

Controlling the Multidivisional Organization: General Motors in the 1920s

BEFORE World War I, the Du Pont Powder Company was using almost every management accounting procedure for planning and control known today. To monitor and control the intermediate output produced by each single-activity department, Du Pont used accounting systems developed by manufacturing and distribution firms during the nineteenth century. In addition, Du Pont developed new budgeting and return on investment systems to plan and control the use of capital. With its comprehensive accounting systems, the Du Pont Powder Company could assess internalized operations that encompassed every activity in a single industry, from gathering raw materials to serving the final consumer.

The founders of Du Pont and other entrepreneurs created vertically integrated firms because they perceived opportunities for higher profits in a well-managed hierarchy

than in unaided market exchange. To search for and manage opportunities for higher profit, vertically integrated firms relied heavily on internal accounting information. Prompt access to such information was no guarantee, however, that top managers would invariably realize sought-after profit.

Two obstacles particularly could jeopardize the success of the integrated firm. One was the complexity of vertically integrated firms; the other was managerial indifference to owners' goals. Growth in the size and variety of firms' activities could overwhelm even the most dedicated owner-managers, but as professional managers replaced owner-managers, a new problem, indifference to owners' goals, arose. As an employee, the manager does not necessarily share to the same degree the owner's interest in attaining profits. Consequently, the public generally believed in the early 1900s that managerial indifference and increased complexity would cause large firms to topple from internal inefficiency or else, by abusing their market power, to pass on to customers, workers, stockholders, and other outsiders the costs of bureaucratic inefficiency.¹

The Multidivisional Enterprise Emerges

The record of the past eighty years certainly suggests that giant enterprises are capable of efficient and acceptable behavior.² Their growth in size and numbers during the volatile and unpredictable course of twentieth-century economic history indicates that they have coped well with the potential loss of management control resulting from complexity and the failure by professional nonowner managers to concentrate on profit-oriented goals. They have overcome these causes of bureaucratic paralysis largely by transforming the unitary, or centralized, organization into a new structure, the multidivisional organization. Referring to the multidivisional structure as "American capitalism's

most important single innovation of the 20th century,"³ Oliver Williamson credits it with preserving the vitality of giant enterprise by permitting "the corporation to limit the degree of control loss and subgoal pursuit that, without innovation, were predictable consequences of large size. Rather than be overcome by what otherwise would have been serious bureaucratic disabilities, the corporation has responded with a demonstrated capacity for self-renewal."⁴ The multidivisional enterprise does not abandon "the [unitary] structure; rather, it attempts to harness the [unitary structure's] solution to the division of labor problem within a larger organizing framework. The technical benefits of the [unitary] organization are thereby preserved, while its undesirable control loss and goal pursuit properties are restrained."⁵

The first integrated firms to become multidivisional, such as Du Pont, were owner-managed. The multidivisional organization was created primarily to restrain the loss of control precipitated by inordinately *complex* activities in a unitary firm, not to overcome managers' indifference to owners' goals. Undue complexity of activities threatened the viability of several of the nation's largest and best-run integrated industrial firms (for instance, Du Pont, General Motors, Sears, and Standard Oil⁶) when they expanded into a diverse array of new product lines or new geographic territories after World War I.

At Du Pont, diversification occurred almost by accident. The company's search for ways to use by-products of smokeless gunpowder produced during World War I led to the discovery of several products (among them, plastics, synthetic fibers, and exterior paint additives) that bore no resemblance to the company's traditional line of explosives except for their origins in a common chemical technology. This array of new products multiplied enormously the complexities of managing the company and threatened to unravel the efficient integration of multiple activities the company had

achieved before the war with a product line in one industry (explosives). Alfred Chandler gives us a vivid account of the complexities engendered by this product diversification at Du Pont:

The essential difficulty was that diversification greatly increased the demands on the company's administrative offices. Now [ca. 1919] the different departmental headquarters had to coordinate, appraise, and plan policies and procedures for plants, or sales offices, or purchasing agents, or technical laboratories in a number of quite different industries. The development of plans and the appraisal of activities were made harder because executives with experience primarily in explosives were making decisions about paints, varnishes, dyes, chemicals, and plastic products. Coordination became more complicated because different products called for different types of standards, procedures, and policies. For although the technological and administrative needs of the new lines had many fundamental similarities, there were critical dissimilarities.

The central office was even more overwhelmed than the departments by the increased administrative needs resulting from diversification. Broad goals and policies had to be determined for and resources allocated to functional activities, not in one industry but in several. Appraisal of departments performing in diverse fields became exceedingly complex. Interdepartmental coordination grew comparably more troublesome. The manufacturing personnel and the marketers tended to lose contact with each other and so failed to work out product improvements and modifications to meet changing demands and competitive developments. . . . Each of the three major departments—Purchasing, Manufacturing, and Sales—made its own estimates and set its own schedules.⁷

Companies like Du Pont used the decentralized multidivisional organization to alleviate the chaos and confusion that diversification brought to a centralized, multi-activity organization. Alternatively, they might have managed diversity by designing systems to trace accurately each product line's consumption of resources and profitability. As we

showed in chapter 3, this alternative means of managing a diverse line of products was discussed by scientific management advocates in the early 1900s. The high cost of processing information seems, however, to have precluded implementation of strategic product costing systems early in the century. The multidivisional organization offered a less costly means to manage product diversity.

The multidivisional organization assigns to top management the task of planning the company's strategy, while assigning to subordinate managers the task of coordinating and controlling the operating activities for each of the company's different product lines or sales regions. By relieving top managers of responsibility for day-to-day operations, the multidivisional organization extends its span of control to encompass the affairs of several integrated multi-activity organizations. The manager who heads each of the internalized multi-activity organizations, known as divisions, concentrates fully on the operating activities of a single product line or a single geographic region. By separating policy managers from operations managers, the multidivisional firm overcame the main stumbling block to diversification posed by the unitary form of organization: the loss of control that top management faced when asked to administer simultaneously both long-run policy and an impossibly complex array of operating details for several diverse products.

To point these separate management groups toward common firm-wide goals, multidivisional firms relied on management accounting systems for data to evaluate divisional performance, company-wide performance, and future company policy. Understandably, these systems borrowed accounting procedures already used in integrated multi-activity firms; each division of a multidivisional firm resembles a freestanding integrated firm, managing its own business with a centralized organization in which purchasing, manufacturing, and sales managers report to a general

divisional manager. However, multidivisional firms had a new use for return on investment information. Whereas unitary, multi-activity firms used return on investment information to centralize the allocation of capital among the firm's varied activities, multidivisional firms used the ROI measure to delegate to division managers the entire responsibility for using capital efficiently. This delegation of responsibility was possible because return on investment information about each division's internalized activities assured top managers that the division managers would give strict attention to top-level profit goals. These relatively unambiguous measures of divisional performance enabled top managers to reward successful division managers with both additional capital and promotions to top management posts. On the other hand, they could withhold capital from, and even dismiss, division managers who failed to perform.

By helping the different management groups, top policy managers and divisional operations managers, work toward common goals, return on investment information enabled early multidivisional firms to perform the same roles as the markets for capital and for managers perform today.⁸ In theory at least, these markets can withhold capital from and discipline top managers of integrated firms who fail to perform adequately. In the early 1920s, however, labor and capital markets were relatively undeveloped and inefficient. Multidivisional organizations arose to supplant these markets by internalizing the multi-activity operations of several integrated firms to earn higher asset returns than the market could elicit from the same firms if they operated independently. This argument has been generalized by Williamson in his multidivisional hypothesis:

The organization and operation of the large enterprise along the lines of the [multidivision form] favors goal pursuit and least-cost behavior more nearly associated with the neoclassical profit maximization hypothesis than does the [unitary form] organizational alternative.⁹

Researchers in the past ten or fifteen years have marshalled an impressive array of empirical evidence that supports this hypothesis, although the results are undoubtedly driven by the relative efficiency of markets in the periods studied and should not, therefore, be generalized beyond those periods.¹⁰

The success of the multidivision organizational form depends on the management accounting system to perform three particular tasks better than the markets for capital or for managers:¹¹ provide strong incentives for managers to seek profit-oriented goals; increase the power of incentives through internal audits by linking performance to probable causes in a discriminating way; and develop monitoring and measuring procedures that help to allocate cash flows to high-yield uses in a sequential, adaptive manner. By providing an internal quasi-capital market to monitor and discipline top managers of vertically integrated organizations,¹² the management accounting system of the multidivisional firm undoubtedly did much to avert Adolph Berle and Gardiner Means's dire prophecies about professionally managed giant enterprise.¹³ The system was able to stimulate in the multidivisional firm a market for professional general managers, a market that virtually did not exist before the 1920s.¹⁴ It provided, in other words, a mechanism not only to evaluate general managers, but also to channel their self-interest toward the owners' interest in profits.

Executives of large American corporations did not quickly recognize and understand the unique properties of either the multidivisional firm or its management accounting systems. Substantial numbers of vertically integrated firms did not adopt the multidivisional structure before World War II. The academic and general business public did not become familiar with this remarkable innovation until the 1950s. It is all the more intriguing, then, to examine the ideas about management accounting that leaders of one of the first multidivisional industrial organizations, General

Motors Corporation, expressed in the 1920s. Their management accounting procedures reflected a profound understanding of the gains from having the multidivision firm internalize the markets for capital and for managers.

General Motors

Founded in 1912 by the visionary William C. Durant, General Motors combined into one organization several integrated units, each of which manufactured and sold a unique line of autos or parts.¹⁵ Each unit performed all the operating functions, such as marketing, manufacturing, and purchasing, that an independent manufacturing company performs, and each unit's administrative system resembled a unitary form of organization. Durant, in consolidating these autonomous auto and parts manufacturing units into one giant firm, hoped to achieve economies in areas such as manufacturing, finance, and management. He originally envisioned, in other words, a consolidated enterprise whose total profits would exceed the combined profits that would have been earned by the individual units operating as separate companies.

Despite this noble goal, Durant's practice at GM nevertheless failed, primarily because he was unable to resolve the problems entailed in administering a diversified company. He did not have an administrative system that could direct the activities of each operating unit toward common goals. His unwieldy management procedures immersed Durant in the detailed activities of each operating unit. Thus embroiled, Durant could not give his attention to general policy making and could not achieve the savings that coordinated operations can produce. Durant's special style of management even prevented many of GM's operating units from performing as efficiently as they might have done as independent companies.

Durant's inability to control GM's diverse operating

units precipitated an inventory crisis in 1920 that led to Pierre du Pont succeeding Durant as company president. The Du Pont Company had invested heavily during the war in Durant's forward-looking enterprise. With their substantial investment threatened by Durant's unanticipated mismanagement, the Du Ponts were drawn inexorably into managing the auto company's affairs after the Armistice. Already known for their prowess as managers, the Du Pont Company officials took over from Durant with the blessings of GM's creditors and other stockholders.

Pierre du Pont's leadership, coupled with the brilliant insights of Alfred P. Sloan, Jr., one of Durant's executives, led to developing GM's well-known multidivisional structure in which top management coordinates, appraises, and plans GM's diversified activities without having to supervise its day-to-day operations. This structure places full responsibility for operating performance on the general managers of each division, freeing top management to concentrate on policy making and to coordinate divisional performance with company policies. Not surprisingly, a key component of this Du Pont-designed organization was a sophisticated set of management accounting procedures introduced by Donaldson Brown, who applied to GM the Du Pont Company's advanced and sophisticated financial control techniques.

GM's management accounting system performed three tasks to permit what Brown described as "centralized control with decentralized responsibility." First, it provided an annual operating forecast to compare each division's *ex ante* operating goals with top management's financial goals. Top management used the operating forecast to coordinate each division's expected performance with company-wide financial policy. Second, the system provided sales reports and flexible budgets that indicated promptly if actual results were deviating from planned results. They further specified the adjustments to current operations that division managers should make to achieve their expected performance

goals. The sales reports and the advanced flexible budget system provided the control for each division's actual performance. Third, the management accounting system allowed top management to allocate both resources and managerial compensation among divisions on the basis of uniform performance criteria. This encouraged both a high degree of automatic compliance with company-wide financial goals and, also, divisional managers' autonomy. We shall describe in some detail, how this innovative management accounting system facilitated coordination, control, and compliance at GM in the twenties.¹⁶

GM's fundamental goal was to secure "the permanent welfare of the owners of the business."¹⁷ Brown said that "a business owes its existence to its owners" and therefore is "expected to operate for their benefit." The basic financial policy that guided GM's top management after 1921 was to earn the highest long-run return on investment "consistent with a sound growth of the business."¹⁸ The policy did not mean that the company should strive to earn, in Brown's words, "the highest attainable rate of return on capital, but rather the highest return consistent with attainable volume, care being exercised to assure profit with each increment of volume that will at least equal the economic cost of additional capital required."¹⁹ In practice, top management stipulated that the corporation over the long run should earn average after-tax profits equal to 20 percent of investment while operating on average at 80 percent of rated capacity (the so-called "standard volume").

It was extremely difficult, however, to coordinate the company's actual operations in the short run with these long-run rate of return and standard volume goals. At GM, or any automaker for that matter, sales and profits in the 1920s fluctuated enormously over seasonal and cyclical trends that were difficult to predict. Contributing to these fluctuations were the volatile demand for automobiles, a durable capital good whose purchase or replacement consum-

ers could postpone for long periods of time; the practice, industry-wide by the 1920s, by which automakers announced retail prices at the beginning of a model year and adhered to those prices during the year, even when market demand changed; and the typical automaker's high fixed costs. Rigid annual prices and high fixed costs meant that an automaker's profits and return on investment varied greatly, depending upon annual fluctuations in the ratio of output to average annual capacity. These largely unpredictable short-run variations made it difficult to coordinate short-run operating plans with long-term financial goals.²⁰

Responding to this difficulty, Brown designed a unique annual "Price Study" that enabled GM's top management to coordinate each division's annual operating plan with the company's long-term return on investment and standard volume policies. Each division manager prepared a Price Study every December for the coming model year (August 1–July 31).²¹ Albert Bradley, Brown's protégé at GM, provided a succinct description of the Price Study.

[The Price Study] embodies the Division's estimates of sales in units and in dollars, cost, profits, capital requirements, and return on investment, both at Standard Volume and at the forecast rate of operations for the new sales year, all on the basis of proposed price. The Price Study, in addition to serving as an annual forecast, also develops the standard price of each product; that is, the price which, with the plant operating at standard volume, would produce the adjudged normal average rate of return on capital which has been referred to as the economic return attainable. Proposed prices can therefore be directly compared with the standard prices which express the Corporation's fundamental policy, and a means is thereby provided for the measurement of departures from the policy. . . .²²

A division's Price Study consisted of three basic elements: a forecast of operations calculated at the coming year's expected volume, a forecast of operations calculated at the standard volume, and a determination of each product's

standard price. Top management used two of the elements, the forecast at expected volume and the standard price data, to coordinate each division's *ex ante* operating plan with the company's long-run financial policy. These two elements of the Price Study provided, in Bradley's words, "a means of gauging an operating program in terms of the fundamental policy of the Corporation regarding the rate of return on capital investment, as related to the pricing of the product, and the conditions under which additional capital will be provided for expansion." The third element of the Price Study, the forecast at standard volume, provided top management with "a tool for the control of current operations."²³

A division manager's initial task in preparing the annual Price Study was to forecast the coming year's expected revenue, costs, and return on investment. First he estimated the two components of total revenue: proposed selling price and expected sales volume. Between the two components, price was presumably the least difficult to predict. The company's policy after 1921 was to restrict the products of each division to a distinct price range. Moreover, the coming year's price had to correspond to the current year's prices and to competitors' expected prices. Next, the manager estimated sales volume. Each division manager had sole responsibility for establishing the number of vehicles the division would sell and for seeing to it that his division's ultimate sales goal was met. Considerable help with making sales estimates was available, however, from top management's advisory staff. In fact, by 1925 the corporate central office assisted the divisions in making their sales forecasts by estimating GM's share of national automobile demand in each division's price range. The central office derived these estimates from data on expected consumer disposable income, sales trends of the past three years, and the expected impact of style, quality, and price on GM's share of each division's market.²⁴

After arriving at an estimate of the coming year's total revenue, the division manager estimated operating costs, capital requirements, and return on investment. Division

managers used data on past ratios of costs to output and investment to output, tempering these data, of course, with information concerning expected changes in both factory prices and productive efficiency. Presumably it was not difficult to estimate unit variable operating costs. An estimate of new fixed investment was probably more difficult to make. The only available indication, found in a published source, of how the company planned its capital expansion suggests that management geared new investment both to estimated future output and to the company's standard volume policy that annual output should average 80 percent of practical annual capacity over the long run. It may be, as several authorities believe, that the company's standard volume policy provided a means of estimating long-run capital requirements.²⁵ Certainly the forecast did predict the actual investment expected during the coming year. With that investment figure, and the net profit calculated from the revenue and cost estimates, the coming year's actual return on investment could be forecast.

A divisional manager's expected return on investment and his proposed selling prices for a coming year did not inevitably meet the basic long-run goal formulated by top management. For example, when the projected operating rate exceeded 80 percent of capacity, proposed selling prices could be high enough to ensure a divisional return on investment forecast that was at or above 20 percent for the coming year but too low to ensure an average return of 20 percent in subsequent years, when operating rates might fall below 80 percent. To avoid unintentional cases in which proposed prices and expected return on investment rates did not meet the corporation's long-run goals, top management compared the proposed selling prices in each division's forecast with the so-called "standard price." Standard prices, as Bradley said, expressed "the Corporation's fundamental policies [and they provide a means] for the measurement of departures from the policy."²⁶

The standard price was the factory-delivered price that

a division had to charge at standard volume (80 percent of capacity) in order to earn the standard return on investment (20 percent). Standard price ratios, the markup rate over factory production costs, were apparently calculated from Price Study data. The ratio remained unaltered until a permanent change occurred either in capital turnover rates, factory operating efficiency, or the division's return on investment target.

Because the company applied fixed factory production costs at the standard volume rate to all units produced, unit factory production costs, by which the standard price ratio was multiplied, varied during the model year only if changes occurred in variable material or labor costs.²⁷ Consequently, the dollar equivalent of the standard price ratio (unit factory costs at standard volume multiplied by the standard price ratio) yielded just enough total revenue to cover all costs and return 20 percent on investment at standard volume.

If the factory-delivered price charged to dealers always equalled the standard price, then total profits would yield a return on investment in excess of 20 percent when the operating rate exceeded 80 percent and conversely a return below 20 percent when the operating rate was less than 80 percent. The company expected that the high profits earned at high operating rates and the low profits earned during low operating rates would average out to a long-run 20 percent on investment. Given its standard price data, top management felt reasonably certain that *if* the actual selling prices proposed for the coming model year were in line with the standard price, *then* the operating forecast in a division's annual Price Study would conform to the company's long-run policies regarding return on investment and standard volume.²⁸

It should be emphasized that GM did not use standard price data to determine the actual prices to be charged during any given model year. Rather, the apparent purpose of

the standard price policy was to determine the minimum markup needed to make the planned operations of a division comply with the corporation's long-run financial policy. Top management assumed that the proposed selling price for any particular year was determined in the competitive marketplace. The divisional manager's main responsibility was to adjust costs and capital turnover ratios in order to assure that his return on investment corresponded to long-run objectives. In other words, if the proposed selling price for any model fell below the standard price, and if the gap between the two prices could not be attributed to short-run competitive pressures, then top management requested a division manager to reduce proposed operating costs.²⁹ Were top management to accept selling prices that fell for a prolonged time below prices dictated by the standard price, it would be violating its acknowledged obligation to protect the owners' "permanent welfare." Top management would also request changes in a forecast in which the proposed selling price *exceeded* the standard price; such action was implicit in its commitment to long-run policies. Clearly, the standard price formula provided top management with a compact and powerful means of coordinating a division's forecast operating plan with company-wide financial policy.

After top management had reviewed and approved the annual forecast, the division manager proceeded to recast the annual figures into monthly estimates, using for this purpose indices of seasonal output trends prepared by top management's advisory staff. These monthly forecasts were submitted to top management for approval. Submission was expected no later than four months before the operating date; by the twenty-fifth day of each month in other words, the divisional manager had to provide, not only for the current month but also for the coming three months, a forecast including data on plant investment, working capital, inventory, purchase commitments, sales, production costs, and earnings. When top management gave its final approval, the

four-month forecast established the division manager's authority to make commitments for production labor, purchases, and other acquisitions. Having reviewed the division's forecasts, top management was assured that, assuming actual operations went according to plan, the division's performance would conform to corporate financial policy. Thereafter, the divisional manager had complete freedom to implement the operating plans in the forecast, and he assumed responsibility for his division's final performance.

If their management accounting system had consisted only of the *ex ante* forecasts that coordinated the decentralized operations of various divisions with company-wide policy, Durant's successors at GM would not have achieved their astonishing success. Perhaps even more important than the operating forecast were management accounting procedures that permitted top management to evaluate the division's actual performance throughout the year. A division's actual operating conditions could deviate from the forecast for a given year in two important ways, either one requiring prompt adjustment if the planned return on investment was to be achieved. In one case, sales to consumers could differ from the forecast plan. In the other, the division's production could depart from the forecast. GM developed two management accounting procedures, sales reports and a flexible budget system, to deal with each of these eventualities.

Severe overproduction at several of the company's divisions in 1924 taught GM's top management that it takes more than accurate sales forecasts, annual or seasonal, to ensure smooth coordination of production and sales. This well-known crisis arose simply because the divisions did not compare their monthly production schedules with timely sales and inventory data from dealers. To prevent production from ever again running ahead of actual demand, the company, after 1924, required dealers to submit a detailed sales report to their respective division every ten days. These

reports would ensure "a change in [divisional] production schedules the moment actual experience indicates a change in the trend of retail deliveries to the public."³⁰

To assist a division manager in adjusting his production plans, the corporate central office advisory staff prepared seasonal sales indices and minimum/maximum working-capital-to-seasonal-sales ratios for each division. In addition, GM received monthly new car registration figures from the R. K. Polk Company, that provided up-to-date information on changes in GM's share of the national automobile market in each division's respective price class. The ten-day sales report system greatly reduced the annual gap between the number of cars sold by GM to its dealers and the number sold by dealers to the public. While the gap amounted to about 10 percent of sales from August 1923 to March 1924, it was kept to about 1 percent in 1925 and subsequent years.³¹

Nevertheless, further data were needed to evaluate the changes in costs, profits, and return on investment that occurred when the output level departed from the planned level. Indeed, if information in the sales reports caused a division manager to change his output level, the actual profits and return on investment for his division would differ from the planned amounts in the original forecast, given the typical automaker's high fixed costs and inflexible prices. Whenever changes occurred, it was important to know if the resulting variance between actual net income and forecast net income was due exclusively to unplanned changes in the level of output or due to unplanned changes in controllable costs, operating efficiency, and other factors unrelated to the level of output. In other words, did actual income differ from forecast income because the division's sales volume did not match the planned level or because the division's operating efficiency was not at planned levels? Modern management accountants use the "flexible budget" to compare forecast results with the results attained at actual levels of output.

The flexible budget distinguishes between variable and fixed costs and thereby forecasts total costs and profits at any level of actual output (within a given amount of fixed capacity).

Accounting and business historians suggest that flexible budgeting was barely discussed in accounting literature before the 1920s. Historian R. H. Parker takes the view that "it was not until the late 1930s that refined techniques for relating cost to size of output in the short-run were developed." Other writers have noted that flexible budgeting systems actually were being used by 1927 at the Gillette Safety Razor Company and by the late 1930s at the Westinghouse Electric Corporation. As early as 1924, however, Donaldson Brown, in a series of three articles on GM's pricing and budgeting procedures, described an ingenious technique for relating cost, net profit, and return on investment to short-run output variations. Nowhere in these articles does Brown refer to his technique as "flexible budgeting;" nevertheless, he does make it clear that his pricing and budgeting procedures were designed primarily so that the large annual and seasonal variations of sales and output that typified GM's operations would not vitiate management's efforts to control costs and profits. His revolutionary procedures gave GM a fully articulated flexible budget at least as early as 1923.³²

GM's flexible budget was based on the forecast at standard volume contained within each division manager's annual Price Study. The forecast at standard volume, as we mentioned above, projected operations for the coming model year at the proposed selling price and the standard volume (80 percent of planned capacity). The forecast at standard volume established "standard" values for all the major factors such as fixed cost, variable cost, and capital turnover that affect return on investment. Specifically, the forecast showed each of the following items as percentages of total sales (at the proposed selling price and standard volume): variable costs, fixed costs plus net profit, variable

working capital, and fixed investment. These ratios (and ratios of these same items to factory cost at standard volume) were frequently used to project the cost and investment figures in the actual operating plan that a division manager incorporated into his annual forecast.³³ Their main purpose, however, was to provide norms so that deviations could be assessed between the division's forecast and its actual operating performance. Using the standard volume ratios in a simple formula, one could calculate what the annual net return on investment *should* be at *any* volume of output (at the coming year's proposed selling price and with total plant capacity given) in order to satisfy top management's basic financial objective. The same standard volume ratios also made it possible, assuming appropriate seasonal adjustments for production and fixed cost factors, to predict each month what the return on investment should be at any relevant volume.³⁴

The ratios in the standard volume forecast enabled top management and the division manager to compare easily and rapidly the *ex post* return on investment at any operating level with the desired return dictated by long-run corporate policy. Unless identified and compensated for, a variation between the two rates of return could prevent a division from achieving its long-run financial objective. In the 1920s, GM managers attributed any discrepancy between the actual and desired rate of return to either unanticipated deviations from the projected selling price, unplanned changes in factory price, or unexpected alterations in operating efficiency. Because each division manufactured a relatively homogeneous line of products in the 1920s, a discrepancy between actual and desired rates of return was not likely to be caused by deviations in planned mix of products. As the divisions' product lines became complex and diverse, certainly the case by the 1970s, the standard volume forecast probably became less useful as a management tool. Records indicate, however, that GM managers in the 1920s

regarded the standard volume forecast as a useful tool. They monitored deviations between planned and actual return on investment by comparing the actual price, cost, and capital ratios, adjusted for seasonality, to the standard volume ratios. Each division prepared not only monthly, but even daily, reports designed specifically to compare actual results in every aspect of operations with the standard volume results that had been predicated upon GM's top-level goals for return on investment.³⁵

That management as a result of its management accounting system effectively handled fluctuations in demand is suggested by the company's extraordinary return on investment and its remarkable expansion after its reorganization in 1921. Capital turnover data reveal, furthermore, that sales reports and flexible budget forecasting also contributed to efficiency. For example, top management's improved forecasting and a leveling of production schedules permitted the company to raise its average annual inventory turnover from a low of 1.5 in 1921 to a high of 6.3 in 1925. We can safely assume that similar improvements occurred in the turnover of cash, receivables, and fixed plant investment. Speaking in 1926 about the consequences of improved turnover, Albert Bradley said, "the corporation, with no increase in capital, has been able to conduct a larger volume of business at a smaller net profit per unit, and to make a very satisfactory return on its capital; and to pass along to the public the savings resulting from increased volume and increases in efficiency."³⁶

Aligning Managers' and Owners' Interests

We have seen that particular features of GM's management accounting system helped top management delegate operating decisions to the divisions by clearly establishing financial objectives for division managers. Other

features in the system helped motivate division managers to comply with the company-wide financial goals. The mechanisms for compliance not only increased the probability that top management's financial goals would in fact be achieved; they also increased the likelihood that top management's goals would be synonymous with those of the company's owners. Top management is more likely to advocate entrepreneurial goals when assurances of subordinates' compliance remove all pressures to compromise top-level objectives for the sake of smoothly coordinated operations.³⁷

We already have mentioned Oliver Williamson's hypothesis that the multidivisional firm has powers to exact stricter compliance with owners' goals from heads of divisions than the capital market can exact from top managers of independent vertically integrated firms. The hypothesis implies that the multidivisional organization does a superior job of solving the problem of getting delegated managers to identify their own self-interest with the firm's top-level goals. It does this in large part because top managers can scan complete and timely information about subordinates' performance. Providing this information is the major contribution of management accounting to the multidivisional firm's superior performance.

But even though top managers in a multidivisional firm receive prompt and accurate information from throughout the firm, certain precautions are needed to ensure that the information does not engender dysfunctional or suboptimal activities. One precaution particularly important in a decentralized organization such as GM is to price interdivisional transfers so that the actions which an autonomous division manager takes to enhance his own subunit's profit do not simultaneously impair company-wide profits. Published evidence suggests that GM's new management team adopted a market-based transfer pricing policy in the early 1920s. Sloan had practiced market-based transfer pricing in his United Motors Company before it was brought into GM by

Durant in 1918.³⁸ Although Sloan was apparently unsuccessful at selling Durant on the idea of market-based transfer pricing, his idea was accepted by Pierre du Pont after the 1921 reorganization. Brown described the new GM transfer pricing policy in a speech delivered to a conference of executives in 1927.

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.³⁹

Other precautions besides attention to transfer pricing are needed to avert circumstances that impair the usefulness of return on investment as an indicator either of a division's contribution to company-wide profits or of the performance of a division manager. We noted in the previous chapter, for instance, that return on investment statistics net of depreciation can encourage division managers to underinvest. Although the Du Pont organization itself seems to have met this problem after 1920 by evaluating division managers using gross return on investment figures, this was not done at GM. Instead, the architects of GM's early management accounting system built alternative safeguards within the system to assure that return on investment would serve as a valid criterion of performance.

The annual forecast included plans for expansion that division managers worked out in collaboration with top management. The role of the corporate staff in assisting with

sales and capital turnover estimates minimized divisional bias in the plans. The expansion plans, presumably stated in terms of expected unit sales, surely placed a lower bound on each division manager's planned investment. The annual forecast therefore compelled a division manager to achieve return on investment targets without stinting on expansion plans.

Another common difficulty with return on investment data is that comparisons of divisional return on investment results do not always properly indicate the comparative performance of the division managers themselves. A capable manager who takes over a division that already has chronic and deep-rooted troubles might be evaluated unjustly were his return on investment to be compared with that of other divisions rather than his own division's past or potential performance.⁴⁰ Because top management in a multidivisional firm allocates resources among the firm's operating units, and because a division manager's search for additional resources encourages him to comply with top-level goals, resources must not be allocated strictly according to differential return on investment results. Indeed, in order to maintain company morale, GM's top management as far back as the 1920s occasionally assessed divisional managers with differing targets for return on investment, the target depending upon the division in question.⁴¹

GM's return on investment criterion for judging divisional financial performance apparently provided proper motivation, then, for division managers to pursue top management's goals. Further motivation was supplied by the timely and accurate reporting of divisional financial performance to GM's top management. The return on investment data sent to top management related each division's performance directly to top-level goals. The data were prepared in all divisions according to company-wide accounting standards; they were audited by top management staff personnel; they were compiled for top management by cor-

porate staff personnel whose company-wide perspective freed them from divisional biases; and they were timely.⁴² The data revealed promptly and unambiguously any failure of a division manager to meet the company's basic financial objectives. In so doing, they enabled top management to swiftly remove a division manager who failed to perform as expected. Obviously, such a reporting system put enormous pressure on the division manager to remove slack and inefficiency at all levels within his division. The intensity of pressure on a division manager to comply with top-level profit goals is an important reason why a departmentalized division within a multidivisional firm may, according to Williamson's hypothesis, be more profitable than an independent departmentalized firm of similar size.

A final means GM used to align division managers' goals with corporate goals was a bonus-incentive plan for salaried executives. Based on divisional performance, bonuses were awarded in the form of rights to GM common stock. A manager's stock bonus for any given year became vested only if he stayed with GM for a certain period, usually five years. Therefore, the value of the bonus to an executive depended ultimately on the long-run performance of the corporation as a whole. That GM's top management intended the bonus plan to check division managers' tendencies to pursue local goals at the expense of corporate goals is apparent in the following remarks made by Sloan:

The Bonus Plan established the concept of corporate profit in place of divisional profits. . . .

Before we had the Bonus Plan in operation throughout the corporation, one of the obstacles to integrating the various decentralized divisions was the fact that key executives had little incentive to think in terms of welfare of the whole corporation. . . . Under the incentive system in operation before 1918, a small number of division managers had contracts providing them with a stated share of profits of their own divisions, irrespective of how much the corporation as a whole earned. Inevitably, this system

exaggerated the self-interest of each division at the expense of the interest of the corporation itself. It was even possible for a division manager to act contrary to the interest of the corporation in his effort to maximize his own division's profits.⁴³

Given the remarkable growth in value of GM's common stock during the 1920s, it is reasonable to conclude that GM's bonus plan both intensified a division manager's desire to stay with the company and made him eager to comply with company-wide performance goals.⁴⁴

Summary

The multidivisional structure and management accounting procedures that GM's top management devised in the early 1920s enable giant industrial firms to overcome the inefficiency and bureaucratic disabilities that economists once thought were endemic to large-scale organizations. In large, diversified enterprises, the multidivisional organization sharply reduces the volume of communication between divisional and corporate managers, thus enabling managers to employ resources more efficiently and more effectively than if they used centralized organizations. And internal accounting procedures, such as those used at GM in the 1920s, enabled top management to transmit to operating managers in sharp, unambiguous terms the goals for company-wide profits and growth. While the procedures impelled all operating managers to pursue the same corporate goals, they also permitted them enormous freedom to exercise initiative in deciding how to employ resources most efficiently. The internal accounting procedures were undoubtedly essential to GM's remarkable performance record after 1921, as they also were to the performance of countless large firms in the world that adopted the multidivisional structure after the 1920s.

The multidivisional structure was not the only means of managing product diversity in the 1920s, nor is it always the best way. In chapter 3 we mentioned the approach to managing product diversity that scientific management engineers such as Alexander Church had advocated in the early 1900s. Their procedures for strategic product costing offer a potential means of managing diversity without having to decentralize responsibility for operating decisions. As we indicate in the next chapter, the preference that managers in the 1920s showed for divisional structures rather than strategic product costing undoubtedly reflected the high cost of processing information at that time. Recently, sharp reductions in information processing costs have generated new interest in strategic product costing.⁴⁵ Conceivably these advances in information technology have reduced the multidivisional structure's appeal as a means of managing product diversity. Moreover, recent changes in costs of using markets may also have diminished the advantages of diversifying product lines in a single organization. It is too early to tell, but "downsizing" and "unbundling" of large multidivisional conglomerates in the late 1970s and the 1980s may signify that the costs of using markets for capital and managers—so high in the 1920s—are no longer high enough to warrant widespread use of the divisional form of organization in the 1980s.

Notes

1. These views were expressed in Adolph Berle and Gardiner Means, *The Modern Corporation and Private Property* (New York: Macmillan, 1932), and in John K. Galbraith, *The New Industrial State* (Boston: Houghton Mifflin, 1967).

2. Alfred D. Chandler, Jr., *Strategy and Structure: Chapters in the History of the American Industrial Enterprise* (Garden City, N.Y.: Doubleday, 1966; reprint of 1962 ed.), 44; Oliver E. Williamson, *Corporate Control and Business Behavior: An Inquiry into the Effects of Organization Form on Enterprise Behavior* (Englewood Cliffs, N.J.: Prentice-Hall, 1970), 4.

3. Williamson, *Corporate Control*, 175.
4. *Ibid.*, vii.
5. *Ibid.*, 134.
6. This episode in American business history is brilliantly analyzed in Chandler, *Strategy and Structure*.
7. *Ibid.*, 110–111.
8. For more on the market for managers, see E. F. Fama and M. C. Jensen, "Separation of Ownership and Control," *Journal of Law and Economics* (June 1983), 327–349.
9. Williamson, *Corporate Control*, 134.
10. See, for instance, H. O. Armour and D. J. Teece, "Organizational Structure and Economic Performance: A Test of the Multidivisional Hypothesis," *Bell Journal of Economics* (Spring 1978), 106–122; R. M. Burton and B. Obel, "A Computer Simulation Test for the M-form Hypothesis," *Administrative Science Quarterly* (1980), 457–466; J. Cable and M. J. Dirrheimer, "Hierarchies and Markets: An Empirical Test of the Multidivisional Hypothesis in West Germany," *International Journal of Industrial Organisation* (1983), 43–62; P. Steer and J. Cable, "Internal Organisation and Profit: An Empirical Analysis of Large UK Companies," *Journal of Industrial Economics* (September 1978), 13–30; D. J. Teece, "Internal Organization and Economic Performance: An Empirical Analysis of the Profitability of Principal Firms," *Journal of Industrial Economics* (December 1981), 173–199. The multidivisional firm's superior performance properties may exist only when markets for capital and managers are relatively inefficient, as in the United States between World War I and the 1960s. Developments in the 1980s (e.g., spin-offs, leveraged buy-outs, takeovers leading to radical "downsizing," and efforts by incumbent managers to "unbundle" complex multidivisional firms) suggest that today's markets for capital and managers evaluate opportunities for gain more efficiently than internal hierarchy does, at least in some industries.
11. Oliver E. Williamson, *Markets and Hierarchies: Analysis and Antitrust Implications* (New York: Free Press, 1975), 145–148.
12. As we mentioned in note 10, enormous improvements in the ability of the capital market to perform these functions since the mid-1970s may considerably reduce the incentive to internalize unitary divisions within multidivisional organizations. When improvements in markets lower the cost of discovering opportunities for gain, it is reasonable to assume *ceteris paribus* that economic exchange will move at the margin from firms to markets.
13. Oliver E. Williamson, "The Modern Corporation: Origins, Evolution, Attributes," *Journal of Economic Literature* (December 1981), 1559–1560.
14. See Fama and Jensen, "Separation of Ownership and Control."
15. The following discussion of Durant's years at GM and Pierre S. du Pont's arrival at GM are drawn from Alfred D. Chandler, Jr., and Stephen Salsbury, *Pierre S. du Pont and the Making of the Modern Corporation* (New York: Harper & Row, 1971), chapters 16–18; Ernest Dale, "Contributions to Administration by Alfred P. Sloan, Jr., and GM," *Administrative Science Quarterly* 1(1956–1957), 30–62; Alfred P. Sloan, Jr., *My Years with General Motors*

(Garden City, N.Y.: Doubleday, 1963), chapter 2; Bernard A. Weisberger, *The Dream Maker: William C. Durant, Founder of General Motors* (Boston: Little, Brown, 1979), chapter 8.

16. The sources of information used to prepare the following discussion of GM's post-1921 accounting practices are Albert Bradley, "Setting Up a Forecasting Program," *Annual Convention Series No. 41*, (American Management Association: New York, 1926), 3–20; Donaldson Brown, "Pricing Policy in Relation to Financial Control," *Management and Administration* 7 (February 1924), 195–198 and (March 1924), 283–286; Brown, "Pricing Policy Applied to Financial Control," *Management and Administration*, 7 (April 1924), 417–422; Brown, "Centralized Control with Decentralized Responsibilities," *Annual Convention Series No. 57*, (American Management Association: New York, 1927), 3–24; and Brown, "Some Reminiscences of an Industrialist" (unpublished ms., Eleutherian Mills Historical Library, Wilmington, Delaware, 1957; reprinted with introduction by Ernest Dale in 1977 by Hive Publishing Co. of Easton, Pa.); Chandler, *Strategy and Structure*, chapter 3; Chandler and Salisbury, *Pierre S. du Pont*, chapters 17–21; Thomas B. Fordham and Edward S. Tingley, "Control through Organization and Budgets," *Management and Administration* 6 (December 1923), 719–724, 7 (January 1924), 57–62, (February 1924), 205–208, and (March 1924), 291–294; R. C. Mark, "Internal Financial Reporting of General Motors," *Federal Accountant* (November 12, 1952), 31–41; C. S. Mott, "Organizing a Great Industrial," *Management and Administration* 7 (May 1924), 523–527; Sloan, *My Years*, chapter 8; Alfred H. Swayne, "Mobilization of Cash Reserves," *Management and Administration* 7 (January 1924), 21–23; U.S. Senate, Committee on the Judiciary, Subcommittee on Antitrust and Monopoly, *Administered Prices, Report and Hearings*, vols. 6 and 7 (Washington, D.C., 1958); and Karl Wennerlund, "Quantity Control of Inventories," *Management and Administration* 7 (June 1924), 677–682.

17. Brown, "Pricing Policy in Relation to Financial Control," 195–196 and "Some Reminiscences," 59–65.

18. Brown, "Centralized Control with Decentralized Responsibilities," 5; Sloan, *My Years*, 141. Other statements confirming that the sole concern of GM management was profit can be found in Fordham and Tingley, "Control through Organization and Budgets," 719, and Mark, "Internal Financial Reporting," 33.

19. Brown, "Pricing Policy in Relation to Financial Control," 197. Several writers have noted the sophisticated example of "marginalist" economic reasoning in this remark of Brown's.

20. An excellent discussion of the auto industry's interwar pricing policies is in Homer B. Vanderblue, "Pricing Policies in the Automobile Industry," *Harvard Business Review*, 17 (Summer 1939), 385–401.

21. Sloan, *My Years*, 129.

22. Bradley, "Setting Up a Forecasting Program," 7.

23. *Ibid.*, 3.

24. The detailed steps involved in preparing a divisional budget are described in Fordham and Tingley, "Control through Organization and Budgets."

Limiting the sales of each division to a specific price range followed from GM's overall product policy, enunciated in late 1921, to minimize duplication and competition among divisions. See Sloan, *My Years*, 65. Although the company's basic product policy indicated a need for some top-level coordination of divisional sales plans, no such coordination existed before 1924. However, top management took a more serious interest in divisional sales forecasts after the excessive optimism of certain general managers caused a serious overproduction crisis in that year. For information on this famous episode in GM's history, see Sloan, *My Years*, 129–134, and Chandler and Salsbury, *Pierre S. du Pont*, 549–554.

25. Bradley, "Setting Up a Forecasting Program," 7–8; Vanderblue, "Pricing Policies," 397, n.14.

26. Bradley, "Setting Up a Forecasting Program," 7.

27. It should be noted that GM did not have an inventory costing system for financial reporting, notwithstanding the mention here of the company "applying fixed costs to units produced." The full-absorption unit cost calculations mentioned here were used to evaluate prices and to control operations, never to calculate the bookkeeping transfers that one often associates with manufactured product inventory valuation. GM did not need inventory cost accounting systems for the simple reason that they had neither work-in-process nor finished goods inventories. Work-in-process inventories were absent because the assembly lines were empty at the end of a normal 16-hour workday; finished goods were absent because vehicles were "sold" to the GM Acceptance Corporation the moment they rolled off the assembly line.

28. Alfred Sloan remarked once that "an alternative approach to our standard-volume policy would have been to evaluate prices strictly in terms of actual unit costs at actual or anticipated production levels." However, "the use of the actual unit-cost type of evaluation would have been socially and economically unsound," he argued, because of the industry's cyclical demand and the company's high fixed costs. Naturally, "unit costs would drop in times of high volume and increase during periods of low production. Any attempt to raise prices during periods of low volume, even if competition permitted, to recover the higher unit costs could have deflated sales still further, with the result of still lower profits, less employment, and a generally depressive effect on the economy." See Sloan, *My Years*, 147.

29. Brown, "Pricing Policy Applied to Financial Control," 417–422; Sloan, *My Years*, 146–148; Dan Cordtz, "Car Pricing, . . .," *The Wall Street Journal* (December 10, 1957); Vanderblue, "Pricing Policies," 396–401; and Mark, "Internal Financial Reporting," 34. Homer Vanderblue once suggested that cost does not determine auto price; instead, it determines auto quality. Thus, if division managers regarded the coming year's price as more or less given, they probably coordinated proposed price with standard price by postponing, whenever possible, costly quality (or style) improvements. Vanderblue, "Pricing Policies," 395.

30. Bradley, "Setting Up a Forecasting Program," 13; Sloan, *My Years*, 138.

31. Sloan, *My Years*, 138; Ernest Dale, *The Great Organizers* (New York: McGraw-Hill, 1960), 100.

32. Robert H. Parker, *Management Accounting: An Historical Perspective* (London: Macmillan, 1969), 67–70; David Solomons, "The Historical Development of Costing," in David Solomons, ed., *Studies in Costing* (London: Sweet & Maxwell, Ltd., 1952), 36; on Gillette, see R. H. Raymond, "History of the Flexible Budget," *Management Accounting* (August 1966), 12; on Westinghouse, see Dale, *The Great Organizers*, 151, 165–166, and Brown, "Pricing Policy." "In these annual budgets, fixed and non-variable expenses are treated separately from variable so that the figures can be readily adjusted for changes in volume at any time during the year." (Sloan, *My Years*, 143.) See also Mark, "Internal Financial Reporting," 34.

33. Fordham and Tingley, "Control through Organization and Budgets," 722.

34. For a detailed discussion of this formula and an example of how it was applied to an actual situation, see H. Thomas Johnson, "Management Accounting in an Early Multidivisional Organization: General Motors in the 1920s," *Business History Review* (Winter 1978), 505–510.

35. Examples of these reports are in Mark, "Internal Financial Reporting," 36. Albert Bradley once noted that "on the basis of our forecast we work up a balance sheet and income statement [and] during each month as it develops we make up a daily balance sheet and income account, so that we can tell you this afternoon where we stood at the close of business yesterday." (Bradley, "Setting Up a Forecasting Program," 19).

36. Bradley, "Setting Up a Forecasting Program," 15–18.

37. On this point see Oliver E. Williamson, "Managerial Discretion, Organization Form, and the Multi-division Hypothesis," in Robin Marris and Adrian Wood, eds., *The Corporate Economy: Growth, Competition, and Innovative Potential* (Cambridge, Mass.: Harvard University Press, 1971), 358–359.

38. Sloan, *My Years*, 48.

39. Brown, "Centralized Control with Decentralized Responsibilities," 8.

40. The problem of distinguishing between the division's performance and the division manager's performance is succinctly analyzed in Charles T. Horngren, *Cost Accounting: A Managerial Emphasis* (Englewood Cliffs, N.J.: Prentice-Hall, 1977), 713.

41. Different return on investment targets existed for different products at least since 1910 at the Du Pont Corporation, whose methods provided so many of the basic ideas for GM's post-1921 accounting system. See H. Thomas Johnson, "Management Accounting in an Early Integrated Industrial: E. I. du Pont de Nemours Powder Company, 1903–1912," *Business History Review* (Summer 1975), 198–199.

42. It is notable that division controllers at GM were the only company officials who had dual responsibility; they reported both to the division manager and to the corporate controller. Williamson, *Corporate Control*, chapter 8.

43. Sloan, *My Years*, 409.

44. *32nd Annual Report of the General Motors Corporation, Year Ended*

December 31, 1941, 38–40, 81. Sloan, *My Years*, 407–420. The Bonus Plan provided “the means to attract and to hold in the employ of the Corporation men of proven and potential ability.” (Brown, “Centralized Control with Decentralized Responsibilities,” 13.)

45. For examples of this new interest see Robin Cooper and Robert S. Kaplan, “How Cost Accounting Systematically Distorts Product Costs,” in William J. Bruns and Robert S. Kaplan, eds., *Accounting and Management: Field Study Perspectives* (Boston: Harvard Business School Press, 1987).