This statement was approved for issuance as a Statement on Management Accounting by the Management Accounting Committee (MAC) of the Institute of Management Accountants (IMA). IMA appreciates the collaborative efforts of The Society of Management Accountants of Canada (SMAC) and the work of Dr. Howard Armitage, CMA, of University of Waterloo, and Vijay Jog, of Carleton University, who drafted the manuscript.

Prior to his becoming a member of MAC, Randolf Holst, CMA, was a SMAC staff manager and, in that capacity, supervised and monitored the project, which was brought to conclusion by SMAC staff manager Elizabeth Bluemke. MAC member Thomas E. Huff served on the focus group that provided significant assistance in shaping the final document. IMA thanks the aforementioned individuals and members of the Management Accounting Committee for their contributions to this effort.
# Measuring and Managing Shareholder Value Creation

## TABLE OF CONTENTS

I. Rationale ........................................... 1
II. Scope ............................................. 1
III. Defining Shareholder-Value and Wealth Creation .................................................. 2
IV. Determinants of Shareholder-Value Creation .......................................................... 3
V. The Role of the Management Accountant ................................................................. 5
VI. Techniques for Measuring Shareholder Value .......................................................... 6
   **Value-Creation Measures** ................................................................. 7
   Economic Value ................................................. 9
   The Equity Spread ........................................... 11
   Implied Value ............................................. 12
   Cash Flow Return on Investment .............................................. 12
   **Wealth-Creation Measures** ....................................................... 14
   Total Shareholder Return ........................................ 14
   Annual Economic Return ........................................ 15
   **Hybrid Value/Wealth-Creation Measures** ............................................ 16
   Market Value Added .......................................... 16
VII. Additional Issues Related to Shareholder-Value-Creation Measurement ................. 18
   **Stock Price** ............................................... 18
   **Uncontrollable Factors** ..................................... 18
   **Linkage Between Value- and Wealth-Creation Measures** .............................. 19
VIII. Managing for Shareholder Value .......................................................... 19
   **Ensuring Senior Management Commitment and Support** ................................. 20
   **Creating a VBM Transition Team** ........................................ 21
   **Aligning Incentives to Enable Change** ........................................... 23
IX. Organizational and Management Accounting Challenges ................................... 25
X. Conclusion ................................................ 25

Appendix A: Sample Calculations for Shareholder-Value-Creation Measures

Appendix B: From Earnings to Operating Performance to Value Creation

Bibliography

### Exhibits

- **Exhibit 1:** Corporate Objectives and Value Drivers ............................................ 3
- **Exhibit 2:** Examples of Shareholder-Value-Creation Strategies ................................ 4
- **Exhibit 3:** Comparing Traditional and Value-Based Income Statements ................. 8
- **Exhibit 4:** Rate of Return on Net Assets (RONA) ........................................... 9
- **Exhibit 5:** Financial Drivers of Total Shareholder Return (TSR) .......................... 15
- **Exhibit 6:** Comparison of Shareholder-Value-Creation Measures .......................... 17
I. RATIONALE
More than ever, corporate executives are under increasing pressure to demonstrate on a regular basis that they are creating shareholder value. This pressure has led to an emergence of a variety of measures that claim to quantify value-creating performance.

Why is creating shareholder value suddenly becoming a credo in corporate boardrooms? There are many reasons for this renewed emphasis on measuring and managing shareholder value, prominent among which are the following:

- Capital markets are becoming increasingly global. Investors can readily shift investments to higher yielding, often foreign, opportunities.
- Corporate governance is shifting, with owners now demanding accountability from corporate executives. Manifestations of the increased assertiveness of shareholders include the necessity for executives to justify their compensation levels, and well-publicized lists of underperforming companies and overpaid executives.
- Executives are concerned with self-preservation. Well-publicized hostile takeovers have served notice to all levels of management that weak financial performance is unacceptable and may precipitate a fight for corporate control. This potential loss of control has motivated many executives to better understand the importance of measuring and managing shareholder expectations.

There is also considerable dissatisfaction with existing accounting-based earnings and return measures. Evidence is mounting that accounting measures such as earnings per share (EPS) and profit or growth in earnings do not take into account the cost of the investment required to run the business. Similarly, return-based measures, such as return on assets, often motivate managers to make short-term dysfunctional decisions that encourage underinvestment. Furthermore, neither earnings nor return measures appear to correlate well with actual market values of companies.

II. SCOPE
This Statement compares and contrasts various measures that claim to quantify management’s shareholder-value-creation abilities and describes the issues and challenges faced in order to implement an operating paradigm resulting from these measures—value-based management (hereafter referred to as VBM). This Statement applies to all firms, private and public, large and small, whose managers are interested in creating value for their shareholders/owners. It will help management accountants and others to:

- understand the fundamental concepts of shareholder-value creation;
- link value creation to shareholder-wealth maximization;
- unravel financial and operational drivers that can lead to improved performance and thereby improve shareholder-value creation;
- understand the differences among a variety of measures that assess management performance within the context of shareholder-value creation and wealth maximization;
- appreciate the organizational and management accounting challenges in implementing VBM to improve shareholder-value creation; and
- broaden shareholder and management awareness of the importance of shareholder-value creation.

*BUSINESS PERFORMANCE MANAGEMENT*

1 VBM is an approach to management whereby the company’s overall aspirations, analytical techniques, and management processes are aligned to help the company maximize its value by focusing management decision making on the key drivers of shareholder value.
The Statement recognizes that several philosophies exist with respect to how organizations perceive the process of shareholder-value creation. The approach taken here places the shareholder at the focal point of all economic activity within the firm, with maximizing shareholder value as the objective of the organization. This does not mean that, in its quest to create shareholder value, other stakeholders, such as employees, customers, suppliers, or the community, are ignored. Quite the contrary. Value-creating firms take decisions that maintain a proper balance between the competing interests of all stakeholders.

Nevertheless, the shareholder is the central stakeholder. Placing the shareholder at the focal point of business activity is simply recognizing the fact that firms that do not satisfy shareholder requirements increase their risk of capital flight, higher interest rates, pressure from the board of directors, takeovers, and lower productivity. Organizations that create long-term shareholder value simultaneously create relatively greater value for all stakeholders. Thus, value-creating organizations appear to operate with the following objective function in mind: 

\[ \text{Maximize shareholder wealth subject to satisfying remaining stakeholder requirements.} \]

### III. DEFINING SHAREHOLDER-VALUE AND WEALTH CREATION

From the economist’s viewpoint, value is created when management generates revenues over and above the economic costs to generate these revenues. Costs come from four sources: employee wages and benefits; material, supplies, and economic depreciation of physical assets; taxes; and the opportunity cost of using the capital.\(^2\)

Under this value-based view, value is only created when revenues exceed all costs including a capital charge. This value accrues mostly to shareholders because they are the residual owners of the firm.

Shareholders expect management to generate value over and above the costs of resources consumed, including the cost of using capital. If suppliers of capital do not receive a fair return to compensate them for the risk they are taking, they will withdraw their capital in search of better returns, since value will be lost. A company that is destroying value will always struggle to attract further capital to finance expansion, since it will be hamstrung by a share price that stands at a discount to the underlying value of its assets and by higher interest rates on debt or bank loans demanded by creditors.

Wealth creation refers to changes in the wealth of shareholders on a periodic (annual) basis. Applicable to exchange-listed firms, changes in shareholder wealth are inferred mostly from changes in stock prices, dividends paid, and equity raised during the period. Since stock prices reflect investor expectations about future cash flows, creating wealth for shareholders requires that the firm undertake investment decisions that have a positive net present value (NPV).

Although used interchangeably, there is a subtle difference between value creation and wealth creation. The value perspective is based on measuring value directly from accounting-based information with some adjustments, while the wealth perspective relies mainly on stock market information. For a publicly traded firm these two concepts are identical when (i) management provides all pertinent information to capital markets, and (ii) the markets believe and have confidence in management.

---

\(^2\) Opportunity cost is often referred to as the cost of capital. It is an opportunity cost because it represents a foregone return on an alternative investment opportunity of equal risk.
IV. DETERMINANTS OF SHAREHOLDER-VALUE CREATION

To create value, management must have a deep understanding of the performance variables that drive the value of the business. Called key-value drivers, there are two reasons why such an understanding is essential. First, the organization cannot act directly on value. It has to act on things it can influence, such as customer satisfaction, cost, capital expenditures, and so on. Second, it is through these drivers of value that senior management learns to understand the rest of the organization and to establish a dialogue about what it expects to be accomplished.

A value driver is any variable that significantly affects the value of the organization. To be useful, however, value drivers need to be organized so that management can identify which have the greatest impact on value and assign responsibility for their performance to individuals who can help the organization meet its targets.

Exhibit 1 shows the linkage between corporate objectives and four categories of value drivers.
- Intangibles
- Operating
- Investment
- Financial

EXHIBIT 1. CORPORATE OBJECTIVES AND VALUE DRIVERS

Source: Adapted from Rappaport 1986
In the exhibit, the objective of management is to provide consistent and positive shareholder value. Positive shareholder value results from improving cash flow from operations and minimizing the cost of capital by making optimal capital structure decisions. The cash flow from operations is determined by the value drivers and is affected by operational and investment decisions taken by management.

Exhibit 2 shows the implications of this framework for value-creating strategies as they relate to the financial and operational value drivers. The second column shows the value drivers and the third column shows the various underlying strategies that positively influence these drivers.3

### EXHIBIT 2. EXAMPLES OF SHAREHOLDER-VALUE-CREATION STRATEGIES

<table>
<thead>
<tr>
<th>To Achieve</th>
<th>Value Drivers</th>
<th>Strategic Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>An increase in cash flow from operations</strong></td>
<td>higher revenues and growth</td>
<td>patent barriers to entry, niche markets, innovative products, etc.</td>
</tr>
<tr>
<td></td>
<td>lower costs and income taxes</td>
<td>scale economies, captive access to raw materials, higher efficiencies in processes (production, distribution, services) and labor utilization, effective tax planning, etc.</td>
</tr>
<tr>
<td></td>
<td>reduction in capital expenditure</td>
<td>efficient asset acquisition and maintenance, spin-offs, higher utilization rates of fixed assets, efficient working capital management, divesture of negative-value-creating assets, etc.</td>
</tr>
<tr>
<td><strong>A reduction in capital charge</strong></td>
<td>reduced business risk</td>
<td>consistent and superior operating performance compared to competitors, long-term contracts, project financing, etc.</td>
</tr>
<tr>
<td></td>
<td>optimize capital structure</td>
<td>achieving and maintaining a capital structure that minimizes the overall costs, optimizes tax benefits, etc.</td>
</tr>
<tr>
<td></td>
<td>reduced cost of debt</td>
<td>reducing surprises (volatility of earnings), designing niche instruments, etc.</td>
</tr>
<tr>
<td></td>
<td>reduced cost of equity</td>
<td>consistent value creation</td>
</tr>
</tbody>
</table>

3 It should be noted that reducing (and measuring the reduction of) the cost of capital is indeed a very difficult task and management should focus more on increasing operating cash flows than on reducing the cost of capital.
There are many examples of firms employing one or many of these strategies to create shareholder value. The 3M Company does it by continuously introducing new products; Corel does it by bringing quality products to market very quickly, usually with more functionality and at a cheaper price than its competitors; Sony does it by introducing high-quality products to the market for which consumers are willing to pay a higher price. Each organization uses its respective competitive advantages to dominate their product markets, so that as long as their operations and capital continue to be managed effectively, incremental shareholder value will be created. In reality, successful firms employ a combination of these strategies to achieve competitive advantages, which in turn create value for their shareholders.

However, not every strategy, although well-intended and even well-executed, results in shareholder-value creation. For example, it may not be sufficient to simply introduce new and innovative products at an attractive price. Although this may result in increased market share and high revenue growth, unless there is sufficient competitive advantage to permit these new revenues to exceed the required additional investment and expense, value may actually be destroyed. Similarly, not all total quality management (TQM) and customer satisfaction programs are successful in creating value. As has been shown by the examples of the Wallace Corporation and Florida Power & Light, winning the Baldrige or Deming award does not automatically place the company’s management in the shareholder hall of fame.4 Quite clearly none of these strategies is likely to successfully increase shareholder value unless it is implemented in an area of a sustainable competitive advantage.

The linkage between strategy and value creation can be summarized by two simple laws of value creation. The first law is that management must create value for shareholders. The second law is that all other stakeholders should also be satisfied in a way that contributes to shareholder value. The company’s ability to continue to attract capital by providing incremental value to shareholders is exactly what will allow it to continue to provide attractive products to its customers, attractive employment to its staff, and opportunities for its suppliers.

If a company can offer attractive and challenging work to its staff, in a healthy and positive environment, perhaps it can lower the cost of compensation. If customers are always served better but at no incremental cost, market share can be protected. These attributes also create competitive advantage, which in turn is a prerequisite for creating shareholder value.

The key is to understand and manage the interrelationships among what customers are willing to purchase, what employees perceive to be appropriate rewards, and, ultimately, what shareholders view as delivered value. The success of VBM hinges on management’s ability to balance the sometimes conflicting notions of value between the three principal partners: customers, employees, and shareholders.

V. THE ROLE OF THE MANAGEMENT ACCOUNTANT

Management accountants have, for years, been concerned with financial drivers like profit margins, capital utilization, and financing structures. This specific knowledge, plus the broadening of man-

4 The Wallace Corporation won the Baldrige award for outstanding quality in 1989. In 1991, it declared bankruptcy. Florida Power & Light won the even more prestigious Deming award in the early 1990s and was only saved from the same fate when it realized that the costs of its quality efforts vastly exceeded the benefits shareholders were receiving from them.
agement accounting responsibilities that has been taking place in the last decade, mean that management accountants play an important role in the planning, implementation, and measurement of shareholder-value creation. While the degree of involvement will vary, seven focal points seem particularly pertinent.

- **Assessing the Potential of VBM** – Management accountants can assess whether their organizations can successfully implement a VBM approach. Characteristics that lead to a positive environment include: a senior management commitment to maximizing shareholder value (a value-creation mindset), a dissatisfaction with accounting-based measures, a desire to align performance objectives and value, and an interest in creating stronger links between pay and performance.

- **Communicating the Fundamentals of Shareholder-Value Creation** – Management accountants fill an important role in educating personnel on what VBM is, the strategies that lead to value creation, the key drivers of value, the measures of value, and how an individual’s work can support a VBM initiative.

- **Measuring Shareholder Value** – Once particular shareholder-value-creation measures have been selected, the management accountant considers which adjustments to traditional income statement reporting formats may be necessary to make value-based calculations. Adjustments such as deferred taxes, goodwill amortization, research and development expenditures, and unusual loses or gains cause value-based measures to differ from accounting-based statements.

- **Linking Value Measures to Financial and Operational Drivers** – Management accountants play an important role in helping operations personnel develop measures that are linked to, and promote, shareholder value. The task of the management accountant is to focus these measures so that everyone in the organization is pointing in the same value-enhancing direction.

- **Assisting in Designing Performance Measurement Systems** – Management accountants have an important role to play in designing, explaining, and maintaining the performance measurement systems necessary to provide the right value-creating signals to management. This is a critical area because in many organizations traditional performance measurement systems may reward dysfunctional behavior — behavior that leads to value destruction.

- **Assisting in Setting Value-based Compensation Plans** – Increasingly, boards of directors and shareholders are requiring that compensation (particularly of senior managers and officers) be linked to value-based measures. Management accountants can provide valuable advice on the development and implications (what-if scenarios) of various value-based compensation strategies that may be under consideration.

- **Assisting in Evaluating Value-creating Strategies** – Management accountants are being called upon more often not only to measure outcomes, but also to use their expertise to evaluate new and existing initiatives. By understanding the components that lead to value improvement, management accountants are in the position to determine whether new and existing projects lead to positive NPV.

### VI. Techniques for Measuring Shareholder Value

The measures available to management and shareholders to gauge a firm’s value-creation performance can be separated into three broad categories. The first category includes those appraisals which rely mainly on the financial statements produced by the firm, but require an
estimation of the cost of capital and a variety of other adjustments to traditional income statements and balance sheets to reflect operating cash flows and an appropriate capital base—these can be termed value-creation measures. The second category of measures includes those that rely exclusively on stock market data and, thus, are mainly applicable to exchange-listed companies. These can be termed wealth-creation measures—they concentrate on the impact on shareholder wealth and use that as an indirect measure of annual (or periodic) performance. The third set of measures are hybrid value/wealth-creation measures and require both financial statement and stock market data.\\(^5\\)

Company differences in financial sophistication, internal reporting capabilities, and business characteristics create a need for tailored value-measurement approaches. The techniques differ along a number of dimensions, including:
- the simplicity/accuracy trade-off implied in each;
- management’s ability to understand and control the measures; and
- the complexity required for implementation.

The respective merits of these techniques have provoked a debate over and above discussion of shareholder value generally. None of the alternatives is perfect; even the most sophisticated fuel debate.

**Value-creation Measures**

Value-creation measures require some rewriting of the financial statements to undo any adjustments made by the firm to satisfy external reporting requirements for generally accepted accounting principles and to bring the reported earnings closer to cash flows. Exhibit 3 compares the traditional income statement and value-based formats.

The traditional income statement provides no indication as to whether the earnings generated by the firm’s met investor expectations based on the firm’s business risk and leverage risk. It simply provides an earnings number, popularly called the bottom line. Typically, if the bottom line is positive, the firm is said to have done well.

Yet, firms that show a positive bottom line in a traditional sense may in fact have destroyed value. For example, a large Canadian integrated oil and gas firm showed a bottom line earnings of $514 million according to its published financial statements. However, its value-based view indicates that it destroyed $492 million of economic value. Similarly, an analysis of 639 Canadian firms in the nonfinancial sector in 1994 shows that they earned $18.8 billion (traditional earnings) in total; however, the economic value amounted to minus $6.2 billion.\\(^6\\)

---

\\(^5\\) Value cannot be short term, but other measures can be. Earnings per share (EPS) or return on equity (ROE) are usually used in a myopic way by overly concentrating on the impact of accounting earnings. Furthermore, earnings tend to focus mainly on managing the income statement and places low weight on the actual amount and timing of cash flows.

Sufficient evidence exists to indicate that not only are these measures theoretically inadequate, but, more importantly, there is an increasing body of empirical evidence that shows that these measures have little relation to share prices or market value of the firm. (See Armitage and Jog, 1996.) All standard textbooks in corporate finance describe the theoretical inadequacies of these measures; empirical evidence is now available in the standard material of many consulting firms.

The value-based view explicitly recognizes the capital charge associated with the use of capital. The bottom line under this format is, therefore, quite different from that under the traditional view. A positive bottom line—economic value—signifies a superior performance because it accounts for all four types of costs (see page 2) including that associated with capital.\(^7\)

The value-based income statement concentrates on the operating performance of the firm by focusing on cash flow from operations and accounts for interest expense through capital charge calculations. Thus, it adjusts taxes as if the firm were all equity financed. This view is consistent with the free-cash-flow\(^10\) view.

### EXHIBIT 3. COMPARING TRADITIONAL AND VALUE-BASED INCOME STATEMENTS

<table>
<thead>
<tr>
<th>Traditional Income Statement</th>
<th>Value-Based Income Statement(^8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>Revenues</td>
</tr>
<tr>
<td>less: Cost of Goods Sold</td>
<td>less: Cost of Goods Sold</td>
</tr>
<tr>
<td>equals: Gross Profit</td>
<td>equals: Gross Profit</td>
</tr>
<tr>
<td>less: Depreciation, Sales &amp; Administration, and Other</td>
<td>less: Depreciation, Sales &amp; Administration, and Other</td>
</tr>
<tr>
<td>equals: Profit Before Interest and Taxes (PBIT)</td>
<td>equals: Profit Before Interest and Taxes (PBIT)</td>
</tr>
<tr>
<td>less: Interest</td>
<td>less: Adjusted Taxes</td>
</tr>
<tr>
<td>equals: Profit before Taxes</td>
<td>equals: Net Operating Profit After Taxes (NOPAT)</td>
</tr>
<tr>
<td>less: Taxes</td>
<td>less: Capital Charge(^9)</td>
</tr>
<tr>
<td>equals: Net Income</td>
<td>equals: Economic Value Added</td>
</tr>
</tbody>
</table>

\(^7\) It is noteworthy that current auditing or regulatory requirements do not require a firm to produce such a value-based view when, in fact, it is a more accurate assessment of firm performance. Also, rarely in an annual report can one find a value for the capital charge or a number for cost of equity and cost of capital.

\(^8\) This is a very simple view of the firm’s income statement. For the time being, the issues of economic depreciation and the variety of adjustments required to both income statement and balance sheet to arrive at value-based NOPAT are ignored. See Appendix B for a discussion on these specific adjustments.

\(^9\) Capital charge equals weighted average cost of capital (WACC) times invested capital or capital base. This represents the opportunity cost for using the funds provided by shareholders and debt holders. In other words, it is the amount of profit investors require to compensate them for the riskiness of the business, given the amount of capital invested. WACC represents weighted average cost of after-tax debt costs and estimated cost of equity weighted by their proportional importance. Invested capital equals net fixed assets plus net working capital, representing the total investment made by the firm's shareholders and bond holders. (See any standard corporate finance textbook for a detailed example of how to calculate WACC. The detailed discussion of WACC is beyond the scope of this Statement.)

\(^10\) Free-cash flow is a company’s true operating cash flow. It is the total net after-tax cash flow generated by the company and is available to all providers of the company’s capital, both creditors and shareholders.
The value creation measures considered are:
- Economic Value; 11
- The Equity Spread;
- Implied Value; and
- Cash Flow Return on Investment and Value- 
  Creation Potential.

Economic Value
The use of economic value (EV) as a measure of 
business unit and company performance has 
become increasingly widespread in recent years. 
In North America, it has been adopted in various 
forms by a number of large companies, including 
Coca-Cola, AT&T, Kellogg, and Scott Paper as 
their principal measure of profitability, replacing 
operating income and net earnings as the focus 
of management’s attention.

The origin of EV measures can be traced to 
Ricardo in the mid-1800s who used the term super 
normal rent to describe EV. In the mid- 
1920s General Motors used a measure called 
residual income to indicate the amount of income 
left over after paying for the various components 
of costs including a charge for capital. Although 
used by management accountants for many 
years, it was revived by the PIMS project and pop- 
ularized by Bennett Stewart12 who redefined it as 
economic value added and by Copeland et al. as 
economic profits. Since then this term has also 
been defined as economic value creation and 
shareholder value added by others. 13

---

11 Economic value measures include residual income, 
economic value added, shareholder value added, economic 
profit, and economic value creation. These measures 
are expressed in dollars. The rest of the Statement uses the term 
economic value (EV) to describe these measures.


13 The basic concept was first proposed by Alfred Marshall 
in the 1880s and was further mentioned by Peter Drucker in 
1964. Recently, it has also surfaced in academic accounting 
literature and is known as the Edwards-Bell-Ohlson (EBO) or 
the Feltham-Ohlson framework—see Bernard (1995). Frenkel 
and Lee (1996) show the equivalence between the EBO 
model and the economic-value model.
The key difference between EV measures and traditional measures of performance such as after-tax rate of return on net assets (RONA) as illustrated in Exhibit 4 (see page 9) is that EV accounts for the cost of capital and expresses the value-creation performance in easily measurable units—dollars. Rather than saying that RONA increased from 13 percent to 14 percent in a particular period and letting the reader infer its value-creation implications, it is much easier and intuitively appealing to state the firm created $100 of shareholder value.

In certain firms, managers’ compensation is tied to RONA and there have been instances where managers have foregone investment opportunities that had the potential to generate returns higher than the cost of capital (i.e., value-creating decisions) to protect the minimum level of RONA required to receive bonuses. Moreover, unless a specific cost of capital is used to compare RONA, managers cannot know whether they have created value.

EV measures have some additional advantages: first, by explicitly recognizing the importance of capital and its associated costs, it motivates a capital-usage discipline. Second, it clearly shows the linkage between the operating-margin performance and capital intensity, and thereby can be used to better pinpoint opportunities for improvement as well as to assess the appropriate level of investment to achieve these improvements. Third, it can easily link value drivers such as price and product mix to value creation. Fourth, it is consistent with the standard discounted cash flow (DCF) or the NPV framework. Fifth, and more importantly, since EV is an annual measure, it can be used to evaluate managerial performance and to provide incentives.14 However, there are also some challenges in the actual calculation of all of the EV measures. These challenges arise because the actual calculations may require that precise estimates of the cost of capital be derived and several adjustments to the financial statements be made.15 (See Appendix A for a discussion of these specific adjustments.)

The exact number and magnitude of adjustments required to convert the published numbers to value-based numbers depends upon the specific situation. In general, four key principles should be followed:

1. First, cash flow from operations must be derived by making the necessary adjustments to reported earnings. Thus, any noncash charges to reserves or write-offs affecting the income statement (and balance sheet) must be reversed.
2. Second, appropriate attention must be given to accounting for expenses that can be construed as investments in the future. For example, research and development expenses, which are usually treated as an expense of the period, can be considered as an investment in the future. In such cases, only a portion of the R&D cost should be expensed in a given year; the rest may be capitalized and added to the asset base (and expected to earn the cost of capital). Similarly, expenditures on large construction projects or major research and

---

14 From a present value context (i.e., for valuing a project or a firm), the DCF method provides an identical NPV to that calculated by discounting EVs. DCF is a well-known capital budgeting tool that is almost exclusively used at the project level. Thus, it provides a one-time (today) value of an investment to be undertaken. EV, on the other hand, provides an annual measure and can be used at the project/business/firm level.

15 Although many such adjustments may be required, experience indicates that not more than five to six adjustments may be economically relevant. Examples of such adjustments can be found in Copeland, Koller, and Murrin (1996, 213) and Stewart (1991).
development initiatives generally have a long time-to-market cycle and may not generate immediate cash flow yet consume capital.

- Third, the asset base must reflect the replacement value of the capital and must not be affected by goodwill write-offs, asset write-offs, or a highly depreciated fixed asset base whose book values do not reflect replacement or market value, etc. The idea is to ensure that the capital base used to calculate the capital charge reflects the true underlying capital being used in the business.

- Fourth, and most important, all adjustments must be material, transparent, and have an impact on managerial decision making.

In essence, the firm may well have three sets of books: one to satisfy auditing and reporting requirements, a second to satisfy the tax authorities, and a third—value-based books—to be used in making value-creating decisions. It should also be noted that this third set reflects an economic-value number that is different from reported earnings and free-cash flow; some care is required in its derivation and interpretation. Fundamentally, there is a trade-off between simplicity and accuracy. A very complex calculation with myriads of adjustments will fail because of an inability to understand it. Managers will not abide by a measure that they cannot control or understand. (A detailed example of how to calculate EV is provided in Appendix A.)

While EV is a better measure of financial gain than the traditional income statement, it is still subject to malfunction. Experience shows that financially oriented measures and incentives based solely upon these measures can result in people taking the shortest, most expedient path to personal gain. This path often does not include such important initiatives as strengthening and building long-term customer relationships, protecting the company’s brand image as a franchise or as an employer, or investing for future growth and potential. A careful alignment of incentives to long-term EV creation is necessary to avoid this scenario (see Section VII).

**The Equity Spread**

Another measure of shareholder-value creation is the one proposed by Marakon Associates—the equity spread. This measure considers the difference between the ROE and required return on equity (cost of equity) as the source of value creation. This measure is a variation of the EV measures.

Instead of using capital as the entire base and the cost of capital for calculating the capital charge, this measure uses equity capital and the cost of equity to calculate the capital (equity) charge. Correspondingly, it uses economic value to equity holders (net of interest charges) rather than total firm value.

For an all equity firm, both EV and the equity spread method will provide identical values because there are no interest charges and debt capital to consider. Even for a firm that relies on some debt, the two measures will lead to identical insights provided there are no extraordinary gains and losses, the capital structure is stable, and a proper re-estimation of the cost of equity and debt is conducted. (A detailed example of how to calculate the equity spread is provided in Appendix A.)

A market is attractive only if the equity spread and economic profit earned by the average competitor are positive. If the average competitor’s equity spread and economic profit are negative, the market is unattractive.
Implied Value
The implied value measure was popularized by the Alcar Group and is similar to discounted future market value (DFMV) proposed by the Strategic Planning Institute. In this framework, the emphasis is not on annual performance but on valuing expected performance. The implied value measure is akin to valuing the firm based on its future cash flows and is the method most closely related to the DCF/NPV framework.

With this approach, one estimates future cash flows of the firm over a reasonable horizon, assigns a continuing (terminal) value at the end of the horizon, estimates the cost of capital, and then estimates the value of the firm by calculating the present value of these estimated cash flows. This method of valuing the firm is identical to that followed in calculating NPV in a capital-budgeting context. Since the computation arrives at the value of the firm, the implied value of the firm's equity can be determined by subtracting the value of the current debt from the estimated value of the firm. This value is the implied value of the equity of the firm.

To estimate whether the firm's management has created shareholder value, one subtracts the implied value at the beginning of the year from the value estimated at the end of the year, adjusting for any dividends paid during the year. If this difference is positive (i.e., the estimated value of the equity has increased during the year) management can be said to have created shareholder value.

The use of a change in the implied values as a measure of value creation differs in at least two distinct ways from the EV and the equity spread measures of value creation. First, the implied value measure is based on a longer-term view of the business by using the estimates of future cash flows. Thus, the change in its value across two years may be different from the economic value estimated under the first two methods. Since forecasts are used, it suffers from the same problem as that of the DCF/NPV framework: forecasts can be manipulated to show desired results.

Second, for exchange-listed companies, if capital market participants have similar forecasts to those of business managers, the implied value measure should provide the same outcome as the market value of the firm's equity. If that is the case, it may be easier to use the changes in the market value of the firm as the measure of value creation and not worry about estimating future cash flows. If that is not the case, the difference between the two values (value gap) may require further investigation.

However, despite these differences, the underlying logic behind the implied value measure provides an almost similar decision-making framework as the one resulting from the EV and equity spread measures. Value is created if management's decisions generate cash flows over and above the cost of capital and the firm is able to sustain this performance over a long time period. (See Appendix A for a detailed example of the implied value measure.)

Cash Flow Return on Investment
Many investors are of the opinion that a company is of little use to them unless it has the capacity to produce cash. These supporters of cash flow measurement and analysis claim that it makes company managers think more like shareholders because it concentrates their attention on the actual value of the company. Managers are forced to decide, for instance, whether they can reinvest the capital the company generates at a
level that adds value. If they cannot, they are likely
to either give it back to shareholders in the form
of dividends or buy back the company’s shares,
which can be expected to raise the value of those
still in circulation.

One method of measuring and analyzing company
cash flow is the approach followed by the Boston
Consulting Group and Braxton Associates called
CFROI (cash flow return on investment). CFROI
represents the sustainable cash flow a business
generates as a percentage of the cash invested
in the business.\(^\text{17}\) This cash flow on cash invested
can be expressed as an internal rate of return
(IRR) over the normal economic life of the assets
involved. The difference between this return and
the cost of capital reflects the firm’s value-
creation potential (the more positive the spread,
the higher the potential). The changes in the
CFROI across years can then be used as an
indicator of the firm’s annual performance.

The appeal of CFROI and other metrics that
focus on cash generation is that they help
managers get a clear picture of a business unit’s
capital efficiency. Unlike traditional accounting
measures such as return on assets, for example,
CFROI looks at the true cash amounts invested.
CFROI is not fooled by devices used to enhance
accounting returns, such as operating leases,
and it is not distorted by current or historical
inflation. This helps managers judge whether a
unit’s ability to create value can be enhanced
through expansion, reduced capital allocation, or
assorted efforts to boost profitability.

Assessing the long-term cash flow that the
company is likely to generate is not straight-
forward. Calculating CFROI requires: converting
accounting data (income statement and balance
sheet) into cash in current dollars, calculating
cash flows in current dollars (accounting for infla-
tion adjustments on monetary or near-monetary
assets such as inventories), estimating the
normal life of the assets, calculating the value of
the non-depreciating assets at the end of the
horizon, and then calculating the internal rate of
return. In addition, assumptions regarding the
business environment, industry trends, etc. will
have to be made. The expertise to develop such
long-term scenarios may not be present in
many companies, particularly smaller ones. The
difference between this return and the real cost
of capital is termed the CFROI Spread; a positive
spread reflects a positive expected value
creation performance.

The CFROI methodology can also be used in
valuing the firm by estimating annual CFROIs
over the estimated period rather than estimating
the CFROI value using current values. These
estimates for a variety of industrial sectors are
provided by consulting companies, which use
this method in valuation. The changes in the
estimated value across individual years (by
re-estimating value at the beginning and at the
end of the year) can be considered synonymous
with value-creation performance in that year.\(^\text{18}\)

The period of cash flow that will need to be
explicitly forecast is industry specific, but it is
unlikely to be much less than five years except in
the case of the most stable of environments.
The cash flows should be forecast far enough
out of steady state to be a reasonable approxi-
mation of forecast reality. This steady state
needs long-run average economic conditions, so
organizations need to be careful that they are
not forecasting on the basis of either boom or
slump conditions continuing indefinitely.

---

\(^\text{17}\) When inflation is a significant factor, both cash flow and
cash invested are expressed in current dollars.

\(^\text{18}\) Boston Consulting Group also uses a modified version
of CFROI called Total Business Return (TBR). Rather than
adjusting for inflation, current costs of assets are used in
calculating TBR. For details, see Shareholder Value
Looking at cash flow is not the cure for all ills, however. It can become extremely complex and is probably way out of reach for ordinary investors. But a large segment of the institutional investment community now uses it as a matter of course, and management is more frequently perceiving a real value in looking at their businesses this way. (See Appendix A for a detailed example of how to calculate CFROI.)

Asking whether CFROI is better than EV is like asking whether a Cadillac is better than a Lincoln Town Car. There are trade-offs to each approach. CFROI provides a longer-term perspective but is complex; EV is relatively easy to use but is an annual measure.

Wealth-Creation Measures

Wealth-creation measures rely entirely on the stock market and do not require any analysis of the firm’s financial statements for calculating value-creation performance. Thus, they are primarily applicable to exchange-listed firms and are not useful for individual subsidiaries within the firm or for privately held firms.

The principle behind their use is simple: it is assumed that capital markets are, on average, capable of pricing all securities efficiently. The price of a common share of any firm is determined through the market’s expectations about the firm’s (expected) value-creation abilities. The higher the potential, the higher will be the share price relative to the capital invested. With that premise, a measure of the firm’s managerial performance can be gauged by the rate of return earned by shareholders from their investment in the shares of the firm. Since changes in share price reflect the changes in investor expectations about future performance, these changes can be used as a surrogate for the annual value-creation performance. Two wealth-creation measures considered are:
- Total Shareholder Return; and
- Annual Economic Return.

Total Shareholder Return

A useful summary measure for estimating the annual wealth-creation performance is the total shareholder returns (TSR) concept that shows the relative wealth creation of firms within a homogenous group. This return is simply the rate of return earned by a shareholder through a combination of price changes and dividends received.

The TSR measure allows managers to make appropriate trade-offs among profitability, growth, and free-cash flows and to measure a unit’s contribution to the overall company capital gain and dividend yield to investors.

Because it is possible that this return may be affected by overall capital market conditions rather than any specific decisions made by management, TSR typically is compared on a risk-adjusted basis with a peer group and/or a widely used benchmark (such as the TSE300 or S&P500) for evaluating relative performance. If the relative performance is positive, one may conclude that the capital market has responded favorably to managerial decisions made in that year, and, in turn, management has created shareholder value. This measure is based entirely on the market’s perceptions about a firm’s future performance.

In Exhibit 5, a firm’s TSR is split into three component financial drivers. Its profitability (ROI) and growth in invested capital are the two key-value drivers of capital gains. Companies generating high returns on their invested capital
(i.e., ROIs above investor’s required rate of return) achieve stock-price increases when they are able to invest more capital at these high ROIs. An alternative strategy is exemplified by companies that increase their return on invested capital, which also drives relatively superior TSRs for their shareholders through capital gains performance. The third driver of a relatively superior TSR is free-cash flow. (A detailed example of how to calculate TSR is provided in Appendix A.)

Annual Economic Return

Another wealth-creation measure is the annual economic return (AER).19 The AER explicitly accounts for both dividends and externally raised capital as well as the timing of these decisions to calculate a firm’s annual wealth-creation performance. The rationale behind this measure is as follows: assume that at the end of each year, management has a choice of liquidating the firm at the market value of equity (net of any debt). Shareholders receive this liquidated amount and can invest the proceeds in other investments. Alternatively, management may believe that it can do better by continuing to operate the business.20 In this scenario, management continues to run the business, pay dividends, and raise external capital as and when required. The wealth-creating ability of management can be evaluated by comparing the return it generates with what it could have accrued to shareholders under the liquidation scenario.

The AER method requires an estimation of the shareholder’s alternative investment rate, which, in theory, is the cost of equity capital corresponding to the riskiness of the firm—an estimation challenge that is also faced by value-creation measures. Even the TSR method is not immune to this challenge; ideally, the actual TSR should be compared with the expected TSR—the required rate of return by shareholders or, in other words, the cost of equity capital.

19 See Jog and Halpern (1996), which shows a ranking of Canadian firms based on this measure.

20 While debatable, readers who still remember their corporate finance textbooks can see that this description is the Miller-Modigliani proposition on dividend policy.
The main benefits of the AER measure over the TSR measure are that it accounts for the amount and timing of dividends and external capital raised and also for the differences in opportunity costs across firms. (See Appendix A for a detailed example of how to calculate AER.)

**Hybrid Value/Wealth-Creation Measures**

Hybrid value/wealth-creation measures require information from both the financial statements and the stock market. In essence, these measures evaluate a firm’s performance by comparing the market value of the firm (equity) with the invested capital (equity). By comparing a company’s current value with the capital that has been invested in the company since its formation, the investment community can tell if a firm is creating wealth or wasting it—even destroying it.

The difference between the market value of the firm (equity) and the adjusted capital (equity) can be thought of as a crude proxy for the net wealth creation by a firm’s management. In efficient capital markets, this difference represents the market valuation of a firm’s investment opportunity set. The most common hybrid value/wealth-creation measure is market value added.

**Market Value Added (MVA)**

MVA requires adjusting all capital (debt and equity) and reflects capital market expectations about the firm’s future value-creation performance. The value of capital can be adjusted to ensure that it reflects the cumulative capital invested by the firm’s capital providers. For example, if the reported book value may have been affected by written-off extraordinary and normal losses, one must adjust the book value upward accordingly.

A modification of this approach is to use the market value of the firm’s equity less the adjusted invested shareholder capital. This is often used since the market value of debt is generally unavailable. It requires adjusting for negative changes to equity in the past and is affected by share price and reflects capital market expectations about the firm’s future value-creation performance. The market value of a firm’s equity can be calculated by multiplying the number of all outstanding shares times the price per share, and market value of the firm can be calculated as the sum of the market value of all outstanding securities—common shares, preferred shares, and debt. The value of capital can be estimated by ensuring that all relevant adjustments (see Appendix B) are made.

Management’s value-creation performance in a particular period can be estimated by calculating the annual change in these two performance measures. This annual wealth-creation performance is simply the incremental wealth created by management for its shareholders over a specific time period. For investors, a crucial insight that MVA offers is to beware of companies that pursue growth for growth’s sake. Unless the capital employed to generate earnings produces more wealth then it costs, MVA tends to stagnate and investors achieve no gain.

When comparing the performance of firms with one another using this measure, it is necessary to adjust for the differences in the size of the firms. This can be done by dividing the change in MVA by the adjusted value of equity (capital) at the end of the previous year of each firm. This is referred to as a standardized value. These standardized values can be used to provide a performance ranking of firms relative to their peers.

MVA is not totally adequate when it comes to a natural resource industry like oil and gas, where resources are not renewable and an asset base
can appreciate in value through time—unlike machinery, factories and manufacturing inventories that depreciate in value. (A detailed example of how to calculate MVA is provided in Appendix A.)

Exhibit 6 compares the various techniques for measuring shareholder-value performance discussed in this Statement.

### EXHIBIT 6. COMPARISON OF SHAREHOLDER-VALUE-CREATION MEASURES

<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>Key Challenges in Estimation</th>
<th>Limitations/Challenges</th>
<th>Other Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Value</td>
<td>- definition of operating economic profit, capital base, and cost of capital</td>
<td>- differentiating between expense and investment</td>
<td>- can be used for compensation design</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- requires a variety of adjustments</td>
<td>- easy for line managers to grasp</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- supports the free-cash flow produced</td>
<td>- can be used for comparisons with other companies</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- takes into account the cost of the firm's invested capital</td>
</tr>
<tr>
<td>Rate of Return on Net Assets</td>
<td>- none if accounting values are used</td>
<td>- inter-divisional comparisons can be difficult</td>
<td>- similar to IRR and NPV metrics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- since it is ratio based and ignores cost of capital, RONA provides no explicit recognition of value creation</td>
<td></td>
</tr>
<tr>
<td>The Equity Spread</td>
<td>- cost of equity and equity base</td>
<td>- ignores capital structure changes</td>
<td>- is consistent with DCF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- since it is just a percentage, it provides no explicit recognition of value creation</td>
<td>- no bias regarding new and old business</td>
</tr>
<tr>
<td>CFROI/Value Creation Potential/Implied or Plan Value</td>
<td>- relies on forecasts future cash flows, terminal value, current value of capital base</td>
<td>- since it is based on forecasts, it does not provide a direct measure of performance</td>
<td>- similar to IRR and NPV metrics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- not useful for compensation design</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- complex and difficult for line managers to grasp</td>
<td></td>
</tr>
<tr>
<td>Total Shareholder Return</td>
<td>- no estimation needed</td>
<td>- not directly related to annual managerial performance</td>
<td>- does not require accounting data</td>
</tr>
<tr>
<td></td>
<td>- requires stock price and dividend information</td>
<td>- requires establishment of peer group for comparison</td>
<td>- directly related to shareholder wealth creation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- not applicable for operational units or private firms</td>
<td></td>
</tr>
<tr>
<td>Annual Economic Return</td>
<td>- must know the amount and timing, external equity raised</td>
<td>- not directly related to annual managerial performance</td>
<td>- same as above for firms raising capital frequently, this is a better measure than TSR</td>
</tr>
<tr>
<td>Market Value Added</td>
<td>- requires adjustment of capital base</td>
<td>- accounts partially for opportunity costs</td>
<td></td>
</tr>
<tr>
<td>Standardized Market Value Added</td>
<td>- determination of capital-adjusted equity value</td>
<td>- does not adjust for size differences for comparisons</td>
<td>- provides an indication of the investors’ expectations about future value-creating performance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- not directly related to annual managerial performance</td>
<td>- can be used for comparisons with other companies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- ignores dividends</td>
<td>- easy for line managers to grasp</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- can be biased against lower return start-up investment; can favor businesses with heavily depreciated assets</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- provides an indication of the investors’ expectations about future value-creating performance</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- can be used for comparisons with other companies</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- adjusts for the size differences for comparisons</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- same as above</td>
<td>- better for comparison across firms</td>
</tr>
</tbody>
</table>
VII. ADDITIONAL ISSUES RELATED TO SHAREHOLDER-VALUE-CREATION MEASUREMENT

**Stock Price**
Both the (pure) wealth-creation measures and the hybrid measures are based on share price and assume that the share price reflects the market’s expectations about the firm’s future value-creation performance. A change in the stock price, and consequently in MVA, is automatically attributed to management’s value-creation performance. However, there are some major problems with using the stock price as the only yardstick of managerial value-creation performance.

First, the overall level of stock market prices may change simply because of macro-economic conditions (e.g., interest rates) in the economy that would affect the prices of all stocks. These changes would have no relation to managerial value-creation performance.

Second, consider a situation where a firm has conducted an exploration program that has resulted in it finding economically proven reserves of oil. Fairly accurate estimates of costs associated with drilling and transporting are available. Based on current prices of oil and future uncertainty in oil prices, the stock market has put a value of $100 million on the firm’s equity at the year end. New management arrives at the beginning of the year and decides to take a holiday for one year. During that year, the world price of oil increases and so does the uncertainty about future prices. Accordingly, the market value of firm’s equity rises to $150 million, representing a TSR and AER of 50 percent and change in MVA of $50 million. However, it is not clear what these changes have to do with managerial value-creation performance, unless one assumes that management’s decision to take a holiday (and not start production) was undertaken with great foresight.

The third problem with stock-market-based measures is that they are unable to identify the value-creation performance of individual subsidiaries and business units. The market price may reflect the market’s expectations of what corporate management would do with the overall firm, but the market price cannot be used to assign a specific value to individual business units that may have wide variations in their value-creation performance. If the intent is to promote value-creating behavior within each business unit, perhaps by linking incentive compensation with wealth-based measures (e.g., stock options), then wealth-based measures based on the share price of the overall firm are simply inadequate. In this case, one must resort to value-creation measures.

**Uncontrollable Factors**
EV measures suffer some disadvantages in regard to uncontrollable factors. For example, a rise in oil price may increase the calculated EV for any given year. Considerable care must be taken to decide when managers get applauded (or blamed, if the reverse happens) for factors not under their control.

Similarly, in periods of rising prices there may be a tendency by management to overproduce in order to benefit from the rise in oil price and to show even higher EV. However, this implies that the firm has exercised the option of investing now rather than later. The value of this exercised option must now be subtracted while estimating economic value.\(^{21}\) Similarly, if proper incentive

---

21 See Dixit and Pindyck (1994, ch. 12).
mechanisms are not in place, and if the focus is only on one year’s EV, then management may take actions that may not be in the best long-term interests of the shareholders.

**Linkage Between Value- and Wealth-Creation Measures**

Because stock prices reflect capital market expectations about the firm’s long-term value-creation performance, it is not necessary that there be a one-to-one correspondence between current value-creation performance and wealth-creation performance as reflected through changes in stock price. The table above shows that there are four possibilities.

The vast majority of firms will be found in the low-low and high-high quadrants. However, even if firms are located in the other two quadrants, it is reasonable to assume that their positions there are transient. In these situations, investors are looking beyond existing EV and making an assessment that current EV will soon change to reflect longer-term market trends.

All three categories of measures can capture the essence of management’s value-creation performance on an annual basis. The value-creation measures reflect the periodic operational performance of management, whereas the wealth-creation measures reflect the periodic change in investor wealth arising from changes in the market’s expectations due to management’s decisions during that period. High MVA shows that a high expected value-creating performance is being rewarded by a higher market value of the firm. However, in all cases these measures quantify performance but do not create performance.

**VIII. MANAGING FOR SHAREHOLDER VALUE**

Companies such as Disney and Coca-Cola are managed formally to create shareholder value. For these companies, the objective of value creation is not simply a slogan appearing as the third or fourth important goal in the mission statement. It is the basis of all major decisions they make. In other words, these companies have a value-creation mind-set in addition to management processes and systems that are necessary to translate that mind-set into action. As introduced earlier, this operating paradigm is often referred to as value-based management.

Value-based management (VBM) is an approach to management whereby the company’s overall aspirations, analytical techniques, and management processes are all aligned to help the company maximize its value by focusing management decision making on the key drivers of shareholder value. VBM does not ensure that all
management’s decisions will be perfect. It does, however, greatly improve the quality of decision making by improving the quality of the alternatives that management has to consider, as well as building into the organization a bias for choosing and implementing the best available alternatives.

VBM may be introduced to an organization for a variety of reasons. There may be a mandate for change because of a deterioration in market position, there may be increasing pressure by institutional shareholders for value-based results, or there may be a belief on the part of senior management that implementing a VBM initiative is a way to focus the organization on a primary objective—the creation of shareholder value—that will permit the organization to develop or maintain a competitive edge. Once the notion of VBM has been introduced, various steps must be followed if effective implementation is to occur. These are:

- ensuring senior management commitment and support;
- creating a VBM transition team; and
- aligning incentives to enable VBM.

**Ensuring Senior Management Commitment and Support**

Before VBM is introduced to the rest of the organization, senior managers, including the CEO and the board of directors, must understand, accept, and be prepared to encourage the technical, behavioral, and administrative changes that VBM requires. As a new, and potentially disruptive, change-management approach, key personnel must familiarize themselves with how VBM concepts and measures can benefit their organization. This is not a trivial task. Despite the popularity of a number of value-based approaches and measures, there have not been a large number of value-creation implementations in North America. For commitment at the highest level to be obtained, senior management and the board of directors should feel confident that the following key benefits will pertain to their organization:

- a VBM framework will be able to create clear accountable linkages between strategies, investments, operations, and stakeholder and shareholder values in the firm;
- incentive compensation can be tied to value creation rather than to accounting results or budget negotiations;
- a VBM framework will permit value-based performance comparisons to be made between competitors and between internal business units; and
- superior VBM performance will be demonstrably linked to maximizing shareholder wealth.

While most organizations could benefit from the adoption of VBM principles, not all will be equally motivated to do so. For example, centralized organizations, non-profit organizations that do not have the same profit-maximizing incentive as firms in the profit sector, firms that can generally be classified as followers rather than leaders, and firms that have senior management who may not be motivated to see their compensation

---

22 The steps outlined are necessarily general in nature. Nevertheless, while each organization may differ on how each is carried out, all are necessary conditions for success.

23 An example of this is provided by a recent survey of EVA (a value-based measure) knowledge and practice in Canada. The survey found that of 405 firms responding, only 6% or 24 firms had implemented EVA. Of these, only four firms had been using EVA for more than two years. See The Society of Management Accountants of Canada, (1995a). There is no similar survey from the United States. In general, however, it would appear that adoption of new initiatives occurs more quickly in the USA than in Canada.
linked to value-based performance, will be less likely to be interested in, or mount, a successful VBM initiative.

Creating a VBM Transition Team
Managing change means managing the communication between the leaders of the organization and those who will be affected by the change. It also means managing the organizational context in which the change to VBM is to occur. Organizations that are truly committed to VBM utilize what might generically be called a VBM transition team.

A VBM transition team is a group of company change agents, reporting to the CEO, who commit all their time to making the transition to VBM a reality. While the CEO must provide the context and communicate the vision of the VBM change program, it is the transition team that translates these high-level objectives and makes sure they are understood and implemented by divisional managers and employees throughout the organization.

Depending on the size of the organization, a VBM transition team should consist of five to eight talented individuals who have the credibility and authority to effect change. The minimum skills set of the team includes information technology, management accounting, human resources, and process engineering. Team members come from different parts and levels within the organization. The head of the team should be an individual who has the confidence of the CEO and one who is perceived by others as having the skill, integrity, and adequate knowledge of the business to move the project forward.

Typically, a VBM transition team is charged with the following responsibilities:

- providing context and guidance;
- promoting dialogue;
- coordinating and aligning;
- ensuring top-to-bottom congruence; and
- recognizing human relations issues.

Providing Context and Guidance
Senior management creates the strategic vision and long-run corporate objectives. However, the vision and goals need to be spread throughout the organization and explained to all levels of employees. The VBM transition team assists this transfer by holding organizational meetings to explain the purpose of VBM and to help others understand how they can align their efforts to support the overall organization initiative. This means linking VBM measures such as EV to key operating metrics like cycle time or inventory turns. To assist in transferring the VBM view, the team should prepare printed (newsletter, brochure, communiques, and posters) matter and presentation and video materials that describe the new initiative.

For example, Coca-Cola, one of the pioneers in managing with VBM principles, has an impressive context-generating brochure that is given out to all its employees. The brochure begins with a one page statement signed by Robert C. Goizueta, chairman, board of directors and CEO, that outlines how EVA assists the organization to achieve its mission of creating shareholder value and how each employee, in turn, must be accountable for the capital entrusted to, and the net income generated by, his or her business unit. In simple, straightforward terms the brochure describes the valuation measure selected by the firm, why it is used, how it works, who is accountable, how the reporting process works, and how individual employees can influence the value created by their own operating units.
Promoting Dialogue
It takes time for people within the organization to be convinced why VBM should be the primary organization paradigm, how it impacts on their day-to-day activities, and why they should become committed to the process. The VBM transition team plays an important role in encouraging and leading this dialogue. At Domtar, for example, over 25 management presentations were conducted before implementation.

Coordinating and Aligning
Part of the role of the VBM transition team is to manage the change process as it begins to take shape throughout the entity. Education plays an important part in ensuring that the ground rules are well understood and that individual business units are pursuing a coordinated strategy of value creation. Both Domtar and Husky offered training to leaders, change agents, managers, and employees to get everyone focused on the reasons for pursuing VBM strategies, how value was calculated in the organization, the range of business unit-level strategies that could be undertaken to improve value, and the economic consequences to both the firm and the employee for successfully achieving value creation. Husky calls this the “Communicate, Communicate” phase and it is the manner in which the VBM team can ensure coordination and alignment of many disparate activities with the overall goals of the organization.

Managers need to be involved in the analysis and not just educated in the results of the analysis. To reinforce this involvement, the coordination and alignment phase is the point where, for example, accountabilities should be changed to provide managers with the authority to manage both cash flows and investments, and interrelationships among business units should be determined and communicated to highlight potential trade-offs at lower levels in the business.

Equally important is the necessity to keep other stakeholder groups, particularly investors, informed about key organizational changes and how they will affect shareholder value. Organizations should identify a target group of influential shareholders and explain the company’s actions and how they will contribute to changes in economic value. To gain credibility, this investor communication program requires full disclosure of relevant data. The goal should be to avoid unnecessary surprises and minimize uncertainty of the investing community.

Ensuring Top-to-Bottom Congruence
Adopting VBM means organization-wide changes in managerial philosophy. To be credible, management must be seen as both “Talking the Talk” and “Walking the Walk.” An important role of the VBM transition team is to ensure that this congruence of goals at all levels is maintained, to be on the lookout for situations in which either management or business units appear to be straying from the course, and to take corrective action to remedy the gap.

Recognizing Human Relations Issues
Along the way to VBM, there will invariably be changed job descriptions, the potential of downsizing, re-engineered processes, and revisions to compensation structures. All of these can lead to heightened tensions, negative effects on morale, and natural human resistance. VBM transition teams should anticipate and be prepared for these issues. For this reason, the membership of the VBM transition team should include individuals from human resources.
Aligning Incentives to Enable Change

A necessary final step involves incentive alignment. This has two elements. First, employees must feel internally committed to the VBM program and be willing to take personal responsibility for making VBM happen. Second, there must be an incentive-compensation system that rewards such behavior.

Because true VBM requires a change in mind-set for decision makers at all levels, it usually takes two years to achieve. During the first year, managers are trained and learn to use the tools of VBM, especially value drivers. The second year solidifies their understanding, and when they become confident that VBM tools really do work, they can accept a switch to value-based compensation systems.

While it is impossible to prescribe an actual compensation design that is applicable in all circumstances, it is possible to provide a framework for a VBM compensation scheme. Specifically, a scheme that meets the following criteria satisfies all the main components of a VBM compensation scheme.

The first criterion is that the performance measure must be tied to shareholder-value creation. This criterion rules out compensation schemes centered on earnings-based measures and those that do not take into account the usage of capital; consequently, measures such as EPS, ROE and EPS growth are eliminated for compensating executives. Also ruled out are measures such as ROT and RONA because they do not account for potential differences in the cost of capital.

The second criterion is that the performance measure should be unambiguous and objectively measurable. This criterion rules out measures like CFROI or plan value (estimated value of future cash flows based on estimates), which depend upon forecasted value and can be manipulated.

The third criterion is that the performance measure must be a measure that can be directly affected by managerial decisions. This criterion questions, but does not rule out, compensation schemes tied to the firm’s share price, such as the use of stock options to reward management. There are at least two reasons for caution. First, it is possible that as a result of an overall bull market, share prices of all companies go up, in spite of the performance of individual managers. If managers are compensated only on the basis of share price, they benefit even though the change in the share price may be lower than the required rate of return demanded by shareholders or lower than the required rate of return of industry peers. One alternative to avoid such a consequence is to evaluate the increase in share price in relative terms; relative to its peers in the same industry rather than using an absolute number. Another would be to base it on AER and use the estimated cost of equity rather than the t-bill rate as the reinvestment rate.

---

24 This is especially relevant where the firm is engaged in diverse businesses. Inadequate attention to the differences in the riskiness in the individual business segments and concentrating solely on RONA would imply that managers in stable, low-risk business units would be adversely penalized and vice versa. Accounting for the differences in the respective cost of capital would alleviate this problem.

25 Under this arrangement, managers are given stock options with an exercise price close to the current market price. They benefit if the stock price goes up and get nothing if the stock price goes down. In this sense, this method is closely tied to shareholder-wealth maximization.

26 There is another problem with this type of mechanism. Empirically, it has been observed that the exercise price of stock options granted to the senior executives is fixed and not adjusted for the opportunity cost of capital. Moreover, in those cases where share prices go down, many firms simply adjust the exercise price downward. These adjustments result in a very generous compensation mechanism for executives irrespective of the performance of the firm’s share price.
The second reason for not relying exclusively on the firm’s share price is actually more important. Since stock-exchange-listed firms are generally larger, the value-creation performance of a specific business unit cannot be observed from the changes in the share prices of the consolidated firm. Thus, linking compensation of managers of individual business units to the share price of the consolidated firm provides no incentive.

Linking the compensation of managers of individual business units to the performance of their own unit and not to the firms share price is also consistent with Porter’s ideas on role of business-unit managers. Porter claims that it is only at the business-unit level (not at the corporate level) that a firm can create value, since this is where it can achieve competitive advantage. If this is indeed the case, then compensation must be closely related to the value-creating performance of individual business units and not to the overall performance of the corporation.

Thus, an absolute reliance on share price as the main determinant of the compensation mechanism may not provide the right degree of motivation for value creation. Measures based on TSR, share price, AER, and MVA must be looked at carefully to ensure that they can actually separate value-creating managers from value-destroying managers.

A fourth criterion is that the measure be transparent and understandable. Managers need to understand what they are being measured against. Some measures require many adjustments to the financial statements, making them difficult to understand.

Other important characteristics of VBM-based compensation systems would include the following: First, managerial compensation should not be based upon annual performance but on the cumulative performance. This ensures that the manager has a long-term horizon and is referred to as banking or having a manager’s investment in the firm. Second, since EV calculations require determination of capital and cost of capital, it is necessary that both of these values be established at the beginning of instituting an EV-based compensation scheme. The value of capital should be close to the replacement (or market) value of the capital employed and a proper cost of capital should be agreed on. This is especially important if the firm has multiple business units facing diverse business and financial risk. Third, the exact definition of NOPAT needs to be agreed upon; treatments of R&D, training, reserves, bad debt losses, etc., require discussion and agreement. Fourth, in a cyclical business, there must be agreement on the horizon over which the EV performance is to be evaluated. This is especially crucial if the compensation scheme is being introduced either at the peak or trough of the cycle. In some instances, a relative measure of EV, relative to comparable companies, needs to be created.

No matter how the final compensation plan is designed and how much weight is given to the EV component, it is clear that in the absence of such value-creation-based incentive systems, there will be a misalignment of interests of shareholders and managers. There exist many examples of managerial behavior that maximize

---

27 Sometimes book value will be high relative to replacement value due to poor decisions undertaken by previous management or decisions made by existing management under a different incentive scheme. In this case, there is a need to make an adjustment at the beginning of the implementation period so as to encourage management’s buy-in.

28 Many variations of this EV-based structure have been employed by firms in North America. A comparison of these structures for six firms - Ball Corp, Briggs and Stratton, CILCORP Cincinnati Milacron, Clark Equipment, and NCR Corp (now a part of AT&T) – is available in the Executive Compensation Reports Vol. 12, 8, August 25, 1992.
current earnings because compensation is based on the bottom line. A proper value-based measurement implementation would require discarding these schemes and implementing a VBM compensation system.

Supporters of VBM sometimes underestimate the problems of implementing this approach in practice. Implementing VBM can be a long and complex process involving much trial and error. Nevertheless, a number of companies have gone through the process and have reaped the benefits.

IX. ORGANIZATIONAL AND MANAGEMENT ACCOUNTING CHALLENGES

Managers would benefit enormously by adopting shareholder-value creation instead of operating income or reported earnings as their basic measure of business performance. While it may be disconcerting to discover that some business units in the portfolio are no longer profitable once forced to recognize their full economic cost, this gives a much more reliable signal of the true economic health of a business than that provided by conventional measures.

The great majority of companies do not have the capability to generate reliable measures of shareholder-value creation across and within business units. This means that corporate and business unit managers are flying blind more often than not when it comes to knowing how or where to look for strategies to increase shareholder value. Changing the management accounting system and educating managers in the use of these new measures may require considerable time and effort.

Managers must learn to discriminate carefully between good growth and bad growth. Good growth results when the shareholders’ money—the equity capital supporting a business unit or the company—is invested in strategies that earn consistently positive equity spreads and, thus, positive economic profit over time. Bad growth is just the opposite. It occurs when the shareholders’ money is invested in strategies that produce a consistently negative equity spread and, thus, economic losses over time.

Most companies must grow to create shareholder value, and achievement of the governing objective will require that the company constantly seek out and invest in new opportunities for good growth. If management does not at the same time control and eliminate bad-growth investments, much of the shareholder value created by its good-growth strategies will be wasted or destroyed.

Management accountants need to understand the various shareholder-value-measurement techniques in terms of their strengths and weaknesses, their impact on management behavior, and their potential fit with the business. As well, management accountants must analyze and apply professional judgment in selecting the most appropriate measure for the situation.

X. CONCLUSION

Evidence indicates that increasing shareholder value is the key to success in today’s marketplace. Increasing shareholder value does not conflict with the long-run interests of other stakeholders. Indeed, it supports these interests and motivates organizational constituents to seek out, manage, and measure the drivers that lead to improving shareholder value.

Value-based management is an important tool that links strategic decisions at the senior level all the way down to the value drivers used by frontline managers and employees. It is best measured by metrics that link decisions to over-
all economic value and that are correlated to shareholder wealth. The Statement has described the key features of the VBM paradigm and a number of measures that organizations can adopt to measure the degree to which value is being created.
APPENDIX A

SAMPLE CALCULATIONS FOR SHAREHOLDER-VALUE-CREATION MEASURES

In this appendix, sample calculations for the shareholder-value-creation measures described earlier are provided for a fictional firm called XYZ Company. Because some measures require forecasts, the calculations for these measures are based on these forecasts. As such, the actual numbers for these measures should be considered as illustrative of the calculation methodology employed rather than as definite results.

The following measures are illustrated:

A) Economic Value
B) The Equity Spread
C) Implied Value
D) Cash Flow Return on Investment
E) Total Shareholder Return
F) Annual Economic Return
G) Market Value Added

A) Economic Value (EV)

EV is calculated as net operating income after taxes (NOPAT) minus the capital charge.

The first step in calculating EV is to calculate NOPAT; the second step is to estimate the capital employed; the third step is to estimate the appropriate weighted average cost of capital (WACC); and the fourth step is to calculate the capital charge and EV.

In this example, no adjustments are made to the traditional accounting statements because some of these adjustments require an intimate knowledge of the firm’s operations. However, an analysis of the firm’s annual reports indicates that the impact of any such adjustments would be minimal; for example, the firm has no write-offs, no meaningful R&D or training expenses, no re-valuation of assets, no goodwill, etc. The calculations also require an estimation of the appropriate tax rate: it is assumed to be 39% based on the average historical tax rate.

Step 1: Calculation of NOPAT

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>$139,595</td>
<td>134,567</td>
<td>155,925</td>
<td>187,671</td>
<td>216,378</td>
<td>233,522</td>
</tr>
<tr>
<td>Cost of Sales</td>
<td>135,435</td>
<td>130,537</td>
<td>151,102</td>
<td>181,075</td>
<td>207,804</td>
<td>225,764</td>
</tr>
<tr>
<td>Gross Profit</td>
<td>4,160</td>
<td>4,030</td>
<td>4,823</td>
<td>6,596</td>
<td>8,574</td>
<td>7,758</td>
</tr>
<tr>
<td>Other Operation (Income)/Loss</td>
<td>715</td>
<td>(198)</td>
<td>(1,003)</td>
<td>0</td>
<td>0</td>
<td>(1,035)</td>
</tr>
<tr>
<td>Depreciation</td>
<td>1,328</td>
<td>1,605</td>
<td>1,758</td>
<td>1,817</td>
<td>1,774</td>
<td>1,879</td>
</tr>
<tr>
<td>Profit Before Interest &amp; Tax</td>
<td>2,117</td>
<td>2,623</td>
<td>4,068</td>
<td>4,779</td>
<td>6,800</td>
<td>6,914</td>
</tr>
<tr>
<td>Income Taxes</td>
<td>796</td>
<td>974</td>
<td>1,102</td>
<td>2,091</td>
<td>2,781</td>
<td>3,328</td>
</tr>
<tr>
<td>NOPAT</td>
<td>$ 1,321</td>
<td>1,649</td>
<td>2,966</td>
<td>2,688</td>
<td>4,019</td>
<td>3,586</td>
</tr>
</tbody>
</table>
Step 3: Calculation of WACC
The three steps in developing the WACC include:

- establishing target market value weights for the capital structure;
- estimating the opportunity cost of non-equity financing;
- estimating the opportunity cost of equity financing.

In this example, it is assumed that the WACC and the cost of equity financing are 9% and 12% respectively for each year in the study.

Step 4: Capital Charge and EV Calculations
Using the cost of capital of 9%, the figure below shows that for 1991, $45,102 was employed at the beginning of the year at 9% per year, resulting in a capital charge of $4,059. Similar calculations can be conducted for other years as shown below.

Although the firm has shown positive earnings and positive NOPAT, it has destroyed value since capital charge is higher than NOPAT.

Calculation of Capital Charge

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening Capital Employed</td>
<td>$45,102</td>
<td>46,511</td>
<td>50,444</td>
<td>54,928</td>
<td>67,513</td>
</tr>
<tr>
<td>WACC</td>
<td>9.0%</td>
<td>9.0%</td>
<td>9.0%</td>
<td>9.0%</td>
<td>9.0%</td>
</tr>
<tr>
<td>Capital Charge</td>
<td>$ 4,059</td>
<td>4,186</td>
<td>4,540</td>
<td>4,944</td>
<td>6,076</td>
</tr>
</tbody>
</table>

Calculation of EV
EV is calculated as NOPAT minus capital charge.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>NOPAT</td>
<td>$1,649</td>
<td>2,966</td>
<td>2,688</td>
<td>4,019</td>
<td>3,586</td>
</tr>
<tr>
<td>Less: Capital Charge</td>
<td>4,059</td>
<td>4,186</td>
<td>4,540</td>
<td>4,944</td>
<td>6,076</td>
</tr>
<tr>
<td>EV</td>
<td>$(2,410)</td>
<td>(1,220)</td>
<td>(1,852)</td>
<td>(925)</td>
<td>(2,490)</td>
</tr>
</tbody>
</table>
B) The Equity Spread
To calculate the equity spread, requires that net income (instead of NOPAT) be compared to the cost of equity. Using the value of equity capital (instead of capital employed), another measure of value creation can be calculated. Mathematically, the equity spread is expressed as:

\[
\text{equity value creation} = (\text{return on equity} \% - \text{cost of equity} \%) \times \text{equity capital}
\]

C) Implied Value
The implied value measure requires that forecasts about the future be made by creating pro-forma income statements and balance sheets over a reasonable time period. Since, the internal forecasts are unavailable, the following assumptions, based on historical performance, are used to create a simple forecast for XYZ Company.

### Calculation of Equity Spread and Equity-Value Creation

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Income</td>
<td>$132</td>
<td>1,453</td>
<td>1,511</td>
<td>2,677</td>
<td>1,824</td>
</tr>
<tr>
<td>Opening Owner’s Equity</td>
<td>$24,188</td>
<td>24,320</td>
<td>25,724</td>
<td>27,261</td>
<td>29,506</td>
</tr>
<tr>
<td>Return On Equity (ROE)</td>
<td>0.5%</td>
<td>6.0%</td>
<td>5.9%</td>
<td>9.8%</td>
<td>6.2%</td>
</tr>
<tr>
<td>Opening Cost of Equity</td>
<td>12.0%</td>
<td>12.0%</td>
<td>12.0%</td>
<td>12.0%</td>
<td>12.0%</td>
</tr>
<tr>
<td>Equity Spread</td>
<td>(11.5)%</td>
<td>(6.0)%</td>
<td>(6.1)%</td>
<td>(2.2)%</td>
<td>(5.8)%</td>
</tr>
<tr>
<td>Equity Capital</td>
<td>24,188</td>
<td>24,320</td>
<td>25,724</td>
<td>27,261</td>
<td>29,506</td>
</tr>
<tr>
<td><strong>Equity-Value Creation</strong></td>
<td>$(2,782)</td>
<td>(1,459)</td>
<td>(1,569)</td>
<td>(600)</td>
<td>(1,711)</td>
</tr>
</tbody>
</table>

### Step 1: Assumptions Used for Pro-Formas
- Revenue Growth = 12% for each year
- Cost of Sales = 96.7% of revenue (which is identical to the value for 1995)
- Depreciation = 9% of fixed assets
- Interest Expense = 7% of (bank loans + long-term debt (LTD))
- Income Tax Rate = 39%
- Cash = 0
- Accounts Receivable = 12% of revenue in current year
- Inventory = 11.3% of revenue in current year
- Other Current Assets = $950
- Net Fixed Assets = Growing at 7% per year
- Bank Loans = Includes all excess financing requirements, except in 1999 when equity is raised
- Accounts Payable = 5.1% of cost of goods sold
- Current Portion of LTD = 5.9% of the previous year’s LTD
- Other Current Liabilities = 0.5% of cost of sales
- Long-Term Debt = LTD in previous year - current portion LTD current year
- Deferred Credit = 1.8% of cost of sales
- Common Stock = Increase common stock to $10,000 in 1999
- Retained Earnings = Retained earnings in previous year + retained profit in current year
- Dividend Payout Rate = 20%
- Long-Term Debt in 1995 = $34,451
### Step 2: Forecast of Income

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue</th>
<th>Cost of Sales</th>
<th>Gross Profit</th>
<th>Depreciation</th>
<th>Profit Before Interest and Tax</th>
<th>Interest</th>
<th>Profit Before Tax</th>
<th>Income Taxes</th>
<th>Earnings Available to Shareholders</th>
<th>Dividends</th>
<th>Retained Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>$261,545</td>
<td>$252,914</td>
<td>$8,631</td>
<td>$2,016</td>
<td>$6,615</td>
<td>$2,244</td>
<td>$4,371</td>
<td>$1,705</td>
<td>$2,666</td>
<td>$533</td>
<td>$2,133</td>
</tr>
<tr>
<td>1997</td>
<td>$292,930</td>
<td>$283,263</td>
<td>$9,667</td>
<td>$2,157</td>
<td>$7,510</td>
<td>$2,541</td>
<td>$4,969</td>
<td>$1,938</td>
<td>$3,031</td>
<td>$606</td>
<td>$2,425</td>
</tr>
<tr>
<td>1998</td>
<td>$328,082</td>
<td>$317,255</td>
<td>$10,827</td>
<td>$2,308</td>
<td>$8,519</td>
<td>$2,864</td>
<td>$5,655</td>
<td>$2,205</td>
<td>$3,450</td>
<td>$690</td>
<td>$2,760</td>
</tr>
<tr>
<td>1999</td>
<td>$367,451</td>
<td>$355,325</td>
<td>$12,126</td>
<td>$2,470</td>
<td>$9,656</td>
<td>$2,975</td>
<td>$6,681</td>
<td>$2,606</td>
<td>$4,075</td>
<td>$815</td>
<td>$3,260</td>
</tr>
<tr>
<td>2000</td>
<td>$411,546</td>
<td>$397,965</td>
<td>$13,581</td>
<td>$2,643</td>
<td>$10,938</td>
<td>$3,350</td>
<td>$7,588</td>
<td>$2,959</td>
<td>$4,629</td>
<td>$926</td>
<td>$3,703</td>
</tr>
</tbody>
</table>

### Step 3: Forecast of Assets

<table>
<thead>
<tr>
<th>Year</th>
<th>Cash &amp; Equivalents</th>
<th>Accounts Receivable</th>
<th>Inventory</th>
<th>Other Current Assets</th>
<th>Total Current Assets</th>
<th>Net Fixed Assets</th>
<th>Total Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>$0</td>
<td>$31,385</td>
<td>$29,555</td>
<td>$950</td>
<td>$61,890</td>
<td>$24,401</td>
<td>$84,291</td>
</tr>
<tr>
<td>1997</td>
<td>$0</td>
<td>$35,152</td>
<td>$33,101</td>
<td>$950</td>
<td>$69,203</td>
<td>$23,969</td>
<td>$93,172</td>
</tr>
<tr>
<td>1998</td>
<td>$0</td>
<td>$37,370</td>
<td>$37,073</td>
<td>$950</td>
<td>$77,393</td>
<td>$25,647</td>
<td>$103,040</td>
</tr>
<tr>
<td>1999</td>
<td>$0</td>
<td>$44,094</td>
<td>$41,522</td>
<td>$950</td>
<td>$86,566</td>
<td>$27,442</td>
<td>$114,008</td>
</tr>
<tr>
<td>2000</td>
<td>$0</td>
<td>$49,386</td>
<td>$46,505</td>
<td>$950</td>
<td>$96,841</td>
<td>$29,363</td>
<td>$126,204</td>
</tr>
</tbody>
</table>
This forecast can be used to calculate future NOPAT and capital employed.

### Step 4: Forecast of Liabilities & Owner's Equity

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current Liabilities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bank Loans</td>
<td>$25,095</td>
<td>29,742</td>
<td>34,745</td>
<td>36,689</td>
<td>42,393</td>
</tr>
<tr>
<td>Accounts Payable</td>
<td>12,899</td>
<td>14,446</td>
<td>16,180</td>
<td>18,122</td>
<td>20,296</td>
</tr>
<tr>
<td>Current Portion of LTD</td>
<td>436</td>
<td>411</td>
<td>387</td>
<td>364</td>
<td>342</td>
</tr>
<tr>
<td>Other Current Liabilities</td>
<td>1,265</td>
<td>1,416</td>
<td>1,586</td>
<td>1,777</td>
<td>1,990</td>
</tr>
<tr>
<td>Total Current Debt</td>
<td>39,695</td>
<td>46,015</td>
<td>52,898</td>
<td>56,952</td>
<td>65,021</td>
</tr>
<tr>
<td><strong>Non-Current Liabilities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long-Term Debt</td>
<td>6,962</td>
<td>6,551</td>
<td>6,164</td>
<td>5,800</td>
<td>5,458</td>
</tr>
<tr>
<td>Deferred Credit</td>
<td>4,552</td>
<td>5,099</td>
<td>5,711</td>
<td>6,396</td>
<td>7,163</td>
</tr>
<tr>
<td>Total Non-Current Liabilities</td>
<td>11,514</td>
<td>11,650</td>
<td>11,875</td>
<td>12,196</td>
<td>12,621</td>
</tr>
<tr>
<td><strong>Total Liabilities</strong></td>
<td>51,209</td>
<td>57,665</td>
<td>64,773</td>
<td>69,148</td>
<td>77,642</td>
</tr>
<tr>
<td>Common Stock</td>
<td>6,668</td>
<td>6,668</td>
<td>6,668</td>
<td>10,000</td>
<td>10,000</td>
</tr>
<tr>
<td>Retained Earnings</td>
<td>26,414</td>
<td>28,839</td>
<td>31,599</td>
<td>34,860</td>
<td>38,562</td>
</tr>
<tr>
<td>Total Equity</td>
<td>33,082</td>
<td>35,507</td>
<td>38,267</td>
<td>44,860</td>
<td>48,562</td>
</tr>
<tr>
<td><strong>Total Liab &amp; Owner's Equity</strong></td>
<td><strong>$84,291</strong></td>
<td><strong>93,172</strong></td>
<td><strong>103,040</strong></td>
<td><strong>114,008</strong></td>
<td><strong>126,204</strong></td>
</tr>
</tbody>
</table>

### Step 5: Forecast of NOPAT

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>$261,545</td>
<td>292,930</td>
<td>328,082</td>
<td>367,451</td>
<td>411,546</td>
</tr>
<tr>
<td>Cost of Sales</td>
<td>252,914</td>
<td>283,263</td>
<td>317,255</td>
<td>355,325</td>
<td>397,965</td>
</tr>
<tr>
<td>Gross Profit</td>
<td>8,631</td>
<td>9,667</td>
<td>10,827</td>
<td>12,126</td>
<td>13,581</td>
</tr>
<tr>
<td>Depreciation</td>
<td>2,016</td>
<td>2,157</td>
<td>2,308</td>
<td>2,470</td>
<td>2,643</td>
</tr>
<tr>
<td>Profit Before Interest and Tax</td>
<td>6,615</td>
<td>7,510</td>
<td>8,519</td>
<td>9,656</td>
<td>10,938</td>
</tr>
<tr>
<td>Income Taxes</td>
<td>2,580</td>
<td>2,929</td>
<td>3,322</td>
<td>3,766</td>
<td>4,266</td>
</tr>
<tr>
<td><strong>Net Operating Profit After Tax</strong></td>
<td><strong>$ 4,035</strong></td>
<td><strong>4,581</strong></td>
<td><strong>5,197</strong></td>
<td><strong>5,890</strong></td>
<td><strong>6,672</strong></td>
</tr>
</tbody>
</table>
These statements can now be used to calculate the free-cash flow.

### Step 6: Forecast of Capital Employed

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Working Capital</td>
<td>$47,726</td>
<td>53,341</td>
<td>59,627</td>
<td>66,667</td>
<td>74,555</td>
</tr>
<tr>
<td>Net Fixed Assets</td>
<td>22,401</td>
<td>23,969</td>
<td>25,647</td>
<td>27,442</td>
<td>29,363</td>
</tr>
<tr>
<td><strong>Capital Employed</strong></td>
<td><strong>$70,127</strong></td>
<td><strong>77,310</strong></td>
<td><strong>85,274</strong></td>
<td><strong>94,109</strong></td>
<td><strong>103,918</strong></td>
</tr>
</tbody>
</table>

### Step 7: Forecast of Free-Cash Flow

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>NOPAT</td>
<td>$4,035</td>
<td>4,581</td>
<td>5,197</td>
<td>5,890</td>
<td>6,672</td>
</tr>
<tr>
<td>Investment</td>
<td>4,727</td>
<td>7,184</td>
<td>7,964</td>
<td>8,836</td>
<td>9,807</td>
</tr>
<tr>
<td><strong>Free-Cash Flow</strong></td>
<td><strong>$(692)</strong></td>
<td><strong>(2,603)</strong></td>
<td><strong>(2,767)</strong></td>
<td><strong>(2,946)</strong></td>
<td><strong>(3,135)</strong></td>
</tr>
</tbody>
</table>

### Step 8: Calculation of Continuing (or Residual or Terminal) Value

Since the forecasts are made up to a certain time period (in this example, for five years to the year 2000), a forecast of value of the firm at year 2000 needs to be estimated. In this illustrative example, it is assumed that all future investments beyond the forecast period will earn exactly the cost of capital on the capital employed at the end of the forecast period and will continue at the same rate forever. Therefore, the value for the firm at year 2000 is simply a discounted value of the perpetual NOPAT after 2000. This NOPAT is calculated as the return on opening capital, in the final year of the forecast (in this example the year 2000), multiplied by closing capital. More specifically,

\[
\text{Perpetual NOPAT} = \frac{\text{return on opening capital employed}_{2000} \times \text{closing capital employed}_{2000}}{\text{WACC}}
\]

The NOPAT for year 2000 is $6,672 and the Return on Capital Employed for 2000 is 7.1% ($6,672 divided by the opening period’s capital of $94,109). Since the value of capital at the end of 2000 is $103,918, the perpetual NOPAT for 2001 is estimated to be $7,367. This value of NOPAT is then discounted at the WACC of 9% as a perpetuity providing a value of $81,859 as the firm value at year 2000. The implied market value of the firm at the end of year 1995 can be estimated by calculating the present value of all future cash flows:
The calculations show that, based on the forecasts, the implied market value of the firm is $44.115 million and the corresponding implied value of equity (after subtracting debt of $34,451 million) is $9,664 million. Similar calculations can be conducted for each year and changes in implied market value of equity can be considered as a measure of value creation. These calculations will require estimations for cash flows and NOPAT beyond year 2000. Although not shown here, the methodology for calculations will be identical to that shown above.

D) Cash Flow Return On Investment (CFROI)

To calculate the CFROI, the real value of capital employed at the beginning of the period must be estimated (i.e., inflation is taken into account). This example assumes that the real value of capital employed at the end of 1995 is $79,339. To calculate the CFROI for each period, the real free-cash flow, the real capital employed, and the real WACC for each period are estimated.

**Calculation of CFROI Spread**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Depreciation</td>
<td></td>
<td>1,879</td>
<td></td>
</tr>
<tr>
<td>Real Gross Cash Flow</td>
<td></td>
<td>$5,465</td>
<td></td>
</tr>
</tbody>
</table>

It is assumed that the cash flow for 1995 is in real dollar terms and therefore needs no adjustment. In addition, this real gross cash flow is expected to be constant for each of the remaining years in the life of the assets invested at the end of 1995 ($79,339). The more uncertain the future cash flows of a company, the more heavily they need to be discounted. It is also assumed the life of the assets will be 10 years and, at the end of the period, $44,464 of net working capital will be released. All these simplifying assumptions require estimation, which highlights the complexity of this approach. Under these assumptions, the performance of the company using the IRR formula, where 'R' represents the CFROI can be calculated.

\[
{\text{CFROI(R)}} = 79,339 \left(\frac{5,465}{(1 + R)^1} + \frac{5,465}{(1 + R)^2} + \frac{5,465}{(1 + R)^3} + \frac{5,465}{(1 + R)^4} + \frac{5,465}{(1 + R)^5} + \frac{5,465}{(1 + R)^6} + \frac{5,465}{(1 + R)^7} + \frac{5,465}{(1 + R)^8} + \frac{5,465}{(1 + R)^9} + \frac{5,465}{(1 + R)^10}\right) 
\]

In this case, the CFROI is approximately 2.9%. This value must be compared to the real cost of capital for XYZ, which is estimated to be 7.2% at the beginning of 1995. Thus, the CFROI spread for 1995 is equal to (4.3)%.
As can be seen, these calculations are highly dependent upon subjective assumptions about the real value of capital and real free-cash flows. Thus, these numbers can only be used as an illustration of the calculation methodology; no faith in actual numbers is warranted.

E) Total Shareholder Return (TSR)

The annual TSR is calculated as the change in price plus any dividends by the initial price. Mathematically, TSR can be expressed as:

$$\text{TSR} = \frac{\text{Price}_{t+1} + \text{dividends}_{t+1} \cdot \text{Price}_t}{\text{Price}_t}$$

F) Annual Economic Return (AER)

Calculation of AER requires accounting for dividends paid as well as new equity raised during the year. It also requires an estimate of the opportunity cost of funds. Ideally, this opportunity cost is the cost of equity. AER is calculated as a return by the firm after adjusting for dividends paid and external dividends paid and external capital raised. Mathematically, AER can be expressed as:

$$\text{AER} = \frac{(\text{MV} - \text{ER'} + \text{Div'})/\text{MV}_t}{1}$$

Where ER' and Div' represents value of external equity raised and dividends paid during these years invested at the investor’s opportunity cost, and MV_{t+1} and MV_{t}, represent the market value of firm’s equity at years t+1 and year t, compounded at the t-bill rate, respectively. The investor’s opportunity cost of capital is the corresponding cost of equity for that firm. If this return is positive, then management has created investor wealth, since it has done better than what the investors could have done on their own. In this sense, this is a cash-in, cash-out return provided by corporate management accounting for opportunity cost.

For simplicity, the following example assumes that the opportunity cost is 5% (comparable to investing in T bills) for each of the years in the study and assumes that any dividends paid or external equity raised took place in the middle of the year.

Calculation of AER

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Opportunity Cost %</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Stock Price</td>
<td>1.375</td>
<td>1.20</td>
<td>1.10</td>
<td>0.98</td>
<td>0.93</td>
<td>0.74</td>
</tr>
<tr>
<td>Number of Shares</td>
<td>10,616</td>
<td>10,616</td>
<td>10,616</td>
<td>12,116</td>
<td>12,153</td>
<td>12,466</td>
</tr>
<tr>
<td>Market Value of Equity</td>
<td>14,597</td>
<td>12,739</td>
<td>11,678</td>
<td>11,874</td>
<td>11,302</td>
<td>9,225</td>
</tr>
<tr>
<td>Adj. Market Value of Equity (using 5%)</td>
<td>15,327</td>
<td>13,376</td>
<td>12,262</td>
<td>12,468</td>
<td>11,867</td>
<td>9,686</td>
</tr>
<tr>
<td>Equity Raised N/A</td>
<td>0</td>
<td>129</td>
<td>578</td>
<td>102</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Adjusted Equity Raised (using 5%)</td>
<td>N/A</td>
<td>0</td>
<td>132</td>
<td>592</td>
<td>105</td>
<td>123</td>
</tr>
<tr>
<td>Dividends</td>
<td>N/A</td>
<td>0</td>
<td>178</td>
<td>552</td>
<td>534</td>
<td>501</td>
</tr>
<tr>
<td>Adjusted Dividends (using 5%)</td>
<td>N/A</td>
<td>0</td>
<td>182</td>
<td>566</td>
<td>547</td>
<td>514</td>
</tr>
<tr>
<td>AER</td>
<td>N/A</td>
<td>(16.9)%</td>
<td>(12.3)%</td>
<td>(3.4)%</td>
<td>(5.8)%</td>
<td>(19.0)%</td>
</tr>
</tbody>
</table>

29 This is equivalent to the time-weighted return methodology used in evaluating pension fund performance. Annual economic return is, in essence, nothing but the rate of return that the investor could have earned by starting the portfolio at the market value of equity, receiving periodic dividends, and providing to management any additional equity funds required for investment.
G) Market Value Added (MVA)
This measure is calculated by comparing the market value of capital (equity) with the adjusted value of capital (equity). In this case, both numbers are identical because the market value of debt is assumed to be the same as the book value of debt. If that is not the case, a separate set of calculations is required to calculate MVA. Note that the method requires that the value of capital (equity) invested is properly estimated with all the necessary adjustments for a variety of accounting treatments made to the traditional balance sheet. A change in these measures, which represents the dollar value of wealth creation performance, in year t, can be written as:

\[ \triangle (MVA_t) = MVA_t - MVA_{t-1} \]

The standardized MVA values are calculated by dividing MVA in year by the adjusted equity value at year t-1, or:

\[ \text{Standardized } \frac{MVA_t}{AEV_{t-1}} = \frac{MVA_t - MVA_{t-1}}{AEV_{t-1}} \]

Calculation of MVA and Standardized MVA

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjusted Equity Value (AEV)</td>
<td>$24,188</td>
<td>24,320</td>
<td>25,724</td>
<td>27,261</td>
<td>29,509</td>
<td>30,949</td>
</tr>
<tr>
<td>Market Value of Equity</td>
<td>$14,597</td>
<td>12,739</td>
<td>11,678</td>
<td>11,874</td>
<td>11,302</td>
<td>9,225</td>
</tr>
<tr>
<td>MVA</td>
<td>$(9,591)</td>
<td>(11,581)</td>
<td>(14,046)</td>
<td>(15,387)</td>
<td>(18,204)</td>
<td>(21,724)</td>
</tr>
<tr>
<td>Change in MVA</td>
<td>$(1,990)</td>
<td>(2,465)</td>
<td>(1,341)</td>
<td>(2,817)</td>
<td>(3,520)</td>
<td></td>
</tr>
<tr>
<td>Standardized MVA</td>
<td>((8.2))%</td>
<td>((10.1))%</td>
<td>((5.2))%</td>
<td>((10.3))%</td>
<td>((11.9))%</td>
<td></td>
</tr>
</tbody>
</table>
The main purpose of this appendix is to provide examples of adjustments that are required to ensure that reported numbers based on traditional accounting statements reflect the true underlying picture of the firm’s economic value-creation performance. The final selection of adjustments would vary from firm to firm. As noted earlier, the operating principle should be that of “materiality.”

Ensuring that the measurement of value creation is adequately calculated requires two sets of adjustments. The first set of adjustments ensures that the reported earnings reflect the true operational performance of the entity and that the asset base reflects the total cumulative capital invested in the firm by its shareholders and bondholders. The second set of adjustments are required if some expenses, from an accounting point of view, are, in reality, investments from a value perspective. The following examples provide the flavor of the common adjustments under these two sets of adjustments.

**Table 1**

<table>
<thead>
<tr>
<th>Examples of Accounting Entries</th>
<th>Effect on Reported Earnings</th>
<th>Effect on Reported Asset (or capital) Base</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in Bad Debt Reserves</td>
<td>Lower</td>
<td>Higher</td>
</tr>
<tr>
<td>Amortization of Goodwill</td>
<td>Lower</td>
<td>Lower</td>
</tr>
<tr>
<td>Write-offs of Assets</td>
<td>Lower</td>
<td>Lower</td>
</tr>
<tr>
<td>Increase in Deferred Taxes</td>
<td>Higher</td>
<td>Higher</td>
</tr>
</tbody>
</table>
Many such nonoperating items are often included in earnings to reflect a variety of specific situations faced by the firm. Clearly, to ensure that the value-creation-performance measure is properly calculated, these entries require reversal. For example, reported goodwill arises because the amount paid by an acquiring firm over the fair value of an acquired firm under the purchase method is higher than the reported asset base of the acquired firm. Since the management decided to pay a higher price (and used shareholder capital), value-creation measures require that any amortization of goodwill amortization is reversed with appropriate tax adjustments. Similarly, while estimating the economic value of the asset base, all cumulative goodwill expenses are added back to the reported asset base. In all such cases, appropriate adjustment is required to ensure that reported earnings and asset base reflect the true operating performance and asset base.

**Adjusting to Reflect Economic Value and Assets**

In addition to ensuring that operating performance and asset base are correctly estimated, there is also a question of deciding which items are truly expenses and which can be, at least partially, considered as investments for the future. This is especially important if managers are to take decisions based on long-term vision and investments and are compensated accordingly. Table 2 shows some common expenses that require adjustments to create a value-based view of the entity.

For example, R&D is normally undertaken as an investment to design and develop future products or services. Common accounting practice is to expense all R&D in the year that it occurs. However, a value-creation perspective may treat only a portion of R&D expense as an expense in that year. Thus, the value-based “earnings” would be higher than those reported, as would be the value of the resultant asset base. For example, if R&D is expected to have a life of four years, then the value-based adjustment requires that only 25% be expensed in the first year and the remaining 75% be added to the asset base. In each of the remaining three years, 25% of the R&D would be expensed with a corresponding reduction in asset base. Similarly, training is normally undertaken so that employees can add value to the firm in the future. As a result, training can be considered an investment in the future and treated in the same manner as R&D.

**Table 2**

<table>
<thead>
<tr>
<th>Examples of Value Entries</th>
<th>Effect on Reported Earnings or Operational Cash Flows</th>
<th>Effect on Reported or Operational Asset (or capital) Base</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research and development expense</td>
<td>Increase</td>
<td>Increase</td>
</tr>
<tr>
<td>Training</td>
<td>Increase</td>
<td>Increase</td>
</tr>
<tr>
<td>Reported depreciation lower (higher) than economic depreciation</td>
<td>Increase (decrease)</td>
<td>Increase (decrease)</td>
</tr>
</tbody>
</table>
BIBLIOGRAPHY


