fixed assets would be controllable if division managers had the authority to dispose of these assets but would not be controllable if they did not have that discretion. Also, salary levels of employees and supervisors may be set centrally, but division managers may choose how many workers and supervisors to employ at the division. In any event, controllable contribution ignores the capacity-related costs that can legitimately be attributed to a division and, therefore, some of the costs that a division imposes on the organization.

A tradeoff exists between the need to evaluate managerial performance and the need to measure the economic contribution of the segment to the overall organization. Segment performance can be affected by market conditions beyond the manager's control. For example, a good segment performance can result from excellent market opportunities but weak managerial performance. On the other hand, a weak segment performance can result from terrible market conditions but excellent managerial performance. Any profit performance reported by a segment must be evaluated relative to the potential of that segment, perhaps as expressed in the annual budget for the segment. But the manager usually participates in the budget-setting process and may be motivated to misrepresent potential opportunities in order to avoid the imposition of high performance standards. Kenneth Merchant described how several companies resolved the conflict between controllability and responsibility in their decentralized units.<sup>7</sup>

Controllable contribution measures, to some extent, the performance of the division manager, unencumbered by costs that may have been committed by other managers. On the other hand, controllable contribution, by ignoring attributable but noncontrollable (in the short run) capacity-related costs, provides an incomplete picture of the division's economic contribution to the organization.

## Divisional Segment Margin

The divisional segment margin of \$3,000 represents the assessed contribution that the division is making to corporate profit and capacity-related costs that provide general purpose capacity, such as administrative and office resources. For the reasons mentioned above, it evaluates the performance of the division more than it does the performance of the division manager. Some of the division's capacity-related costs, such as the costs of factory space, warehouses, administrative personnel, and machinery, may result from past investment decisions made by top management. Also, the salaries of the divisional executives may be set by central management. The divisional contribution is clearly an important figure for evaluating the division's profitability, but unless the division manager is given



the authority to restructure the investments or key personnel of the division, these costs are not controllable and hence may not be relevant in evaluating the manager's performance.

### Divisional Profit before Taxes

Many companies allocate all capacity-related costs incurred at the corporate level to their divisions. The motivation, apparently, is to alert division managers to the level of these common costs and indicate that the company as a whole is not profitable unless the revenue-producing divisions generate enough contribution margin to cover a fair share of these costs. Because the profits generated by divisions must exceed centrally incurred costs before the company is profitable, there is considerable interest in allocating these costs in order to identify each division's contribution to the company.

There are two broad complaints raised when centrally incurred capacity-related costs are allocated to divisions. The first complaint is that these allocations are often arbitrary. This complaint can be partially resolved by partitioning centrally incurred capacity-related costs into two groups: those that provide the primitive level of capacity that is required to be in business and those that reflect increments required to service the needs of the divisions. The argument is that organizations can use the cost driver for the second group of costs—those that reflect increments required to service the needs of divisions—to allocate those costs to divisions. However, the allocation of the costs of the primitive capacity is invariably arbitrary and clouds the interpretation of the results and often creates confusion and complaints within the organization.

The second complaint is that these centrally incurred capacity-related costs are usually not controllable at the divisional level since they reflect capacity choices made by other people. This complaint is partly addressed by basing cost allocations on centrally used capacity and requiring the central authority to absorb the costs of unused capacity.<sup>8</sup> Therefore, an unfavorable profit variance caused by an unexpectedly large corporate expense allocation cannot be attributed to division managers, who may have no control over expenditures on corporate staff functions.

If central management wishes to have divisions be profitable enough to cover not only their own operations but corporate expenses as well, it is probably better to establish a divisional contribution standard that will allow the recovery of centrally incurred capacity-related costs. The division managers can then concentrate on increasing revenues and reducing costs that are under their control and not be concerned with costs that they cannot control and that are allocated arbitrarily. Otherwise, division managers may attempt to increase their reported profits by negotiating allocation percentages rather than by spending time creating real economic value within their operations.

### Common Revenues

Occasionally, a conflict may arise on the allocation of revenues among profit centers. Such a conflict can occur if the salesforce for one division promotes the sale of products made by other divisions when calling on customers or when the organization is a complex value chain wherein each division adds a unique piece to the final product that the organization sells.

If a division receives no credit for selling the products of other divisions, little motivation exists for attempting to make such sales. A similar problem arises when branch



banks are evaluated as profit centers. A customer may establish an account near her residence but conduct the majority of banking transactions with a branch near her place of work. Conflict between the branches could occur if all the revenues from the time and savings deposits were credited to the home branch and the costs of supplying banking services were charged to the branch near the business location. In this instance, it seems reasonable to construct a fee schedule that will provide some compensation (such as a finder's fee) from the product division to a salesperson from another division who makes a sale and from the home bank to the service bank for providing services. Such arrangements are complicated, and they illustrate the problems that arise from decentralized profit-directed operations.

## Transfer Pricing

We have already noted some of the difficulties that arise when decentralized organizational units have to interact with each other. Nowhere is there greater potential for conflict in such interactions than when goods produced in one unit are transferred to a second unit. If both units are organized as profit centers, a price must be placed on such transfers; this price represents a revenue to the producing division and a cost to the buying division. Therefore, the transfer price affects the profitability of both divisions, so the managers of both divisions have a keen interest in how this price is determined.

Early applications of transfer pricing were designed to facilitate the evaluation of unit performance. General Motors was one of the first and most energetic proponents of using transfer pricing to evaluate unit performance. This attitude reflected the history of General Motors, a company built by acquiring independent companies. The objective of evaluating unit profitability and using transfer pricing was to allow these formerly independent companies to maintain their identities and their competitive edge—to allow them to operate and to be evaluated as if they were independent organizations.

Alfred Sloan and Donaldson Brown, the senior managers of General Motors in the 1920s, understood well the importance of transfer pricing in this role:

The question of pricing product from one division to another is of great importance. Unless a true competitive situation is preserved, as to prices, there is no basis upon which the performance of the divisions can be measured. No division is required absolutely to purchase product from another division. In their interrelation they are encouraged to deal just as they would with outsiders. The independent purchaser buying products from any of our divisions is assured that prices to it are exactly in line with prices charged our own car divisions. Where there are no substantial sales outside, such as would establish a competitive basis, the buying division determines the competitive picture—at times partial requirements are actually purchased from outside sources so as to perfect the competitive situation.<sup>9</sup>

In a survey of transfer pricing practice in large firms in Canada,<sup>10</sup> 85% of the responding firms reported that they used transfer pricing. In the responding firms, the transfer price was determined by:

cost	57%
market	30%
negotiated	7%
other	6%

The rationales for using transfer pricing included:

for profit evaluation	47%
for cost determination	21%
for control and accountability	23%
other	9%

Transfer prices serve two roles, which, unfortunately, usually conflict. First, as prices, they guide local decision making; they help the producing division decide how much of the product to supply and the purchasing division decide how much to acquire. Second, the prices and subsequent profit measurement help senior management evaluate the profit centers as separate entities.

There is a potential for conflict whenever a number, such as divisional profit, that can be manipulated or otherwise affected by managerial behavior is used to evaluate performance. The problem is that when managers take actions to manipulate the performance measure, decision making often suffers. If division managers are encouraged to maximize their individual divisional profits, they may take actions with respect to other division managers that cause overall corporate profits to decline. For example, a purchaser may want to source outside the company from a supplier that is offering distress prices that cannot be sustained over the long term.

The conflict between decision making and evaluation of performance is the essence of the transfer pricing conundrum. A further conflict occurs if managers emphasize short-term performance in their transfer price negotiations at the expense of long-run profitability of their division and the firm.

## Market Prices

Under a restrictive set of conditions, which are rarely realized in practice, the choice of a transfer price is clear. If a highly competitive market for the intermediate product exists, then the market price (less certain adjustments) is the proper transfer price. The conditions of a highly competitive market imply that the producing division can sell as much of the product as it wishes to outside customers, and the purchasing division can acquire as much as it wishes from outside suppliers without affecting the price. In this case, the market provides an objective valuation of the intermediate product, and that price should be used to price transfers and guide decisions within the firm.

If the purchasing division cannot make a long-run profit at the outside market price (assuming that the market price is a reasonable approximation of the long-run price and not simply a short-run distress price), then the company is better off to not produce the product internally and to go to the external market for its supply. Similarly, if the purchasing division cannot make a long-run profit when it must acquire the product at the external price, the division should cease acquiring and processing this product and should allow the producing division to sell all its output to the external market. With a competitive market for the intermediate product, the market price provides an excellent basis for allowing the decisions of the producing and purchasing divisions to be independent of each other.<sup>11</sup>

Some modifications to the pure market price rule facilitate its use in practice. The company will usually benefit if the transaction occurs internally rather than having a pro-



ducing division sell a certain amount externally while the purchasing division is acquiring the same amount from its own outside suppliers. Internal rather than external transfers are encouraged by means of a discount from market price that is offered to reflect savings on selling and collection expenses and the delivery, service, or warranty terms associated with external sales. This discount will encourage an internal transfer, all other factors being held equal.

Offsetting the desire to coordinate transactions within the firm is the frequent difficulty that division managers have in negotiating the terms of transfers with other divisions in the company. Hidden costs can arise if the buying division makes unreasonable delivery demands (which may not be imposed on external suppliers) on the selling division or when the selling division manager has concerns that any foul-up in product quality or delivery will become publicized throughout the organization, as expressed by the following complaint from the manager of a supplying division:

It is more difficult to work inside than externally. In the smallest impasse, a person can go up the line. Nobody wants to have the boss coming and making accusations of not cooperating. It is always difficult, so you need a financial incentive or something else, such as recognition for being a good corporate citizen.

Sometimes the transaction must occur internally, rather than externally, to maintain product quality or product confidentiality requirements. In this case, the market price may be adjusted to reflect the extra cost required to meet a more stringent quality standard or special features available only from internal manufacture. The challenge is to keep an accumulation of such special charges from driving the price far above the prices of comparable products available externally. A profit-conscious manager of the purchasing division will usually provide the necessary discipline.

Additional problems arise from the conflict between short-run and long-run considerations. An external supplier may quote a low price in an attempt to buy into the business, with the expectation of raising prices later. The company ordinarily should not switch its source of supply from an internal division to an outside company unless it is confident that the outside company has the potential to maintain the quoted price for a substantial period. A similar conflict arises when the price for the intermediate product or service is quoted on both a long-term-contract and a spot-market basis. As more of these complicating factors intrude into the price-setting process, they begin to violate our basic assumption of a perfectly competitive market for the intermediate product. When the market is not perfectly competitive, as it usually is not for most manufactured goods, the transfer price problem becomes much more complicated.

As more of these complications intrude into the transfer pricing mechanism, we get additional evidence of the difficulty of using market prices to coordinate transactions within the firm. If market prices existed that allowed optimal resource allocation and managerial evaluation decisions to be made within the firm, little reason would exist to keep the different divisions within a single corporate entity. The units could function as independent market entities, since no gain apparently would arise from centralized control. Thus, an ability to uncouple divisional operations through an extensive array of market-based transfer prices is inconsistent with any gains accruing from operating these divisions within a single corporate organization.<sup>12</sup>



## Using Marginal-Cost Transfer Prices

It is a trivial mathematical exercise to show that the optimal level of production, and therefore the optimal transfer level of an intermediate product, takes place when price equals marginal cost. Unfortunately, economic theory is vague about the meaning of marginal cost. However, classical economic theory makes the assumption, which can never be met in practice, that capacity can be adjusted continuously without adjustment costs. Not only does this mean that, in classical microeconomic theory, the firm is always operating at the level of capacity that minimizes average cost, but it also means that any incremental change in costs will cause capacity to adjust and therefore cause capacity-related costs to change. Therefore, in classical microeconomic theory, marginal cost includes capacity-related costs.

Unfortunately, accountants have been careless in applying this pricing prescription from microeconomic theory to practice. They attempted to use the economic reasoning that suggests that the optimal transfer price should be the price that equates supply and demand. Using this rule means that the transfer price will equal the short-run short-term variable cost to supply the intermediate product plus an increment to ration existing capacity. Whenever capacity is not constraining production, this rule suggests that the transfer price should equal marginal costs, which accountants have interpreted as the short-term variable costs.

A widely used variation of this rule, which produces the same result, is to set the transfer price equal to short-term variable cost plus the opportunity cost of the capacity used to make the product. So, for example, if the product has an outside market, the transfer price will be market price since the opportunity cost of using the product internally will be the profits foregone by not selling the product in the external market.

Despite being promoted in the academic literature for many years, this rule of using a transfer price that equals short-term variable cost plus an increment to equate supply and demand for capacity has been consistently rejected by practitioners. The reasons are that product-related decisions are long-run decisions that must reflect long-run pricing considerations and that this rule would be impractical to implement in practice anyway.

The point is that organizations must consider all the consequences of pricing rules. Recall that organizations are a value chain that requires complex interactions among the links or components of the value chain. A transfer price is intended to help manage and moderate the level of coordination required. A transfer price that varies up or down as capacity changes provides mixed signals to the other links in the value chain about the economic value of the transferred commodity and creates chaos in the value chain as the various downstream links adjust to the varying transfer price. Long-run planning, which is necessary in most product situations, requires some stability in pricing and a good estimate of the long-run costs, which include the costs of all the resources required to sustain and produce the product.

Therefore, short-term variable cost transfer pricing is rejected for most situations for two reasons. First, short-term variable cost transfer pricing will not provide an economic signal about the long-run cost of supplying the commodity, which is required for long-term planning and stability in a complex value chain. Second, modifying short-term variable cost transfer pricing by adding an arbitrary markup to reflect capacity costs does not deal with the problem identified in the first objective. Not only does the transfer price

not reflect the long-run cost of making the product, but, through continuous variation, it causes confusion and disorder in the value chain.

### Using Activity-Based Costs for Transfer Pricing

The reconciliation between the economists' plea for using long-run marginal cost for transfer pricing and how costs are measured in practice can now be accomplished by using activity-based cost estimates as the transfer pricing mechanism.<sup>13</sup> In this approach, the purchasing unit is charged for the unit- and batch-related costs associated with any products transferred to it, plus an annual fixed fee, calculated from the product-related and facility-sustaining costs, for the privilege of obtaining these transfers. Under this scheme, the purchasing division sees the marginal long-run costs of the transfers and can use this information to choose an output level to maximize profits by equating long-run marginal cost to marginal revenue. The producing division has the opportunity to recover all its costs, including its capacity-related costs. If the transfer price also includes a component related to the assets employed (as discussed in Chapter 5 and revisited in Chapter 10, with the discussion of economic value added), it can earn a profit through the fixed fee charged each period. The assignment of product and facility-sustaining costs represents a reservation price that the purchasing division pays for the privilege of acquiring the intermediate product during that year at short-run marginal cost—defined as the unit and batch costs associated with the production of incremental units.

Assigning product and facility-sustaining costs as a fixed annual fee raises some interesting motivational and control issues. Suppose that the fixed fee assigned to each user is based on that user's planned (or long-run average) use of the product and facility. For example, if a division uses 20% of the average capacity, the division is assigned 20% of the fixed costs of the facility. The prepaid capacity would be reserved for the user paying for that capacity. This scheme has two desirable economic traits. First, in the short run, transfers will take place at short-run marginal (unit plus batch) cost, as economic theory dictates. Second, people will tend to be more honest in the capacity acquisition stage. If they overstate their expected requirements, perhaps to ensure adequate capacity for their own use, they will pay a higher fixed fee in later years. If they understate their expected requirements, to avoid the fixed fee for capacity, they may not have sufficient capacity for their needs as capacity either is not acquired or is reserved for others who have expressed a willingness to pay the fixed fee for that capacity.<sup>14</sup>

Suppose, however, that expectations are not realized. Then the approach will not be best for the firm overall unless some reallocations of capacity take place. When expectations are not realized, capacity allocations based on expectations may no longer be assigned to the most profitable current uses. This problem can be overcome by allowing divisions to subcontract with each other so that a division, facing better opportunities, could rent the capacity previously reserved by another division.

This flexible transfer pricing, which incorporates both marginal and capacity-related costs, is perfectly generalizable. For example, suppose an automobile dealership, after negotiations with the managers of the new- and used-car departments, chooses a level of capacity for its service operations. The negotiations end up with the new-car operations reserving 20% of capacity, the used-car department reserving 30% of capacity, and the service department's expecting to use (for outside customers) 50% of capacity. Now sup-



pose that the used-car operation falls upon hard times. It must still pay its share of the capacity-related costs of the service department. This is proper: Its estimates were used in the capacity acquisition decision. If these capacity-related costs were not assigned to the used-car department, they would be reallocated to the other two departments—in effect, causing them to bear the costs of the used-car department's failure to use the capacity that it reserved. Therefore, this scheme is consistent with responsibility accounting.

In the limit, the fixed-fee plus short-term variable scheme yields either a pure market or a pure cost-plus operation. For example, suppose the service department did no outside work. In this case, it would be responsible for none of its capacity costs and would become a pure cost center. Jobs would be priced at standard costs, which include the cost of capacity used, and the only goal of the service department would be to provide quality service, on time, and at below-standard cost. On the other hand, suppose the service department did no internal work. Then it would be a pure profit center, and all transfers would be at market prices. Therefore, this scheme blurs the distinction between pure cost and pure profit centers by operating over a continuum. Also, the scheme provides a justification for retaining both production and acquisition activities within the firm. Such a dual-price scheme for internal transfers would be difficult to implement and enforce if the divisions did not operate under centralized control.

The approach of a budgeted fixed fee to cover capacity-related costs and to provide a return to capital, plus an incremental cost based on short-term variable cost per unit for each unit transferred leads to efficient resource allocation among divisions while still letting purchasing divisions see the full cost of obtaining goods or services from other divisions. One is motivated to ask: If this is such a great scheme, why is it not widely used? We can only speculate that the need to account for usage and to acquire capacity on a planned and systematic basis may have prevented a more widespread use of this approach to transfer pricing.

## Full Costs

Recent surveys of transfer pricing practice indicate that the most popular method of determining transfer price in practice is a full-cost pricing scheme, but one that uses the company's traditional standard costing system, not an ABC system, to calculate manufacturing costs.<sup>15</sup>

Serious problems arise when accountants estimate full cost using traditional accounting methods that assign capacity-related costs to products in arbitrary ways. One popular method is to divide capacity-related costs by the number of units produced to get a capacity-related cost per unit. That unit rate is then used to allocate capacity-related costs to current production. This approach to transfer pricing has three very unfortunate characteristics.

First, it provides a varying transfer price since the cost per unit is constantly changing as capacity use varies. Second, by mixing the short-run and long-run components of cost, it obscures the underlying cost structure from decision makers in the organization and therefore fails to suggest how cost savings can be obtained by using capacity more efficiently. What is worse, however, is that the full-cost approach is often implemented by using a formula approach that takes variable cost and adds an arbitrary markup to cover capacity-related costs and perhaps a targeted profit margin. In other words, many full-cost

schemes are not *costing systems* at all but *cost recovery systems* that make no attempt to reflect underlying cost behavior.

As a simple illustration of the perverse effects of an inappropriately designed full-cost transfer pricing scheme, consider the practice of a large industrial company that allocates all corporate G&A (general and administrative) expenses to its operating divisions and imposes a transfer price based on cost plus profit markup for all internal transfers. Assume that it is manufacturing a product that must be processed through three divisions before final sale. The company allocates \$12,000 of G&A administrative expenses to the three divisions manufacturing this product. Transfers between divisions are done at full cost plus 20% markup, which is also the procedure used to price the final product.

Suppose the G&A expenses are allocated equally to each division: \$4,000 each. The first division takes the \$4,000 allocation, marks it up by 20%, and transfers these costs to the second division (along with all other product-related costs). The second division now has not just its own \$4,000 G&A expense allocation for the product but also the \$4,800 from the first division ( $\$4,000 + 20\%$  markup). Division 2 takes the \$8,800 G&A allocation, marks it up by 20%, and transfers a total of \$10,560 to Division 3. The third division accumulates its own \$4,000 allocation with the \$10,560, adds the 20% markup to this sum of \$14,560, and obtains a total of \$17,472 of corporate G&A that must be added to the final price of the product. Thus, the \$12,000 of G&A has been increased not by a standard 20% markup but by a 46% markup ( $[\$17,472 - \$12,000]/\$12,000$ ) because of the escalating effect as the product passes from one division to the next. When last heard from, the company was calling in a consultant to determine how competitors were able to price their products so much lower and why the company was steadily losing market share in its product lines. Poorly conceived transfer pricing policies can be highly dysfunctional.

With all these problems, we must ask why the full-cost approach to transfer pricing is so widely practiced. We must distinguish between two situations.

Where an external market price exists, there appears to be little justification for the use of a cost-based approach to pricing. Where there is no external market price, a full-cost price may be used as a surrogate for the long-run marginal cost to the firm of manufacturing the product if costs are appropriately modeled. As we saw in Chapter 4, activity-based costing does make this attempt by identifying the cost drivers for capacity-related costs. So why is not short-run cost used to price transfers, as economic theory dictates? One executive observed:

When we add a product to our product line, we expect to continue to offer it on a full-time basis. It is not practical to offer products only in the short run when conditions seem right and then, in the longer run, or periodically, say to our customers that we cannot produce this product this period because our costs are now too high.

This executive believes that irrespective of the short-run cost, product decisions reflect long-run commitments and should therefore be based on long-run cost that includes a component related to capacity costs. Product decisions imply commitments to product continuity and the integrity of the product line and therefore provide a justification for full-cost pricing. The discussion in Chapter 4 on activity-based costing suggests how this method measures long-run variable cost and therefore aims to provide a transfer price that reflects the costs of the long-run commitments made in capacity and product introduction decisions.



## Dual-Rate Transfer Prices

In a dual-rate transfer pricing scheme, the supplier receives the net realizable value (the market price less finishing costs) for the commodity that is transferred while the buyer pays the sum of out-of-pocket and opportunity costs of producing the product. In this way, both the buyer and the seller are motivated to demand and supply the optimal amount of the quantity. This scheme raises the issue of estimating opportunity costs, and, in an environment in which managers are rewarded based in divisional profits, it can motivate suppliers to misrepresent their opportunity costs. Possibly because of these problems, the dual-pricing scheme is implemented in practice by substituting an allocation of capacity-related cost as an estimate of the opportunity cost; that is, the selling division receives its full cost in the transfer, but the buying division is charged only for the marginal cost.

At first glance, the dual-pricing scheme seems very attractive, but several companies that have tried it eventually abandoned the practice.<sup>16</sup> Senior management objected to having the sum of divisional profits exceed overall corporate profits. In an extreme situation, buying and selling divisions could all show profits while the corporation as a whole is losing money. Thus, divisions would report profits at or above budget, only for large write-downs to occur, to eliminate the double counting of profits among divisions, when the books were closed at the corporate level. One company president noted:

Dual pricing sort of died of its own complexity and conflict. There were situations in which divisions could get something internally that didn't exactly fit their needs but went ahead and got it because actual full cost was so much less than market price.

The dual-price system encouraged divisions to shift more of their mix to internal sales and purchases at the highly favorable terms. Internal sales increased well beyond expected levels. When business was poor and the selling units could not meet their budget for external sales, they generated excessive internal sales. Similarly, because buying units received internal product at cost, they had little incentive to negotiate for more-favorable prices from external or even internal suppliers. In general, neither division in a dual-pricing scheme has a high incentive to monitor the performance of the other division. Thus, the dual-pricing scheme, by lowering the incentives for buying and selling divisions to deal in the external market, could lower overall corporate profitability.

## Negotiated Market-Based Price

Given the lack of a perfectly competitive market for the intermediate product and the limitations of cost-based pricing rules, perhaps the most practical method for establishing a transfer price is through negotiation between the managers of the two divisions. The negotiating process typically begins when the producing division provides a price quotation plus all relevant delivery conditions (timeliness, quality, and so on). The purchasing division may

1. Accept the deal
2. Bargain to obtain a lower price or better conditions
3. Obtain outside bids and negotiate with external suppliers
4. Reject the bid and either purchase outside or not purchase at all

In a different sequence, the purchasing division may make an offer to the producing division for a portion of its current output or an increment to current output. The produc-

ing division can then bargain with the purchasing division over terms, talk to its existing customers, or decide not to accept the purchasing division's offer.

In either case, a negotiated transfer price requires that the managers of both divisions be free to accept or reject a price at any stage of the negotiation. Otherwise we would have a dictated price rather than a negotiated price.

The conditions under which a negotiated transfer price will be successful include

1. Some form of outside market for the intermediate product. This avoids a bilateral monopoly situation in which the final price could vary over too large a range, depending on the strength and skill of each negotiator.
2. Sharing of all market information among the negotiators. This should enable the negotiated price to be close to the opportunity cost of one or preferably both divisions.
3. Freedom to buy or sell outside. This provides the necessary discipline to the bargaining process.
4. Support and occasional involvement of top management. The parties must be urged to settle most disputes by themselves, otherwise the benefits of decentralization will be lost. Top management must be available to mediate the occasional unresolvable dispute or to intervene when it sees that the bargaining process is clearly leading to suboptimal decisions. But such involvement must be done with restraint and tact if it is not to undermine the negotiating process.

A negotiated-price system has the following limitations:

1. It is time-consuming for the managers involved.
2. It leads to conflict between divisions.
3. It makes the measurement of divisional profitability sensitive to the negotiating skills of managers.
4. It requires the time of top management to oversee the negotiating process and to mediate disputes.
5. It may lead to a suboptimal level of output if the negotiated price is above the opportunity cost of supplying the transferred goods.

The negotiated-price system depends also on the willingness of external suppliers or purchasers to supply legitimate bids to the company. If, each time these external bids are solicited, the transfer price is determined so that all transfers are eventually made internally, the external bidders will soon tire of participating in this exercise. Therefore, some amount of external purchase or sale should be a realistic expectation in order to keep the faith of these outside participants and thereby ensure a continuing source of legitimate external prices. Despite these limitations, however, a negotiated-transfer-price system seems to offer desirable mechanisms for permitting local managers to exploit the specialized information they possess about local opportunities.

### Transfer Pricing—A Summary of Practice

Transfer pricing is a tool that organizations use to coordinate the activities of organizational units. The objective of using this financial measure of performance is to drive the division units, acting in their individual self-interest and reacting to local signals (their own costs, prices, and market opportunities), toward behavior that is best for the organization.

But, as we have seen, transfer pricing practice can be quite complex since it is often implemented in difficult situations. As Ronald Coase<sup>17</sup> observed, economies of scale, syn-



ergies, and saving transactions costs motivate organizations to conduct transactions within the firm rather than using market-based transactions with external suppliers and customers. If successful, such vertical integration should lower costs as transactions occur among related parties. But the corporation cannot expect a pure transfer price solution to be able to treat buying and selling divisions as independent entities.

It is true that no one transfer pricing system will work best in all organizations. Rather, the transfer pricing practice chosen in a particular firm must reflect the requirements and characteristics of that firm and must ultimately be judged by the decision-making behavior that it motivates.

We have covered a lot of ground in our discussion of transfer pricing. We have obtained some results under fairly restrictive conditions, and we have discussed some pitfalls from using transfer prices inappropriately. We can summarize our current recommendations as follows:

1. Where a competitive market exists for the intermediate product, the market price, less selling, distribution, and collection expenses for outside customers, represents an excellent transfer price.
2. Where an outside market exists for the intermediate product but is not perfectly competitive and where a small number of different products are transferred, a negotiated-transfer-price system will probably work best, since the outside market price can serve as an approximation of the opportunity cost. At least occasional transactions with outside suppliers and customers must occur if both divisions are to have credibility in the negotiating process and if reliable quotes from external firms are to be obtained.
3. When no external market exists for the intermediate product, transfers should occur at the long-run marginal cost of production. This cost will facilitate the decision making of the purchasing division by providing the stability needed for long-run planning but at the same time exposing the cost structure so that short-run improvements and adjustments can be made. A periodic fixed fee based on capacity reserved for the buying division is incorporated in the marginal cost calculation. The fixed fee, ideally based on product and facility-sustaining costs from an ABC model, should allocate the capacity-related costs of the facility in proportion to each user's planned use of the facility's resources. The fixed fee forces the purchasing division to recognize the full cost of the resources required to produce the intermediate product internally, and it provides a motivation for the producing divisions to cooperate in choosing the proper level of productive capacity to acquire.
4. A transfer price based on fully allocated costs per unit (using present, that is, non-ABC, methods of allocation) or full cost plus markup has no discernible desirable properties. Although the full-cost transfer price, as presently computed, has limited economic validity, it remains widely used. The marginal cost calculated from an ABC model does provide the capability for managers to use a full-cost approach that is consistent with economic theory.

Robert Eccles, after an extensive field study of transfer pricing practices, found it useful to link the transfer pricing policy to two types of strategic decisions: sourcing decisions and pricing decisions.<sup>18</sup>

### **Sourcing Decision**

Some companies follow a deliberate strategy of vertical integration that mandates internal transfers between divisions. The vertical integration creates interdependencies among production, selling, and distribution profit centers, but the prices of the internal transfers

are not factors in determining the sources of intermediate goods. When the firm has no explicit strategy of vertical integration, transfers are not mandatory and the price of the intermediate good determines whether a transfer is made internally or sold and sourced externally.

### Pricing Decision

The pricing decision determines whether the intermediate good contains a margin for profit (or loss). A margin for profit (or loss) is included in the transfer price when the selling division is regarded as a profit center for the transferred product. Alternatively, the selling division could be viewed as a cost center for internal transfers and a profit center only for products sold externally. In this case, the internal transfer could be made at some cost-based price, and all profits or losses for this product would be realized by the division making final sales to external customers.

With this classification scheme, Eccles found that companies without an explicit vertical integration strategy relied on negotiated transfer prices between buying and selling divisions. In general, the resulting transfer price included a margin for profit (or loss) for the selling division.

For firms following a vertical integration strategy, with mandated internal transfers of certain products between divisions, two possible transfer prices could occur. Market-based prices would be used when the selling division was to be viewed as a profit center for all its transactions. Full-cost, or occasionally dual-price, systems would be used when the selling division was treated as a cost center for internal transfers.

### Domestic versus International Transfer Pricing

Whereas internal transfer pricing issues that provide for motivational effects have been the focus of interest for management accountants, the rise of the multinational organization has generated a very different interest and perspective on transfer pricing. The international transfer price is the price that an organization uses to transfer products between a unit in one country and a unit in another country. Note two important issues. First, such transfers are not arm's-length transactions. Second, absent tax considerations, this transaction would reflect the same considerations that we have discussed so far.

Taxes introduce another layer of complexity into transfer pricing. Consider an organization that manufactures products in Country A, which has a marginal tax rate of 20%, and sells those products in Country B, which has a marginal tax rate of 30%. Obviously, this organization would like to locate most of its profits in Country A, where the tax rate is lowest. Therefore, it will want to use the highest possible transfer price for the commodity. For many organizations, these tax considerations outweigh the behavioral considerations in setting a transfer price, and transfer pricing policy is driven by the objective of minimizing global taxes.<sup>19</sup>

Needless to say, tax authorities understand this incentive and have taken steps to moderate corporate behavior. The tax authority in each country scrutinizes the international transfer pricing policies of companies doing business in that country to ensure that these companies are not using arbitrary transfer prices to avoid paying local taxes. The most important document relating to international transfer pricing is the 1995 Organization for Economic Co-Operation and Development (OECD) guidelines statement.<sup>20</sup> This



document is important because it provides the foundation that many nations use to develop their individual tax laws that regulate transfer pricing behavior for organizations that do business in their respective countries.

With regard to transfer pricing, the OECD guidelines are very similar to discussions that surround domestic transfer pricing. The OECD guidelines clearly imply that, whenever possible, the transfer price should reflect economic circumstances.

The OECD guidelines divide transfer pricing practices into two main groups. The **transaction group** includes the comparable uncontrolled price (CUP), cost-plus, and resale price methods. The **other methods** include profit splits, transactional net margin methods, and other approaches that are related to partitioning the profits from trading. The OECD guidelines state that, whenever possible, the CUP method, which uses either the market price or an imputed market price, should be used. If there is no market price, preference falls to cost-plus.

Studies of practice suggest that the cost-plus method of transfer pricing is the most widely used for internal (domestic) transfer pricing but that the market price method is the most widely used for international transfer pricing. Apparently, if given free choice, firms that use market prices to meet international transfer pricing requirements would switch to cost-plus methods. In other words, there is a group of organizations that swing from using cost-based transfer prices to market-based transfer prices in the presence of a tax authority. Alternatively, the results of these studies may mean that firms use market-based transfer prices to meet the requirements of tax authorities because they are to the firms' advantage. But the firms do not really believe that the profit signals provided by these market prices are meaningful, so they prefer to use cost-based methods for internal decision making.

Other than this interesting anomaly, it is instructive to observe how tax authorities interpret the cost component of a cost-based transfer price. It appears that most tax authorities allow organizations to use whatever costing systems their external auditors have certified as conforming to GAAP. For example, the Canadian tax regulation states

When using the "cost-plus method," cost must be computed in accordance with generally accepted accounting principles or normal commercial accounting practices in the industry in Canada, even though some other computation of cost may be acceptable in the foreign country.

Because GAAP was designed for external reporting purposes, and not for making sound economic operating decisions, it permits a huge variation in costing practice. Such flexibility creates an opening for opportunistic behavior by the taxpayer to select tax-minimizing methods when computing a cost-based transfer price.

## Other Measures of Performance

Apart from transfer pricing policies, two additional problems remain with using profit as a measure of divisional or firm performance:

1. Profit provides only an aggregate indication of the firm's ability to achieve the goals that are crucial to its success. It provides no direct indication to the organization members of what they can do individually to improve the performance of the firm.
2. Profit has a short-run orientation and therefore can be manipulated. The manager can take steps to improve short-run performance at the expense of long-run profit considerations.

We have identified a number of problems with profit measurement, but probably the most serious concern with a narrow focus on periodic profit reports is that managers will sacrifice long-term profitability to improve short-term reported profits, for example by lowering quality controls and maintenance standards and providing insufficient funding for R&D and employee training and insufficient attention to customer relations and employee morale.

To balance an exclusive concentration on reported accounting profits, some companies have developed performance appraisal systems in which profitability is only one component. For example, a division manager may be given objectives to meet in human resources, distribution, technology, product quality, or new products, depending on which of those key areas are most crucial to the long-run success of the division and which are susceptible to the greatest improvement. The manager would then be evaluated on whether targeted objectives were achieved in the key areas. This of course is the domain of strategic performance measurement and the Balanced Scorecard, discussed in Chapters 8 and 10.

At first glance, a multidimensional performance measurement system may seem like an intrusion into the decision-making authority of a division manager in a profit center, but it is not. Rather it represents a more accurate definition of the organization's goals and the factoring of those goals into the responsibilities of the individual decision makers in the firm. Discussing with each manager the specific goals that the manager is intended to achieve and the level of performance expected allows the performance metric to be much more clearly defined. Moreover, the intrusion may be necessary because of inadequate measurement of the long-term consequences of the manager's current actions. Because of limited observability of the division manager's actions and the cost of measuring the present value of all the relevant assets in a division (including customer goodwill, equipment availability and condition, quality of work force, product quality), it is likely that the best contract between the division manager and the corporation is a function of variables other than reported accounting profit. The focus on key areas with long-term benefit to the corporation may be seen as a means of ensuring that short-term profit maximizing is not the only objective of the division manager.

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## PRODUCTIVITY MEASURES

Productivity measures that use financial measures are perhaps the oldest and most widely used measures of financial control. Productivity measures all have the same format.

$$\text{Productivity} = \frac{\text{output}}{\text{input}}$$

Organizations increase productivity either by increasing output while holding input constant or by decreasing input while holding output constant. Analysts can compute productivity ratios for any input factor of production. The objective is to evaluate the organization's efficient use of some factor of production (the input) to create results (the output) that the organization deems valuable.

One of the main problems with profit-related measures of performance is that profit is not a natural way for most people to think about an organization. It is more natural for people to think of physical units—such as units of production per shift—when describing



operations. Many productivity measures are not financially based. For example, quality yield, the ratio of good units to total units is a productivity measure that has no financial component. However, many productivity measures will include a financial number in either the numerator or the denominator and then become financial control measures. We will now consider some of the important financial productivity measures that assess the efficiency with which the organization uses various factors of production.<sup>21</sup>

## Return on Investment

The most widely used and known financial control ratio is return on investment, which is a productivity ratio that assesses the organization's use of capital. Return on investment is the ratio of net income to investment.

$$\text{Return on investment} = \frac{\text{net income}}{\text{investment}}$$

Return on investment measures the ability to generate return (the output) from a given level of investment (the input). Chapter 10 discusses the insights and limitations of the return-on-investment measure.

## Material Yield

Material yield is the ratio of the weight of raw material in the final product to the total weight of raw material input. Expressed this way, material yield is not a financial measure. However, it is common to express the numerator and denominator of this expression in dollar terms, and then the ratio becomes a financial measure that assesses the organization's material productivity.

$$\text{Material yield} = \frac{\text{cost of material allowed for output produced}}{\text{actual cost of material used}}$$

In this ratio, the cost of material allowed reflects the standard use of material (standard quantity times standard cost) for the amount of output produced.

Material yield is a very important measure of performance in the natural resource industries such as oil and gas, meatpacking, forest products, fishing products, and food packaging. The material yield measures the underlying efficiency of the manufacturing process. The higher the material yield, the lower the material cost for a given level of output. For this reason this ratio is monitored closely in any organization that processes raw material and in which raw material is a large component of total cost.

## Labor Yield

Like material yield, the labor productivity measure, or labor yield, can be expressed in financial or nonfinancial terms. The financial expression is

$$\text{Labor yield} = \frac{\text{cost of labor allowed for output produced}}{\text{actual cost of labor used}}$$

Labor yield would be monitored closely in assembly or craft industries in which labor is a significant and controllable short-run cost.

## Equipment Yield

Following the pattern developed above for the other factors of production, we could compute an equipment yield as follows:

$$\text{Equipment yield} = \frac{\text{cost of machine hours allowed for production achieved}}{\text{actual cost of machine hours used}}$$

Since most equipment levels are fixed by capacity decisions for the long run, capital, unlike materials, and some labor, cannot be varied in the short run. Therefore, costs in the equipment yield ratio will reflect capacity-related costs that are committed and, therefore, not variable in the short run. For equipment, a more useful way to convert hours of machine time allowed and used is to assess the opportunity cost of the excess use of machine hours.

A widely used, and inappropriate, measure of equipment use is the ratio of machine hours allowed for production achieved and machine hours available—a use measure. This ratio encourages managers to use available machine time to create inventory, a practice that creates the huge inventory-related costs that just-in-time manufacturing systems try to avoid.

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## SUMMARY

This chapter focused on financial control, perhaps the oldest and most widely practiced management accounting tool. Financial control is popular because it focuses on what matters most in most organizations: profitability. The idea in financial control is to identify a measure that can serve as an indicator of performance and provide a warning signal when performance varies from expected results. The warning triggers an investigation to correct the cause of the deviation. The second use of financial control measures is to focus attention on what matters—that is, to get organization members thinking about what success means in the organization.

The tools in organization control are many and varied and are customized to the specific needs of the individual organization. Variance analysis focuses on identifying situations in which actual results have deviated from planned results. Variance analysis provides an overall evaluation or summary of results. Most organizations would find it ineffectual to wait for a variance analysis to identify operational problems; they sense and deal with problems before the financial control results are developed and published. However, the variance analysis provides a summary that can serve as a talking point in retrospective analyses of operations. During this process, managers can discuss what created the variances and how they dealt with those disturbances. The variances provide an estimate of the financial consequences of the unexpected events.

We saw that organizations use transfer pricing to decompose an integrated organization into individual components that work together to achieve overall organization success. Transfer pricing does three things. First, it provides the means of decomposing profits that are jointly earned by all the organization's operating units into profits earned by individual units. Second, it provides an estimate of what each unit is contributing to the organization. Third, it provides a coordinating mechanism in the firm.

Market prices, when they exist, provide an objective and verifiable measure of the value of the commodity being transferred and should be used. Absent a market price, or-



ganizations use transfer prices that are based on cost, are negotiated, or are imposed. Cost-based transfer prices should be based on the full long-run costs, as calculated by the ABC model, in order to provide for long-run planning. Costs that are negotiated or imposed administratively may not reflect the economic attributes of the transferred product and therefore have unpredictable effects on profitability.

Like all financial control measures, productivity measures provide a signal that gives an overview of the financial effects of operations. Productivity is a measure of the organization's ability to create something desired—the output—from something that is controlled and managed by operations personnel—the input.

## ENDNOTES

1. For a notable exception see R. D. Buzzell, *The PIMS Principles: Linking Strategy to Performance* (New York: Free Press, 1987). This study investigated the link between, among other things, quality and sales.
2. We developed this exhibit using the Excel file AMACH9.XLS which is available to your instructor. Numbers in the exhibit may differ in the last digit from the spreadsheet number because of rounding effects.
3. Organization planners will often set a control limit (for example, a variance that is greater than two or three times the standard deviation of the variable under control) that will trigger an investigation of a reported variance.
4. Absent controlling for the amount of work done, managers can manipulate this variance. For example, a maintenance budget might be set on the basis of the amount of maintenance work required, which, by definition, is independent of the number of units made and sold. A manager could show a favorable variance by cutting back maintenance below the target level.
5. For a statistical approach to variance analysis see R. S. Kaplan, "Investigation and the Significance of Cost Variances: Survey and Extensions," *Journal of Accounting Research* (Fall 1975), pp. 278–96.
6. See R. F. Vancil, *Decentralization: Managerial Ambiguity by Design* (Homewood, IL: Dow Jones-Irwin, 1978).
7. K. A. Merchant, "How and Why Firms Disregard the Controllability Principle," in *Accounting & Management: Field Study Perspectives*, ed. R. S. Kaplan and W. J. Bruns Jr. (Boston: Harvard Business School Press, 1987), pp. 316–38.
8. This is done by choosing an allocation basis (cost driver rate) by dividing the cost of capacity by the total capacity acquired. This has the additional and desirable property of making the cost allocation independent of use of the capacity by other divisions. For example, consider the result of a cost allocation where the allocation rate is chosen by dividing the capacity cost by the total use of the capacity.
9. D. Brown, "Centralized Control with Decentralized Responsibilities," Annual Convention Series No. 57 (New York: American Management Association, 1927), p. 8. It is interesting to observe the erosion over the years of the original intention of not requiring divisions at General Motors to buy internally—in effect the assembly divisions became captive customers of the supplying divisions. General Motors endured strikes and labor discontent in the 1990s as it sought to return to the policy of allowing the assembly divisions to source parts wherever they wished.
10. A. A. Atkinson, *Intra-Firm Cost and Resource Allocation: Theory and Practice*, Studies in Canadian Accounting Research (Toronto: Canadian Academic Accounting Association, 1987).
11. More formal arguments exist to establish the validity of the market price as an optimal transfer price under competitive conditions. See J. Hirshleifer, "On the Economics of Transfer Pricing," *Journal of Business* (January 1956), pp. 172–84; and "Economics of the Divisionalized Firm," *Journal of Business* (April 1957), pp. 96–108; also D. Solomons, *Divisional Performance: Measurement and Control* (Homewood, IL: Dow Jones-Irwin, 1965), pp. 167–71.

12. See R. H. Coase, "The Nature of the Firm," *Economica* (November 1937).
13. For a discussion of using activity-based costing to provide a cost base for transfer pricing see R. S. Kaplan, D. Weiss, and E. Desheh, "Transfer Pricing with ABC," *Management Accounting* (May 1987), p. 28.
14. For a discussion of the economic and behavioral properties of this approach to transfer pricing see Atkinson, *Intra-Firm Cost and Resource Allocations*.
15. Variations can arise in practice. For example, many organizations that use cost-based transfer prices like to use standard costs for those costs that are based on use—what accountants call variable costs. This practice provides an incentive to the supply division to become more efficient and provides a stable cost around which the buying division can plan. On the other hand, as a division becomes more efficient, if it does not pass at least some of the resulting savings along to the buying division, the buying division's demand for product will remain unchanged if its cost structure and selling prices remain unchanged. Therefore, the organization as a whole will capture only the cost savings of increased efficiency and not the volume effects that would result from selling more at a lower price.
16. See R. G. Eccles, "Control with Fairness in Transfer Pricing," *Harvard Business Review* (November–December 1983), pp. 153–54.
17. See Coase, "Nature of the Firm."
18. See Eccles, "Control with Fairness in Transfer Pricing"; R. G. Eccles, "Analyzing Your Company's Transfer Pricing Practices," *Journal of Cost Management for the Manufacturing Industry* (Summer 1987), pp. 21–83; and Eccles, *The Transfer Pricing Problem: A Theory for Practice* (Lexington, MA: Lexington Books, 1985).
19. We anticipate the comments of the reader who is thinking: Why not have two transfer pricing systems—one to support the domestic (behavioral) issues that we have discussed so far and the other to support the international transfer pricing issues? As we will see shortly, international transfer pricing conventions argue that, whenever possible, the transfer price should reflect market or economic circumstances. Therefore, on the surface, if an organization chooses an internal transfer pricing system based on economic arguments, such as those discussed earlier, it should use the same system for international transfer pricing. Evidence of two transfer pricing systems has, in the past, attracted the attention of taxing authorities and called for revision in transfer prices that reflect the internal system.
20. Organization for Economic Co-Operation and Development, *Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations* (Paris: OECD, 1995).
21. For an extensive discussion of how organizations use productivity and other measures as indicators of the performance of an underlying process see H. M. Armitage and A. A. Atkinson, *The Choice of Productivity Measures in Organizations: A Field Study of Practice in Seven Canadian Firms*. The Society of Management Accountants of Canada Research Monograph Series (Hamilton, ON: Society of Management Accountants of Canada, 1990).

## ■ PROBLEMS

### 9-1 Comprehensive Variance Analysis

Bayfield Chemical Company manufactures chemicals 1, 2, 3, and 4 using five ingredients: chemicals A, B, C, D, and E. The planned amount of input used to make 100 liters of each of the four products, the standard cost of the input chemicals, the amount of each of the input chemicals that is available for purchase, and the expected price received for each 100 liters of each product are shown in the following table.



PLANNED INGREDIENT USE								
CHEMICAL	A	B	C	D	E	PRICE	COST	MARGIN
1	23	45	0	32	0	\$8,500	\$5,567	\$2,933
2	12	29	33	18	14	\$9,300	\$7,047	\$2,253
3	12	19	34	14	43	\$9,000	\$7,169	\$1,831
4	23	57	10	0	10	\$7,200	\$4,779	\$2,421
Cost	\$67	\$34	\$107	\$78	\$23			
Available	120,000	240,000	320,000	190,000	280,000			

Chemicals 1, 2, 3, and 4 are made in batches of either 2,000 or 5,000 liters. There are costs of setting up the blending tanks before a batch and cleaning them after a batch. These costs, along with the planned number of batches, are shown in the following table.

PLANNED BATCHES MADE			
CHEMICAL	2,000	5,000	COST
1	12	0	\$ 14,400
2	240	0	\$288,000
3	237	0	\$284,400
4	0	0	\$ 0
Cost	\$1,200	\$1,900	

This planned production results in the following pattern of planned input chemical use.

PLANNED TOTAL CHEMICAL USE					
CHEMICAL	A	B	C	D	E
1	5,520	10,800	0	7,680	0
2	57,600	139,200	158,400	86,400	67,200
3	56,880	90,060	161,160	66,360	203,820
4	0	0	0	0	0
Used	120,000	240,060	319,560	160,440	271,020

With the exception of short-term variable inventory carrying costs, all the costs relating to the chemical-making operation are committed capacity-related costs that Bayfield Company feels are not avoidable in the short run. Therefore, they are ignored for short-run planning purposes. The inventory carrying costs are related to cost of carrying inventory including storage costs, the opportunity cost of capital tied up in inventory, obsolescence cost, loss, and waste. Input chemicals are purchased and arrive as needed, therefore they inflict no carrying cost in Bayfield Chemical. The inventory-related costs for chemicals 1, 2, 3, and 4 are estimated using the following steps.

1. For each of the four products, compute the weighted average number of units per batch by multiplying the number of units in each batch by the number of times that batch size is made, summing all the results, and dividing by the number of batches.
2. Since the sales of all four chemicals occur fairly uniformly during the planning period, for each of the four products, estimate the average inventory held by dividing the weighted average number of units per batch by two.
3. For each of the four products, compute the inventory carrying cost by multiplying the average inventory held by \$400, \$800, \$300, \$500 for each of chemical 1, 2, 3, and 4, respectively.

Therefore, the inventory carrying costs for the planned pattern of production are estimated as follows.

PLANNED CARRYING COST		
CHEMICAL	AVERAGE	COST
1	1,000	\$400,000
2	1,000	\$800,000
3	1,000	\$300,000
4	0	\$0

This planned production results in the following planned revenues, cost, and margin from this operation.

PLANNED TOTAL MARGINS				
CHEMICAL	MARGIN	BATCH	CARRYING	NET
1	\$703,920	\$14,400	\$400,000	\$ 289,520
2	10,814,400	288,000	800,000	9,726,400
3	8,678,940	284,400	300,000	8,094,540
4	0	0	0	0
<b>Total</b>				<b>\$18,110,460</b>

The following table shows the actual production during the period.

ACTUAL BATCHES MADE			
CHEMICAL	2000	5000	COST
1	52	18	\$100,000
2	36	15	73,800
3	42	53	150,000
4	22	9	44,800
<b>Cost</b>	<b>\$1,300</b>	<b>\$1,800</b>	



The following table shows the actual amount of input chemicals used, the price received for each product, and the cost of the input chemicals.

ACTUAL INGREDIENT USE						PRICE	COST	MARGIN
CHEMICAL	A	B	C	D	E			
1	22	48	0	30	0	\$8,200	\$5,402	\$2,798
2	11	31	30	21	12	9,600	6,793	2,807
3	11	18	32	12	46	9,100	6,607	2,493
4	23	54	9	0	11	7,300	4,429	2,871
Cost	\$71	\$30	\$105	\$80	\$21			
Available	130,000	250,000	300,000	180,000	300,000			

The following table shows the actual total input chemical use.

ACTUAL TOTAL CHEMICAL USE					
CHEMICAL	A	B	C	D	E
1	42,680	93,120	0	58,200	0
2	16,170	45,570	44,100	30,870	17,640
3	38,390	62,820	111,680	41,880	160,540
4	20,470	48,060	8,010	0	9,790
Used	117,710	249,570	163,790	130,950	187,970

The following table shows the actual carrying costs.

ACTUAL CARRYING COST		
CHEMICAL	AVERAGE	COST
1	1,386	\$582,000
2	1,441	1,124,118
3	1,837	587,789
4	1,435	645,968

The following table shows the actual total margin generated by the operations in this period.

CHEMICAL	MARGIN	BATCH	CARRYING	NET
1	\$5,428,120	\$100,000	\$582,000	\$4,746,120
2	\$4,126,290	73,800	1,124,118	\$2,928,372
3	\$8,700,570	150,000	587,789	\$7,962,781
4	2,555,190	44,800	645,968	\$1,864,422
Total				\$17,501,695

**Required**

Prepare a variance analysis of the operations in this period.

**9-2**

The chapter describes a variance as a warning that signals that actual results differ from planned results. The variance would signal the need to undertake an investigation that would uncover the reason for the variance. Because variances are usually computed long after the fact, operating personnel seldom rely on variances to signal process problems. Rather they can usually predict variances on the basis of their direct observation of the process. Given this fact, does variance analysis really play any useful role in organizations?

### **9-3      *Cost Allocations and Measurement of Division Profitability\****

Paris Company has three operating divisions. The managers of these divisions are evaluated on their divisional net income before taxes, a figure that includes an allocation of corporate overhead proportional to the sales of each division. The operating statement for the first quarter of 1998 appears below:

	DIVISION (IN 000s)			
	A	B	C	TOTAL
Net sales	\$2,000	\$1,200	\$1,600	\$4,800
Unit and batch-related costs	1,050	540	640	2,230
Division capacity-related costs	250	125	160	535
Division margin	700	535	800	2,035
Allocated corporate expenses	400	240	320	960
Net income before taxes	\$300	\$295	\$480	\$1,075

The manager of Division A is unhappy that his profitability is about the same as Division B's and much less than Division C's, even though his sales are much higher than either of these other two divisions. The manager knows that he is carrying one line of products with very low profitability. He was going to replace this line of business as soon as more-profitable product opportunities became available but has retained it until now, because the line was still marginally profitable and used facilities that would otherwise be idle. The manager now realizes, however, that the sales from this product line are attracting a fair amount of corporate overhead, which is allocated at the rate of 20% of net sales, and maybe the line is already unprofitable for him.

\*Adapted from C. Horngren, *Cost Accounting*, 5th ed. (Englewood Cliffs, NJ: Prentice Hall, 1982).



This low-margin line of products had the following characteristics for the quarter:

Net sales (000)	\$800
Unit and batch-related costs	600
Division capacity-related costs	100
Division margin	\$100

Thus, the product line accounted for 40% of divisional sales but less than 15% of divisional profit.

### **Required**

- (1) Prepare the operating statement for the Paris Company for the second quarter of 1998 assuming that sales and operating results are identical to the first quarter except that the manager of Division A drops the low-margin product line entirely from his product group. Is the Division A manager better off from this action? Is the Paris Company better off from this action?
- (2) Suggest changes in the Paris Company's divisional reporting and evaluation system that will improve local incentives for decision making that is in the best interests of the firm.

## **9-4 Interpreting Segment Margins**

The Plevna Hotel is a full-service hotel that provides rooms, extensive restaurant and banquet facilities, and convention meeting rooms and facilities. The hotel is organized into five responsibility units: rooms, meal services, other hotel services, maintenance, and administration. Rooms, meal services, and other hotel services are operated as profit centers. The hotel's accounting system accumulates revenues and costs by organization unit. The costs of maintenance and administration are charged to the three profit centers. Maintenance is charged on the basis of hours worked. Administration charges are divided into two groups: hotel-related costs such as depreciation and electricity are assigned to the three profit centers on the basis of space occupied; other costs, primarily administrative personnel costs, are charged to the profit centers on the basis of the direct cost of each unit. The rationale for administrative cost allocation is that the allocation base is regarded as the cost driver for the allocated costs.

Under this system, the accounting reports indicate that the rooms profit center is always very profitable, the other hotel services profit center breaks even, and the meal services profit center always operates with quite large losses.

This situation has continued for several years and, because bonuses and promotions are based on realized profit center profit, has caused concern and discouragement among the staff in the hotel services division and meal services division.

Recently, there have been suggestions that the extensive meal and convention facilities be closed down and the freed space be used to put in luxury suites and rooms. A profit analysis of the hotel several years ago suggested that the ratio of profit reported by the hotel to square feet occupied was about average for this type of hotel and higher than accommodation-only hotels.

**Required**

You have been hired to evaluate the current system and suggest improvements. Prepare a report.

**9-5 Transfer Pricing Dispute**

A transportation equipment manufacturer is heavily decentralized. Each division head has full authority on all decisions regarding sales to internal or external customers. Division P has always acquired a certain equipment component from Division S. However, when informed that Division S was increasing its unit price to \$220, Division P's management decided to purchase the component from outside suppliers at a price of \$200.

Division S had recently acquired some specialized equipment that was used primarily to make this component. The manager cited the resulting high depreciation charges as the justification for the price boost. He asked the president of the company to instruct Division P to buy from S at the \$220 price. He supplied the following information:

P's annual purchases of component	2,000 units
S's unit and batch-related costs per unit	\$190
S's capacity related costs per unit	\$ 20
S's required return on investment	\$ 10

Suppose there are no alternative uses of the S facilities.

**Required**

- (1) Will the company as a whole benefit if P buys from the outside suppliers for \$200 per unit?
- (2) Suppose the selling price of outsiders drops another \$15 to \$185. Should P purchase from outsiders?
- (3) Suppose (disregarding Requirement 2) that S could modify the component at an additional variable cost of \$10 per unit and sell the 2,000 units to other customers for \$225. Would the entire company then benefit if P purchased the 2,000 components from outsiders at \$200 per unit?
- (4) Suppose the internal facilities could be assigned to other production operations that would otherwise require additional annual outlays of \$29,000. Should P purchase from outsiders at \$200 per unit?

**9-6 Short- and Long-Run  
Transfer Pricing Considerations**

Elora Manufacturing makes autoparts that it sells to automobile assemblers. Elora Manufacturing also makes its own branded autoparts that it sells in the automotive aftermarket. Each autopart is manufactured to the customer's specification.

The price that Elora Manufacturing charges customers is based on the cost of the autopart. These costs include the unit and batch-related costs of filling the order and a share of capacity-related costs.

At the moment Elora Manufacturing has four major customers: Giant Motors, Far East Motors, Tiger Motors, and Fargo Motors. The four customers, who are long-term,



use, respectively, on average 10%, 20%, 15%, and 15% of available capacity. Elora Manufacturing uses 30% of available capacity to make its own autoparts. On rare occasions, Elora Manufacturing receives an order from another source, and those are treated on a one-off basis.

Elora Manufacturing is organized into three divisions: manufacturing, assembler sales, and aftermarket sales.

The automobile parts aftermarket is very competitive and margins there are slim.

The price paid by the assembler to the assembler sales division is invariably a contract price. This contract price is negotiated between the assembler sales division and the assembler and is done with a full exchange of information. That is, the assembler has full access to all Elora Manufacturing's cost records. The assembler usually demands efficiency improvements and therefore, price reductions, during the life of the contract. Three of the four assemblers have consultants who regularly visit their suppliers' manufacturing facilities to suggest process improvements that will lower costs. Usually, the contract specifies a price that equals full manufacturing cost plus a markup to cover corporate-level capacity-related costs and a return on invested capital. The manufacturing cost base of the contract usually falls by 5% to 10% per year during the life of the contract.

Senior management is determined to provide the highest possible level of motivation to its three divisions. Therefore, the three divisions are treated as profit centers, and the company uses transfer prices to price transfers between the divisions. Problems have arisen relating to determining transfer prices under the different circumstances faced by the two sales divisions.

### ***Required***

You have been hired by Elora Manufacturing to evaluate this situation. Senior management will evaluate your proposal on the basis of its practicality and specificity.

## ***9-7 Activity-Based Costing in Transfer Pricing***

St. Jacob's Electronics manufactures electrical components. The company is divided into four divisions: manufacturing, residential products, commercial products, and industrial products. The manufacturing division supplies the other three divisions with all their product requirements. Because the manufacturing division has no control over product price or sales, it is treated as a cost center and transfers its products to the other divisions at full cost plus a profit margin that is intended to provide a return on capital invested in the manufacturing division.

In late 1995, St. Jacob's Electronics implemented an activity costing system to develop more-accurate product costs for planning purposes. A central part of the implementation plan was to use the new costing system as the foundation for computing transfer prices.

The costing system uses the four-level activity costing hierarchy: unit costs, batch costs, product-related costs, and facility-sustaining costs. The detailed analysis of the company's cost structure revealed the following information.

Most of the product-related costs were lodged in the three profit centers. The exceptions were the costs of specialized equipment housed in the manufacturing division that was used uniquely by each of the three profit centers for their products. These product-related costs in the manufacturing division were \$1,500,000, \$500,000, and \$600,000 for the residential, commercial, and industrial divisions, respectively. The balance of the capacity-related costs in the manufacturing division, which amounted to \$2,400,000 and included a charge for capital invested, were allocated to the three divisions in proportion to their long-run expected use of the facility. This amounted to 50% for the residential division, 30% for the commercial division, and 20% for the industrial division. The amount of capacity-related cost allocated to each division was the larger of amount of capacity used or amount of capacity reserved. Each division had the right to use its reserved level of capacity. If some capacity went unused by the division for which it was reserved and was used by another division, the division not using its capacity quota was given credit for its capacity that was used by other divisions.

In addition to the capacity-related costs, the manufacturing division incurred unit and batch-related costs when processing orders. All costs were charged to an order number. In this way, the cost sheet for each order accumulated the unit and batch-related costs for that order.

Some products were sold by more than one division. For example, connectors were sold by all three divisions. All the connectors used the same plastic formulation but different copper or brass components. Therefore, the manufacturing division accumulated orders for connectors, and when there were sufficient orders to make a batch of plastic, the plastic was made and then used to make the connectors for the different products. The cost of a batch of plastic included the raw materials cost and machine setup costs.

Once the plastic was made, it was used to complete the various batches of connectors for the different divisions. The only common component in these connectors was the plastic. Therefore the costs of other raw materials for each connector were accumulated separately and charged directly to the product. Recently, the manufacturing division completed an order of connectors that were sold to the residential division and the industrial division. The cost of the batch of plastic was \$105,000, and it was used to make 50,000 connectors of two types—each connector using the same amount of plastic. The connectors are fed into a machine that inserts the brass fittings into the connector. It costs about \$2000 to set up the machine for each batch of connectors; there were 30,000 connectors made for the residential division and 20,000 connectors made for the industrial division. The cost of the brass fittings were \$0.56 for each residential connector and \$1.78 for each industrial connector.

### **Required**

- (1) For each of the following use levels by the residential, commercial, and industrial divisions respectively, determine the resulting allocation of capacity-related costs:
  - (a) 45%, 35%, 15%
  - (b) 45%, 25%, 10%
  - (c) 45%, 30%, 25%
- (2) What is the cost per unit for each of the residential connectors described above? Make any required assumptions to answer this question.



### 9-8 *Productivity Measures in Practice*

By consulting business periodicals, find an example of a yield type of productivity measure. Document exactly how the productivity measure is computed and how it is used. What insights does this productivity measure offer? What might be some of its limitations?

### 9-9 *Using a Productivity Measure*

Gogan Forest Products maintains its own woodlots from which it harvests trees. It keeps the trees that it can use in its sawmills to make lumber and sells the remaining trees to a nearby pulp mill.

Ronnie Gogan, the president and chief operating officer, is concerned about the profitability of the sawmill. In particular, he is concerned about the profits generated by his mill. From talking to other owners of small sawmills, Ronnie is convinced that his profit levels are lower than theirs even though he processes more logs.

A sawmill uses all the tree that arrives in its yard. The bark is stripped, packaged, and large basic pieces are sold to nurseries. Some bark pieces are packaged as forest mulch and sold to nurseries. Wood chips are used along with sawdust to make particle board. Any sawdust remaining from the particle board operation is used in the kilns used to dry the lumber.

Ronnie observed, "Based on the market price for sawlogs, the raw material component of our lumber is about 65%. We need to control material use to be profitable. I was thinking about using material yield but our material yield is 1 since we use all the log."

#### ***Required***

Can you devise a financial productivity ratio that might provide Ronnie with an overview of his operations?

### 9-10 *Computing a Cost-Plus International Transfer Price*

Absent market prices, organizations compute cost-plus transfer prices that are intended to estimate a reasonable market price. As suggested by the title, the cost-plus transfer price has two components, a cost component and a markup component.

Most tax authorities allow organizations to use the cost basis that is generated by their conventional financial accounting systems—that is, the systems that provide the numbers for external reporting.

The markup component is usually undertaken by identifying the functions that the supplying organization undertakes. For example, suppose that Global Company manufactures a product in country A and then distributes that product to other countries, where it is sold. If Global Company does all the research and development and market analysis in country A, the number of functions and therefore the markup will be different than if country A simply acts like a contract manufacturer to manufacture products that were designed in other countries.

**Required**

Suppose that you are employed by the tax authority in one of the countries in which Global Company operates. What problems, if any, do you see in applying the cost-plus transfer pricing rule in practice? How would you propose to resolve these problems?

### 9-11 *Computing an International Transfer Price with Joint Costs*

Return to Gogan Forest Products in Problem 9-9. Suppose that logs are processed in batches. Batch-related costs amount to \$35,000 for the logs, \$600 for batch-related costs including moving and setting up, and \$11,000 for capacity-related costs, which are allocated to each batch on the basis of the machine time the batch uses.

On average each batch produces

- 40,000 units of lumber
- 75,000 units of wood chips
- 65,000 units of sawdust

Ronnie is considering establishing a particle board facility in a foreign country. Ronnie would ship wood chips and sawdust, approximately 45,000 units of woodchips and 15,000 units of sawdust, from each batch to the foreign facility.

**Required**

There is no market for wood chips or sawdust. Ronnie feels that the transfer price for wood chips and sawdust will have to be computed on a cost-plus basis. How would you compute the cost base for wood chips and sawdust? Make any assumptions you feel are necessary to answer this question.

## ■ CASES

### TRANSFER PRICING IN AN AUTOMOBILE DEALERSHIP— SHUMAN AUTOMOBILES INC.\*

Clark Shuman, the part owner and manager of an automobile dealership, was nearing retirement and wanted to begin relinquishing his personal control over the business's operations. (See Exhibit 1 for current financial statements.) The reputation he had established in the com-

munity led him to believe that the recent growth in his business would continue. His longstanding policy of emphasizing new car sales as the principal business of the dealership had paid off, in Shuman's opinion. This, combined with close attention to customer relations so that a substantial amount of repeat business was available, had increased the company's sales to a new high level. Therefore, he wanted

\*This case was prepared by James S. Reece.  
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**EXHIBIT 1** Shuman Automobiles Inc. Income Statement for the Year Ended December 31

Sales of new cars			\$7,643,746
Cost of new car sales*		\$6,312,802	
Sales remuneration		324,744	6,637,546
			<u>\$1,006,200</u>
Allowances on trade <sup>†</sup>			232,224
New cars gross profit			<u>\$ 773,976</u>
Sales of used cars		\$4,791,392	
Cost of used car sales*	\$3,814,554		
Sales remuneration	183,308		
		<u>3,997,862</u>	
		\$ 793,530	
Allowances on trade*		122,236	
Used cars gross profit			<u>671,294</u>
			<u>\$1,445,270</u>
Service sales to customers		\$ 695,022	
Cost of work*		513,968	
		<u>\$ 181,054</u>	
Service work on reconditioning			
Charge	\$ 473,160		
Cost*	488,624	(15,464)	
Service work gross profit			<u>165,590</u>
			<u>\$1,610,860</u>
General and administrative expenses			983,420
Income before taxes			<u>\$ 627,440</u>

\*These amounts include all costs that are attributable to the department and exclude allocated capacity related dealership costs.

<sup>†</sup>Allowances on trade represent the excess of amounts allowed on cars taken in trade over their appraised value.

to make organizational changes to cope with the new situation, especially given his desire to withdraw from any day-to-day managerial responsibilities. Shuman's three "silent partners" agreed to this decision.

Accordingly, Shuman divided up the business into three departments: new car sales, used car sales, and the service department (which was also responsible for selling parts and accessories). He then appointed three of his most trusted employees managers of the new departments: Jean Moyer, new car sales; Paul Fiedler, used car sales; and Nate Bianci, service department. All of these people had been with the dealership for several years.

Each of the managers was told to run his

department as if it were an independent business. In order to give the new managers an incentive, their remuneration was to be calculated as a straight percentage of their department's gross profit.

Soon after taking over as manager of new car sales, Jean Moyer had to settle upon the amount to offer a particular customer who wanted to trade his old car as a part of the purchase price of a new one with a list price of \$12,800. Before closing the sale, Moyer had to decide the amount he would offer the customer for the trade-in value of the old car. He knew that if no trade-in were involved, he would deduct about 15% from the list price of this model new car to be competitive with several other

dealers in the area. However, he also wanted to make sure that he did not lose out on the sale by offering too low a trade-in allowance.

During his conversation with the customer, it had become apparent that the customer had an inflated view of the worth of his old car, a far from uncommon event. In this case, it probably meant that Moyer had to be prepared to make some sacrifices to close the sale. The new car had been in stock for some time, and the model was not selling very well, so he was rather anxious to make the sale if this could be done profitably.

In order to establish the trade-in value of the car, the used-car manager, Fiedler, accompanied Moyer and the customer out to the parking lot to examine the car. In the course of his appraisal, Fiedler estimated the car would require reconditioning work costing about \$700, after which the car would retail for about \$3,700. On a wholesale basis, he could either buy or sell such a car, after reconditioning, for about \$3,200. The wholesale price of a car was subject to much greater fluctuation than the retail price, depending on color, trim, model, etc. Fortunately, the car being traded in was a very popular shade. The retail automobile dealer's handbook of used car prices, the "Blue Book," gave a cash buying price range of \$2,750 to \$2,930 for the trade-in model in good condition. This range represented the distribution of cash prices paid by automobile dealers for that model of car in the area in the past week. Fiedler estimated that he could get about \$2,200 for the car 'as-is' (that is, without any work being done to it) at next week's auction.

The new car department manager had the right to buy any trade-in at any price he thought appropriate, but then it was his responsibility to dispose of the car. He had the alternative of either trying to persuade the used-car manager to take over the car and accepting the used-car manager's appraisal price, or he himself could sell the car through wholesale channels or at auction. Whatever course Moyer adopted, it

was his primary responsibility to make a profit for the dealership on the new cars he sold, without affecting his performance through excessive allowances on trade-ins. This primary goal, Moyer said, had to be "balanced against the need to satisfy the customers and move the new cars out of inventory—and there was only a narrow line between allowing enough on a used car and allowing too much."

After weighing all these factors, with particular emphasis on the personality of the customer, Moyer decided he would allow \$4,270 for the used car, provided the customer agreed to pay the list price for the new car. After a certain amount of haggling, during which the customer came down from a higher figure and Moyer came up from a lower one, the \$4,270 allowance was agreed upon. The necessary papers were signed, and the customer drove off.

Moyer returned to the office and explained the situation to Joanne Brunner, who had recently joined the dealership as accountant. After listening with interest to Moyer's explanation of the sale, Brunner set about recording the sale in the accounting records of the business. As soon as she saw the new car had been purchased from the manufacturer for \$8,890, she was uncertain as to the value she should place on the trade-in vehicle. Since the new car's list price was \$12,800 and it had cost \$8,890, Brunner reasoned the gross margin on the new car sale was \$3,910. Yet Moyer had allowed \$4,270 for the old car, which needed \$700 repairs and could be sold retail for \$3,700 or wholesale for \$3,200. Did this mean that the new car sale involved a loss? Brunner was not at all sure she knew the answer to this question. Also, she was uncertain about the value she should place on the used car for inventory valuation purposes. Brunner decided that she would put down a valuation of \$4,270 and then await instructions from her superiors.

When Fiedler, manager of the used-car department, found out what Brunner had done,



he went to the office and stated forcefully that he would not accept \$4,270 as the valuation of the used car. His comment went as follows:

My used-car department has to get rid of that used car, unless Jean (Moyer) agrees to take it over himself. I would certainly never have allowed the customer \$4,270 for that old tub. I would never have given any more than \$2,500, which is the wholesale price less the cost of repairs. My department has to make a profit too, you know. My own income is dependent on the gross profit I show on the sale of used cars, and I will not stand for having my income hurt because Jean is too generous toward his customers.

Brunner replied that she had not meant to cause trouble but had simply recorded the car at what seemed to be its cost of acquisition, because she had been taught that this was the best accounting practice. Whatever response Fiedler was about to make to this comment was cut off by the arrival of Clark Shuman, the general manager, and Nate Bianci, the service department manager. Shuman picked up the phone and called Jean Moyer, asking him to come over right away.

"All right, Nate," said Shuman, "now that we are all here, would you tell them what you just told me?" Bianci, who was obviously

very worried, said, "Thanks Clark; the trouble is with this trade-in. Jean and Paul were right in thinking that the repairs they thought necessary would cost about \$700. Unfortunately, they failed to notice that the rear axle is cracked, which will have to be replaced before we can sell the car. This will probably use up parts and labor costing about \$530.

"Besides this," Bianci continued, "there is another thing which is bothering me a good deal more. Under the accounting system we've been using, I can't charge as much on an internal job as I would for the same job performed for an outside customer. As you can see from my department statement [Exhibit 2], I lost almost eight thousand bucks on internal work last year. On a reconditioning job like this, which costs out at \$1,230, I don't even break even. If I did work costing \$1,230 for an outside customer, I would be able to charge him about \$1,660 for the job. The Blue Book<sup>1</sup> gives a range of \$1,620 to \$1,700 for the work this car needs, and I have

<sup>1</sup>In addition to the Blue Book for used car prices, there was a Blue Book which gave the range of charges for various classes of repair work. Like the used car book, it was issued weekly, and was based on the actual charges made and reported by vehicle repair shops in the area.

**EXHIBIT 2** Shuman Automobiles Inc. Analysis of Service Department Expenses for the Year Ended December 31

	CUSTOMER JOBS	RECONDITIONING JOBS	TOTAL
Number of jobs	2,780	1,051	3,831
Direct labor	\$213,860	\$197,640	\$ 411,500
Supplies	74,124	65,510	139,634
Department capacity-related costs	63,116	52,134	115,250
	\$351,100	\$315,284	\$ 666,384
Parts	162,868	173,340	\$ 336,208
	\$513,968	\$488,624	\$1,002,592
Charges made for all jobs	695,022	\$473,160	1,168,182
Gross profit (loss)	\$181,054	\$(15,464)	\$ 165,590
Allocated corporate capacity costs			\$ 114,160
Departmental profit for the year			\$ 51,430

always aimed for about the middle of the Blue Book range. That would give my department a gross profit of \$430, and my own income is based on that gross profit. Since it looks as if a high proportion of the work of my department is going to be the reconditioning of trade-ins for resale, I figure that I should be able to make the same charge for repairing a trade-in as I would get for an outside repair job."

Fiedler and Moyer both started to talk at once at this point. Fiedler, the more forceful of the two, managed to edge out Moyer: "This axle business is unfortunate, all right; but it is very hard to spot a cracked axle. Nate is likely to be just as lucky the other way next time. He has to take the rough with the smooth. It is up to him to get the cars ready for me to sell."

Moyer, after agreeing that the failure to spot the axle was unfortunate, added: "This error is hardly my fault, however. Anyway, it is ridiculous that the service department should make a profit out of jobs it does for the rest of the dealership. The company can't make money when its left hand sells to its right."

At this point, Clark Shuman was getting a little confused about the situation. He thought there was a little truth in everything that had been said, but he was not sure how much. It was evident to him that some action was called for, both to sort out the present problem and to prevent its recurrence. He instructed Brunner, the accountant, to "work out how much we are really going to make on this whole deal," and then retired to his office to consider how best to get his managers to make a profit for the company.

A week after the events described above, Clark Shuman was still far from sure what action to take to motivate his managers to make a profit for the business. During the week, Bianci, the service manager, had reported to him that the repairs to the used car had cost \$1,376, of which \$640 represented

the cost of those repairs which had been spotted at the time of purchase, and the remaining \$736 was the cost of supplying and fitting a replacement for the cracked axle. To support his own case for a higher allowance on reconditioning jobs, Bianci had looked through the duplicate invoices over the last few months and had found examples of similar (but not identical) work to that which had been done on the trade-in car. The amounts of these invoices averaged \$1,610, which the customers had paid without question, and the average of the costs assigned to these jobs was \$1,192. (General overhead was not assigned to individual jobs.) In addition, Bianci had obtained from Brunner, the accountant, the cost analysis shown in Exhibit 2. Bianci told Shuman that this was a fairly typical distribution of the service department expense.

### Required

- (1) Suppose the new car deal is consummated, with the repaired used car being retailed for \$3,700, the repairs costing Shuman \$1,376. Assume that all sales personnel are on salary (no commissions) and that departmental overheads are fixed. What is the dealership contribution on the total transaction (i.e., new and repaired-used cars sold)?
- (2) Assume each department (new, used, service) is treated as a profit center, as described in the case. Also assume in a-c it is known with certainty *beforehand* that the repairs will cost \$1,376.
  - (a) In *your* opinion, at what value should this trade-in (*unrepaired*) be transferred from the new car department to the used car department? Why?
  - (b) In *your* opinion, how much should the service department be able to charge the used-car department for the repairs on this trade-in car? Why?
  - (c) Given your responses to a and b, what will be each of the three departments' contributions on this deal?
- (3) Is there a strategy in this instance that would give the dealership more contribution than the one assumed above (i.e., re-



pairing and retailing this trade-in used car)? Explain. In answering *this* question, assume that the service department operates at capacity.

- (4) Do you feel the three profit center approach is appropriate for Shuman? If so,

explain why, including an explanation of how this is better than other specific alternatives. If not, propose a better alternative and explain why it is better than three profit centers and any other alternatives you have considered.

### **TRANSFER PRICING AMONG RELATED BUSINESSES— KIRKPATRICK ASSOCIATES, INCORPORATED\***

Richard (Rick) Kirkpatrick Sr. started Columbus Realty, Inc., a real estate firm, about 40 years ago. His personality and honesty made this undertaking a success. When his eldest son, John Kirkpatrick, graduated with an engineering degree, Kirkpatrick Sr. incorporated K & S Construction Company and put John in charge. Forty percent of the stock was given to John, and 60% was deposited with Kirkpatrick Associates, Incorporated, which Kirkpatrick Sr. controlled 100%. Having intimate knowledge of the housing market, Kirkpatrick Sr. suggested, and John agreed, that the construction company should concentrate on custom designed and built houses in the price range of \$100,000 to \$200,000. John Kirkpatrick's technical knowledge and imagination made the construction company a success.

Kirkpatrick Sr.'s second son, Court, received a degree in architecture but upon graduation was not ready to enter employment. Upon the suggestion of several friends and the family, Court Kirkpatrick continued with his education and pursued an MBA degree. During this study, and because of a special project he was assigned, he became interested in the development of living complexes around shopping centers. In this project, both the living complex and the shopping center were designed with a continental motif. Fur-

ther research convinced him that this project would not only be feasible but also very profitable. He discussed his idea and all the information he had gathered with his father, who agreed that this kind of design seemed to be the upcoming style. Upon Court's graduation, the Columbus Rental Company was incorporated with the same stock arrangement as with the K & S Construction Company.

Court bought land and proceeded with the design and building of a shopping center and several apartment buildings around this shopping center. This undertaking was an instant success, too. The shopping center has an extraordinary 100% lease commitment and some prospects on a waiting list. The apartments have an 85% occupancy rate. This complex has been and still is the "in thing" in this community. Mostly young upper-middle-class people are living there.

Until several years ago, Court had to maintain a large maintenance crew whose task was to keep up both the shopping center and the apartment buildings. However, when the youngest of the children, Richard Kirkpatrick Jr., graduated, this function was separated from his brother's company, and the Columbus Remodeling Company was incorporated. Stock arrangements were the same as for the other companies. Rick Jr. was put in charge of this company. Over the years, the various family members have retired from active participation in the day-to-day activities of the companies. Each still sets

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overall policies and objectives for the entities but leaves the daily operations to the general managers. Each general manager shares in the profit of his company. Although there still exists very close cooperation among these companies, they have grown to be rather independent of each other. If one inside company wants any service from the other, these services are priced the same as to outsiders. Managers of each feel they are competitive and offer the best service for the lowest cost. For instance, the Columbus Remodeling Company does all the maintenance for the Columbus Rental Company. However, to keep this contract, Columbus Remodeling must be competitive with other maintenance companies.

These arrangements have generally been successful, although occasional complaints have been raised. Recently, however, the complaints have become more vocal. To some degree they were due to poor general economic conditions. Last year was a depression year, and, although the Kirkpatrick complex fared better than the average real estate company, the general managers experienced a considerable cut in their profit participation and are now very conscious of any dealing that would reduce their profits.

During the last year, the Kirkpatrick family came up with another innovation in the real estate business—the “house trade-in.” The Construction Company will construct a house for a buyer with the understanding that his old residence be taken in as a trade, providing it is located in Columbus. In many instances, this practice would avoid down payments for the buyer, as well as the inconveniences of selling the house.

The value of the trade-in is established by the real estate company and the Remodeling Company. The Remodeling Company will determine what should be done to the house and give an estimate for necessary repair work. The real estate company will make suggestions as to certain remodeling needs

which make a house more valuable and sellable. The Remodeling Company will also give firm estimates on these suggestions. The real estate company will then give the construction company a realistic market value of the house.

The value of the renovated house, less the renovation costs, is used internally by the construction company to determine its profit on a sale and trade-in. Externally, the construction company will quote the buyer the renovated house value as the trade-in value but also will increase its normal price for a given house for the costs of the remodeling. The reason for this valuation is that the buyer may see the asking price for his old house in a sales advertisement and may feel cheated if the price is more than he received. Very likely, he may not be aware of the total renovation costs.

Until the house is sold, the construction company has title to the house. It is responsible for any house repairs and remodeling and for any interest, taxes, insurance, or other costs. The real estate company will list and sell the house, collecting a 6% commission from the buyer. This plan has been successful and has made the name of Kirkpatrick a household word in the real estate business throughout the state. However, the plan is not without drawbacks. The following transaction is an example, and your advice is solicited.

The K & S Construction Company sold a newly constructed house to Mr. Baxter as follows:

Price of new house	\$200,000
Trade-in from old house	50,000
Cash (from mortgage)	\$150,000
Value received	
Cash	\$150,000
Trade-in	40,000
Total	\$190,000
Cost of building new house	160,000
Profit	\$ 30,000



The trade-in value was established as follows: the fair market value of the house, if fixed up, was determined as \$50,000 by the real estate company. The renovation needs were jointly determined by the manager of the real estate company and by the manager of the remodeling company. These needs were costed by the manager of the remodeling company as \$10,000.

Two days after the deal was closed, a heavy rain occurred, and it was discovered that the roof must be replaced and the basement water-sealed. The costs for these repairs were established at \$4,000 and \$2,000.

The managers of the real estate and construction companies think that these repairs should be priced at \$3,000 only, since the remodeling company has a 50% variable cost factor. The remodeling company's manager says that under no condition will he make the repairs for a price other than that quoted. He claims to have enough outside business to keep him occupied during the present high season. He might consider doing it for a somewhat lesser price during the off-season, which will begin in seven months. But his delay would mean not selling the house for at least a full year. Also, predictions for next year's prices for houses are impossible to make.

To complicate matters further, the manager of the rental company stated that he

would like to acquire the house, since it is located within the general territorial boundaries which he would like, eventually, to incorporate. Furthermore, some of the people in the continental complex would prefer houses to apartments, if they were available. He is unwilling to pay more than \$50,000 and the commission. He estimates rental income to be \$500 per month, with an estimated 80% occupancy. Real estate taxes are \$951 per year, maintenance is estimated to be about \$500 per year, and allocated management expenses, \$500 per year. Management expenses are fixed and would not change with the acquisition of this house. Income tax rate is 50%. Land value is estimated at \$8,000. Life of the building is 30 years.

### **Required**

- (1) Determine the profit of the K & S Construction Company for this sale.
- (2) What should the charge be for fixing up the house?
- (3) Who should be charged with the fixing-up costs? Why? Are there any changes in procedures you would suggest?
- (4) If the house is to be sold to outsiders, what alternatives are open to the company?
- (5) If the house is sold to the rental company, what is its price?
- (6) Should the house be rented or sold?

## **TRANSFER PRICING IN A MULTINATIONAL CORPORATION—DEL NORTE PAPER COMPANY (A)\***

"If I had purchased the kraft linerboard for the African box sale from one of our mills, I would have paid \$360 per ton, \$140 per ton higher than the price I actually paid by pur-

chasing the linerboard in the spot market," said Frank Duffy, Managing Director of Del Norte Paper's Italian subsidiary (DNP-Italia). "I can't possibly make a profit for Del Norte if I have to pay so much for my principal raw material."

Del Norte Paper Company was a large, fully integrated paper manufacturer. 1974

\*This case was prepared by William Sahlman under the supervision of M. Edgar Barrett.

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sales were about \$2.8 billion, making Del Norte Paper one of the 75 largest industrial companies in the United States. The company's product line ranged from raw pulp to a large variety of converted paper products, including corrugated boxes.

DNP-Italia purchased kraft linerboard from outside suppliers and converted it into corrugated boxes. These boxes were sold primarily within Italy, though occasional sales were made outside of Italy. DNP-Italia had six plants, each of which represented a separate profit center.

### ***The African Bid***

In mid-1975, an African firm asked a number of paper companies to submit bids on a large quantity of corrugated boxes. In total, 22 companies submitted bids, including DNP-Italia and another Del Norte subsidiary, DNP-Deutschland. The bids were said to have ranged from approximately \$340 per ton to over \$550 per ton, with most of them within 5% of \$400 per ton. Del Norte-Italia won the contract by submitting the lowest bid from a firm viewed as being capable of meeting the customer's desired delivery and quality standards.

The price quoted by DNP-Italia had been substantially below that quoted by DNP-Deutschland. The primary difference between the two bids was the raw material (kraft linerboard) cost calculation embedded in each. DNP-Deutschland had formed its estimate using a per ton price for kraft linerboard of \$360; DNP-Italia had used \$220. The \$360/ton figure was the price (inclusive of freight) quoted for export by a Del Norte Paper mill located in the eastern United States. The \$220 figure was the price for kraft linerboard of comparable quality in the European "spot" market.

There were basically two reasons why the Del Norte Paper mill price was so much higher than the European spot price. First, Del Norte

Paper was a member of the Kraft Export Association (KEA), a group of kraft linerboard manufacturers which was responsible for setting and stabilizing linerboard prices for the export market. The Del Norte Paper Company mill could not, as a member of the KEA, offer a lower price to its own converting plant than to any other external customer.

The second reason for the large price differential was the extremely weak economic conditions present in mid-1975. The paper and container industries were suffering from a worldwide slump. As a result of this slump, many non-KEA producers of kraft linerboard were selling their product at very low prices. This was the exact opposite situation as had existed in 1973, a year in which there was a worldwide paper and container economic boom, when the spot price for kraft linerboard had actually exceeded by a small amount the KEA set price.

### ***Del Norte's Transfer Pricing System***

Prices on domestic (U.S.) intracompany sales of linerboard at Del Norte Paper were set at the "market" level. That is, the transfer price was the price at which the linerboard could be bought or sold in the marketplace. However, on international intracompany sales, the product price was set at a level determined by the Kraft Export Association. The KEA price could vary according to market conditions but tended to fluctuate less than the so-called spot price. Officials of Del Norte Paper in San Francisco estimated that, even if all foreign subsidiary managers agreed to take all of the KEA-priced, Del Norte Paper linerboard available, some 60% to 65% of their linerboard would have to come from other sources.<sup>1</sup>

<sup>1</sup>This 60% to 65% was basically in grade lines not produced by DNP mills in the United States. In addition, it generally consisted of lower-quality material than was normally found in the American market.



When a Del Norte Paper converting plant located in the United States purchased its linerboard from a company mill, the profit made by the mill on the transaction was included as part of one of the reported profit figures of the converting plant. The method employed for allocating the profit was rather complex. At the time of preparing the annual budget, the converting plant made a commitment to purchase a specific amount of kraft linerboard from a specific mill. The income statement of the converting plant was then credited with the actual mill profit resulting from delivery of actual orders placed against the commitment.

The figure used for the "mill profit" was determined by taking the mill profit applicable to the specific shipment after a full allocation of both fixed and variable costs and amending it for two specific items. First, any manufacturing variances were added to or subtracted from the mill profit. Second, in the event that the converting plant did not take as much of the mill's production as expected, the proportional cost of the resulting mill downtime was charged to the converting plant.

In Del Norte's international operations, the profit allocation process was similar. The foreign converting plant entered into a commitment for its U.S.-produced requirements. The "mill profit," as defined above, was credited to the converting plant and its manager. However, in contrast to domestic operations, the set of financial statements in which this amount was credited was not made freely available to the foreign subsidiary's managing director and other management personnel. The reason was to maintain a legal, arms-length business relationship. Such statements of "integrated profit" were, however, available upon request to the managing director of each foreign subsidiary.

### *The African Sale*

The bid submitted by DNP-Italia to the African customer was \$400 per ton of corrugated boxes. DNP-Italia's direct costs (variable costs) were approximately \$325 per ton, of which 72%, or \$235,<sup>2</sup> represented the cost of kraft linerboard.

The bid submitted by DNP-Deutschland was \$550 per ton of corrugated boxes. DNP-Deutschland's direct costs on the transaction were approximately \$460, of which \$385 represented the cost of kraft linerboard.

The average Del Norte Paper mill had a direct cost per ton of linerboard of \$190.<sup>3</sup> Thus, the contribution per ton at the mill was approximately \$170, given the KEA selling prices of \$360 per ton. The \$170 contribution figure minus the actual freight costs from the United States to Germany (approximately \$45 per ton) and the allocated overhead at the mill level would have been credited to the DNP-Deutschland converting mill had Germany won the contract.

### *An Informal Discussion*

Late one afternoon in July 1975, Frank Duffy, Managing Director of DNP-Italia held a discussion with John Powell, General Manager-International Operations of Del Norte Paper's Container Division. The specific topic of the discussion was the African container sale, but the conversation also touched on the transfer pricing system used by Del Norte Paper.

DUFFY: John, you know I would prefer to buy all my linerboard from a Del Norte Paper mill, but I just cannot compete if I have to pay \$360 per ton. The price competition in the box

<sup>2</sup>*Editor's note:* This figure represents the linerboard cost per ton of corrugated box sold. The actual cost per ton of linerboard used was \$220.

<sup>3</sup>The direct cost figure of \$190 per ton at the linerboard mill included the cost of raw wood going into the mill. Approximately 30% to 40% of the raw wood used by the mill was purchased from the Del Norte Paper Company Woodlands Division at a market-determined transfer price.

market has been absolutely fierce this year. If I paid that much for linerboard, I would have to price my corrugated boxes below cost in order to win any contracts. If I am supposed to be a profit center, you can't expect me to report a loss on every sale I make, which is exactly what I would do using \$360 per ton linerboard.

POWELL: But you would get credited with the mill profit in the transaction. You wouldn't have to report a loss.

DUFFY: Maybe on your books I wouldn't show a loss, but on my books I sure would. We never see that profit here in Italy. The transaction is noted in some secret little book back in San Francisco. How am I supposed to convince my plant managers and salespeople they are being credited with the mill profit when they never see it? Furthermore, from a financial point of view, the transfer pricing system doesn't make sense. Even if the mill profit were put directly into our profit and loss statement, our cash flow would not benefit. As you know, John, this is a completely self-financed operation in Italy. If I have to borrow more money than I need to, then I incur extra interest costs. There is no offsetting credit for these expenses.

POWELL: I sympathize with you, Frank, but we also have a re-

sponsibility to keep our mills operating. Further, by not purchasing Del Norte Paper linerboard when times are bad, you run the risk of not being able to buy linerboard from our U.S. mills when there is a shortage like there was two years ago. As you know, we're moving increasingly toward long-term commitments for delivery by our kraft linerboard mills. You also don't help maintain the pricing stability we've been working so hard to establish through the KEA.

DUFFY: I appreciate the problem, but I also have the responsibility to keep my plants running. Unlike in the United States, I can't fire any of my laborers in Italy; the unions just won't allow it. Any orders I can get to keep those laborers busy is pure contribution to me.

POWELL: I still think you're making a mistake by not purchasing Del Norte Paper linerboard. However, we're not going to resolve the issue today. If it were not for this damn recession, the problem probably wouldn't even exist. If it's O.K. with you, Frank, I'd like to have a chance to give the problem some more thought.

### **Required**

Analyze the Del Norte transfer pricing situation.



## MANAGING PROFIT CENTER PERFORMANCE— WILKINSON TRANSPORT (B)\*

In December 1979, the managing director of Wilkinson Transport was considering a change in the organization. Wilkinson Transport was a wholly owned subsidiary of the Lex Service Group Limited. Lex was a diversified service company with 1979 sales of £500 million and profits of £22.8 million before taxes and £19.7 million after taxes. It was organized into seven business groups. Wilkinson Transport was one of the five subsidiaries included in the Transportation Business Group.

In general, Lex Service was highly decentralized. The top management of the business group participated in strategic planning; it reviewed and approved the annual budget. It reviewed accounting and budget performance reports each month. As long as Wilkinson was performing within expectations, top management did not involve itself in the day-to-day operations.

### *Operations*

#### **Collection and Delivery Operations**

Wilkinson Transport was an express parcel company that collected and delivered parcels weighing between 10 kilograms and one metric ton. It operated throughout the United Kingdom and in Ireland through an arrangement with an associated company located there. Wilkinson typically collected 58,000 parcels a day from 2,300 customers and delivered these parcels to 10,000 addresses, ranging from retail outlets to industrial users. The average consignment was 5.3 parcels weighing 80 kilograms.

Wilkinson operated 16 depots throughout the United Kingdom. Each depot was respon-

sible for a geographic area. Daily, it collected parcels from the customers in its area and delivered parcels for the entire network to the consignees within its area.

Each morning vans from each depot delivered parcels to the consignees within its area and then collected the consignments from its customers. The vans returned to the depot, were off-loaded, and the parcels consolidated for the depot located in the area to which the parcels were to be delivered. Thus, each day a depot would have 15 different consolidations for delivery to other depots, plus the retention of its own delivery traffic.

**Trunking** Each consolidation was loaded into vans and, during the night, the vans delivered the parcels to the appropriate depot and collected the parcels for consignees within its area. This operation was known as "trunking." There were a variety of trunking configurations. For example, Depot A and Depot B vans would meet at an intermediate point and exchange loads. Or Depot A would do the entire trunking for Depot B by delivering to Depot B and picking up its own parcels. In some instances, a depot would not have enough activity to warrant direct shipments from all depots. In this case, Depot A might deliver to Depot B parcels for delivery by Depot C. The next day Depot B delivered the parcels to Depot C. This was called transshipment. About 80% of the trunking was made directly to the depot that was to deliver the parcels, and about 20% were transshipped. The trunking configurations were determined periodically by a computer model that simulated the optimum trunking configuration based on the past six months' collections and delivery patterns.

\*This case was prepared by John Deardon.  
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The delivery schedule for a typical parcel was as follows:

Monday: The parcel was collected from the customer.

Monday night: The parcel was trunked to the depot that was to deliver it.

Tuesday: The parcel was unloaded and assigned to the appropriate route.

Tuesday night: The parcel was loaded onto a delivery van.

Wednesday: The parcel was delivered.

About 10% of deliveries were overnight shipments. In this case, parcels are placed onto the back of the appropriate van that evening, removed immediately upon arrival at the delivery depot, and loaded onto delivery vehicles.

### **Marketing**

The volume and quality of sales depended on three factors: service, price, and personal sales effort. Each is discussed below.

**Service** The most important factor in retaining present customers was the reliability of the service provided. Also, to a considerable extent, the ability to obtain new customers was affected by the company's reputation for service. Service was measured by the speed and reliability of delivery, although other factors, for example the ability to inform the customer quickly as to the status of a consignment or the prompt settlement of claims for lost or damaged goods, were also important.

Speed and reliability depended on:

1. The proper marking of the parcel and the correct information on the waybill
2. The correct classification of the destination at the collection depot
3. The correct classification of the route at the delivery depot
4. The handling of parcels so as to minimize damage
5. The control of theft

**Price** The transport business was extremely competitive, and price was an important factor in obtaining new customers and retaining present customers. Wilkinson published a price card that provided the prices for all of the usual types of deliveries. Prices were based on the weight of the consignment and the distance traveled. Discounts from the price card were made for special circumstances. For example, large customers were sometimes quoted a fixed price per kilogram delivered. Or salespersons discounted the list price to take account of competition.

**Salespersons** A third factor in selling the service was the personal contacts made by individual salespersons. Salespersons also handled complaints or contacted present customers to ascertain that the service was satisfactory.

By July of 1980 Wilkinson Transport had largely completed a program of computerization and mechanization started two years previously. This part of the case describes these programs.

### **Wilkontrol**

WILKONTROL was the name of the computer system that had been designed to:

1. Keep track of consignments during the collection and delivery process
2. Provide current operating data to management

The WILKONTROL system was installed in 1979.

**The Consignment Note** The consignment note was the main source of information in the WILKONTROL system. The consignment note was initially prepared at the collection point and contained all of the relevant information about the consignment; for example, the shipper's name and address, the consignee's name and address, and the number and weight of the packages in the consignment. The consignment note was prepared in duplicate and was num-



bered for identification. One copy of the consignment note remained with the consignment; the other copy was retained by the depot.

**Keeping Track of Consignments** The information from the consignment notes was recorded in a central computer by clerks in the depot. From this information, the computer calculated additional data such as the revenue from the consignment.

When the consignment moved from the collecting depot to the delivery depot, this information was recorded into the computer. The information was continually updated as the consignment was moved through the system. Finally, after the consignment was delivered, the driver returned the receipted copy of the delivery manifest to the depot and the final delivery was recorded.

Throughout the system there were computer terminals with visual display devices that gave access to the information stored in the central computer. Thus, the status of any consignment could be ascertained within four seconds from any point within the system. The WILKONTROL system allowed management to identify quickly shipments that deviated from the standard pattern and to take appropriate corrective action.

Wilkinson was the only transport company in the United Kingdom that employed such a computer control system in 1980.

**Operating Statistics** The WILKONTROL system made it possible to provide detailed operating statistics on a daily and weekly basis. For example, at 10 A.M. every morning, the following information about the previous day's operation was available by depot and, if desired, by route:

- Number of consignments
- Number of waybills
- Total weight
- Number of packages
- Total revenue

In short, it was possible on a daily basis to observe the "profile" of the business being done on the preceding day down to the smallest organization unit. This information was then summarized by week and month.

In addition to the profile information, the depot managers were provided daily or weekly with all information relevant to the effective operation of the system. Statistics on any deviations from standard were available. This information was also required by regional and headquarter executives.

### ***Depot Mechanization***

It was Wilkinson's plan to mechanize most depots by 1983. It was expected that mechanization would increase both the efficiency and the capacity of the depots. Also, since much of the labor would be machine-paced, better standards and performance measures against these standards would be possible.

**The Hub** *The Hub*, a highly mechanized central depot, was built in Nuneaton, a town near Birmingham. It was designed to be fully operational in the latter part of 1980. The Hub would completely transform the trunking patterns. When operational, all depots would send their collection to the Hub. There, the parcels would be sorted mechanically and trunked to the delivery depots. This had several important advantages.

First, the collecting depots would not be required to sort and consolidate the collected parcels except those that were to be delivered within their area. This increased the effective capacity of the depots.

Second, vans from both the depots and the Hub would move fully loaded because all collections and deliveries were made to the same location. Under the present system, each depot sent vans to 15 other locations, many of them with less than a full load.

Third, it would be possible for all drivers to reach the Hub in eight hours. EEC regulations by 1981 would require that a driver work a maximum of eight hours. Under the present system, some locations required more than eight hours driving time to reach their destination.

Fourth, the Hub was designed to provide a highly mechanized, efficient method for handling parcels. It would be possible to exercise greater control over all of the aspects of parcel handling.

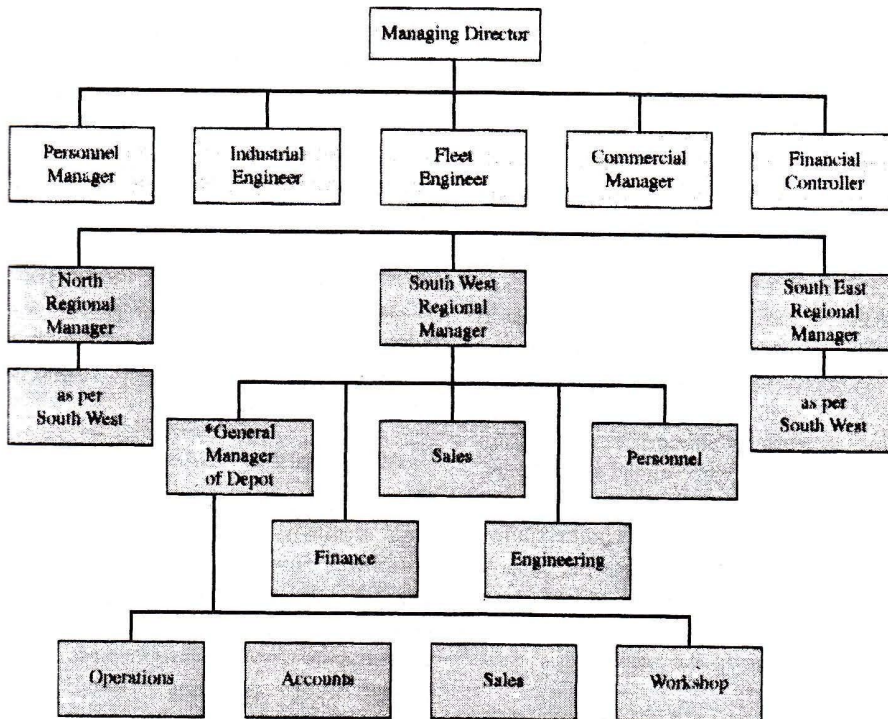
### *The Organization*

Exhibit 1 is an organization chart of Wilkinson Transport as of July 1, 1980. There were five staff officers and three regional managers

reporting to the managing director. The commercial manager was responsible for the rate structure, the settlement of claims, public relations, and advertising. Other staff offices are self-explanatory.

**The Region** Each region was a profit center. Four staff officers and the general managers of the depots reported to the regional manager.

**The Depot** Each depot was also a profit center. The depot manager was responsible for operations, sales, accounting, and the repair shop. Although depot managers came from a variety of backgrounds, many had worked their way up from hourly employ-



**EXHIBIT 1 Wilkinson Transport (B)—Current Organization**

\*N.B. Typical profit center consolidation at region.



ment. Each depot had its own accounting system, which collected from customers and paid suppliers. Throughout the system, costs were recorded in the area where they were incurred and revenues were recorded in the area where they were received. Each month, the depot accounts were consolidated by the regional accounting staff, and the regions were consolidated by the headquarters staff.

Purchasing was also done locally, although some items were controlled through companywide contracts.

**The Financial Control System** The Lex organization exercised short-term control through an annual profit budget. Each year a budget was presented by Wilkinson's management to the management of the Transportation Business Group. The proposed budget was reviewed and either accepted or adjusted. The final version became the basis for the monthly reports that provided a comparison of the actual results with the budget on both a monthly and year-to-date basis. The report included the analyses of variances and explanations of the causes of the variances and the action being taken.

Within Wilkinson a similar type of control was used for each region and for each depot within the region. Each depot prepared a profit plan which was approved by the regional manager, and each region prepared a regional profit plan that was approved by the managing director. Comparisons of actual performance to plan were made monthly by depot and consolidated by region. These reports included a great deal of operating statistics in addition to the financial comparisons.

In addition, there was a weekly information system that provided network profit contribution and efficiency indicators.

**Transfer Pricing** Each depot typically performed two services for other depots and used similar services from other depots. The

most important was to deliver parcels collected by other depots. Since the entire revenue was paid to the collecting depot, under a profit center system, part of this revenue must be reassigned to the delivering depot. Several methods of transfer pricing had been used. Currently, the intracompany charge made by the delivering depot to the collecting depot was a flat charge of £2.50 for each delivered consignment plus a variable charge of £10 per metric ton. This charge, on average, would compensate the delivery depot for its costs plus providing an allowance for profits.

The second service performed by one depot for the other was trunking, or delivering consignments between depots. This charge was £0.40 a mile, which also was sufficient to cover costs plus providing a profit.

**Operating Control** Although the profit plan was an important tool for measuring managerial performance, management at all levels had access to detailed operating statistics daily and weekly. (These operating statistics were developed through the WILKONTROL system previously described.) For example, each week four pages of operating statistics were developed for each depot. One of the unique features of Wilkinson's measurement system was the amount of operating statistics that was available to management on a current basis.

### *Consideration of Change*

In 1980, the managing director began to consider seriously whether the organization of Wilkinson Transport should be changed. In particular, he wondered whether the profit center system should be abandoned in favor of some other form of organization. Although he had always had some reservations about the profit center system, recent events had made it desirable to consider a change at this time. It seemed logical to him that if the orga-

nization were to be changed, it should be done in 1980.

**The Strategic Plan** In 1979, Wilkinson Transport, together with the management of Lex, developed a new strategic plan. Among other things, the plan called for sales volume to be increased by 1985 to two and a half times the 1979 volume at 1979 prices. The managing director wondered whether volume increases of this magnitude could be accomplished with the present organization. Of principal concern was whether such a large increase in sales could be realized with a sales force that was decentralized into 16 separate depot organizations.

**The Hub and Depot Mechanization** It is expected that the Hub would change significantly network operations and would result in a greater central control. In the same way, the mechanization of the depots would change the way that parcels were handled and, to some extent, would make central control easier. Although neither the Hub nor the depot mechanization would have an important direct impact on the profit center system, the managing director believed that these developments would have an impact on the timing of any organizational change. The operations of the depots would be changed considerably by these developments. It seemed to him that a change in organization, if one was to be made, would be more acceptable to those executives affected if it were done coincidentally with the operating changes.

**Concerns about the Profit Center System** Although the adoption of the 1979 strategic plan was the immediate cause for reconsidering the profit center form of organization, the top management of Wilkinson had experienced some concerns about the profit center system for some time. These concerns are described in this part of the case.

First, there was a question as to whether the depot manager controlled the critical elements of profit generation. For example, most of the delivery business was generated by other depots and most of the business generated by a depot was completed by other depots.

Second, there were questions as to whether excessive demands were being made on the depot manager. Was it not enough for the depot manager to be responsible only for operating the depot? Should not responsibility for sales, finance, and purchasing be assigned to functional experts? In fact, did the depot manager even have enough expertise in these areas?

Third, the profit center system tended to encourage depot managers to optimize depot profits at the expense of company profits. There was simply no incentive to sacrifice depot profits for the benefit of the company. For example, a depot manager could turn down (or, at least, not pursue aggressively) business that might benefit the company. If a depot was very busy, additional business might not be profitable to the collecting depot even though it might benefit the company. On the other hand, business that might be profitable to collect but marginal to deliver might be pursued aggressively. The problem was that the depot manager evaluated the desirability of business from the collection point of view only.

Finally, there was a question as to whether the transfer price system divided the revenue among contributing depots fairly. A related concern was whether the paperwork required to implement the transfer price system was not only a waste of money but might even be producing misleading information.

**Advantages of Profit Centers** In deciding upon any organizational changes, the managing director was well aware of the benefits that had accrued to the company because the



profit center system *had* worked very well in the past. The depot general managers viewed themselves as managing their own business. Parcel collection and delivery was a geographic function, and the depot general manager controlled all aspects within his area.

Three considerations were of particular importance in any change from the profit center system.

First, what would be the effect if responsibility for sales was taken from the depot manager? How would the tradeoff between simply increasing the level of sales volume and increasing the quality of the sales be resolved? For example, additional business obtained from customers on established routes required almost no additional cost to collect; however, business in other locations might require considerable additional cost. If salespersons did not report to the depot manager, would they not be motivated to increase the level of sales regardless of location?

Second, the level of costs were to some extent a function of volume. The volume of

activity, particularly of deliveries, was largely outside the control of the depot manager. Without the profit center system, how could the performance of a depot manager be measured?

Finally, the depot manager controlled the most important element of sales volume—service. Without profit centers, how would this be taken into consideration in the measurement system?

### **Required**

- (1) Should Wilkinson Transport change its organization? If so, how? If not, explain why the present system should not be changed.
- (2) How would you change the performance measurement system to accompany your revised organization? In particular, how would you evaluate depot managers to ensure goal congruence?
- (3) In order of potential severity, list the problems that you anticipate would occur in implementing your revised organization and measurement system. How would you handle these problems?

## **INTERNAL TRANSFER PRICING WITH AN OUTSIDE MARKET—THE NEW BRUNSWICK COMPANY\***

### **Background**

The New Brunswick Company is a mid-sized subsidiary of the Sun Corporation, which manufactures various textile and similar material composites. Sales are made to affiliate companies within the Sun Corporation, as well as to external companies. Approximately one-half of New Brunswick's sales are to affiliated companies.

New Brunswick's formal mission statement reads as follows:

New Brunswick's mission is to develop and supply unique, cost effective fabrics and related nonconventional structures to proactively support the Sun Corporation's worldwide consumer and professional markets.

An extension of New Brunswick's mission is to capitalize on the resultant unique product and fabric capabilities by developing profitable franchises in selective growth-oriented consumer and industrial markets.

This will be accomplished while satisfying the expectations of the company and fostering commitment, challenge, and reward for our employees.

This statement has received wide approval from the corporate level and from the affiliate

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management boards. It serves as the driving force for New Brunswick's management and sets clear objectives.

### ***The Product***

Fifteen years ago, New Brunswick research began evaluating a fabric formation technology (originally developed by the Smith Company, a competitor) called Super Weave. In this technology, fibers are entangled mechanically using water sprayed under high pressure. The resulting fabric is very clothlike in appearance, feel, and comfort. The Smith Company realized early on that this fabric would make an ideal barrier in the operating room. The new fabric would provide an effective disposable replacement for operating room drapes and gowns, providing a greater degree of sterility than had been attainable in the past.

Within the Sun Corporation's family of companies, Sanitech is responsible for asepsis within the operating room. To this end, Sanitech markets operating room apparel, gloves, and disinfectants.

Ten years ago, Sanitech began marketing operating room packs and gowns using the Smith fabric. Although the franchise was successful, the relationship between supplier and customer did have drawbacks, which the Sun Corporation, Sanitech, and New Brunswick fully understood:

1. Product improvements made by Smith might not be exclusive to Sanitech in the future, because Smith could sell to Sanitech's competitors.
2. Smith's capacity versus Sanitech's demand.
3. Lack of a second source.
4. Fear of monopolistic pricing practices.

### ***New Brunswick's Entry into the Market***

Six years ago, New Brunswick developed a material equivalent to the Super Weave fabric for sale to Sanitech. Entering this business

required New Brunswick to make a significant capital investment in plant and equipment. The total investment would approach \$30 million, the largest single investment in the company's long history. Given the Sun Corporation's policy of decentralized operating companies and New Brunswick's mission, New Brunswick's resources alone were used to fund the project. In addition, Sanitech as the marketing company was at liberty to select the fabric that, from its perspective, would best meet its customers' requirements at the lowest cost to Sanitech.

New Brunswick's proposal was presented to the executive committee of the Sun Corporation, who gave final approval for New Brunswick to proceed.

### ***Smith's Response***

Three years ago, New Brunswick began making fabric of a quality comparable to Smith's. However, New Brunswick found itself in a significantly changed market environment:

1. Concurrent with New Brunswick's entry, Smith's prices to Sanitech immediately dropped.
2. Smith introduced pricing strategies that rewarded Sanitech for high volume and provided multiyear incentives.
3. With the exception of price escalation, Sanitech and Smith had developed an effective partnership since 1975.
4. After several years of manufacturing, Smith had been able to maximize manufacturing efficiencies and achieve lower cost. New Brunswick realized it was at a cost disadvantage and could not price on the basis of intercompany transfer formulas (normally, full cost plus a percent return on invested capital and working capital).

New Brunswick understood very quickly and clearly that, in order to be successful, it must beat Smith's pricing and in the long run minimize manufacturing costs or New Brunswick would have to be content as a secondary source of supply.



***New Brunswick's Problem***

The vice president of affiliate marketing at New Brunswick requested the assistance of the chief financial officer in developing a plan that would enable New Brunswick to sell its product to Sanitech while achieving the following objectives:

1. Establish a price that is competitive while recovering the capital investment in a reasonable number of years.
2. Establish the longer-term profitability for New Brunswick.
3. Provide the corporation with the lowest-cost product over the long run.

***Required***

- (1) How should New Brunswick develop its pricing strategy?
- (2) How should the benefit to the Sun Corporation be measured?
- (3) What might Smith's reaction be to your strategy?
- (4) Should vertically integrated corporations be forced to procure raw materials from other divisions?
- (5) Should intercompany pricing policy be inflexible?