Title
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Publication Date
2003-11-27

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November 27, 2002

We benefited from the comments of James S. Wallace at the Meetings of the Financial Management Association, October 2002. Our thanks to Juan A. Siu for his assistance.

ABSTRACT: A Unifying Theory of Value Based Management

We identify four alternative performance metrics used in value based management (VBM). (1) Basic is an intrinsic value analysis (IVA), the discounted cash flow (DCF) methodology. (2) We show that this framework will be consistent with returns to shareholder (RTS, capital gains plus dividends) measured over appropriate time horizons. (3) Economic profit (EP) [also called economic value added (EVA®)] takes from the DCF free cash flow valuation, net operating profits after taxes (NOPAT), divided by invested capital to obtain the return on operating invested capital (ROIC) less a cost of capital estimate (*k*); the difference multiplied times operating capital. (4) The relationship between the market value of the firm's financial instruments and the book value of the firm's operating assets can be expressed equivalently as market value added (MVA), the *q* ratio, and the market-to-book ratio.

We test the relationships of alternative financial accounting performance metrics versus market metrics on a historical basis as well as on a prospective basis. We find that the alternative financial performance metrics – discounted cash flow valuation, returns to shareholders, economic profit, the market to book ratio [equivalently, the *q* ratio and market value added (MVA)] are highly correlated. We also find that standard financial ratio analysis as expressed in the DuPont formulation are also significantly related to market performance metrics and in the implementation of VBM.

In implementation, each approach to value based management (VBM) starts with strategic planning processes, ties performance to incentive compensation, requires top management involvement, as well as information and training programs for employees. The four approaches to VBM also take into account other stakeholders (employees, consumers, community). VBM must also evaluate changing economic, cultural, and political environments. The strategic planning process analyzes long term trends, cyclical economic changes, competitive forces, and effective development of managerial capabilities and other resources. Our clinical analysis centers on Hershey Foods Corporation.

A Unifying Theory of Value Based Management

The literature on value based management contains many unsettled issues, particularly alternative performance measurement theories (Martin and Petty, 2000; Rappaport, 1998; Stewart, 1991; Young and O'Byrne, 2001; Copeland et al, 2000). Divergent views are also reflected in the extensive bibliography developed by Korajczyk (2001).

This paper seeks to develop a unifying framework for understanding value based management (VBM). Its central elements are portrayed in Figure 1. The overview of relationships presented demonstrates that VBM is a continuous process. It begins with strategic planning to achieve competitive advantages which produce superior growth in economic profits and returns to shareholders. Strategic planning guides the firm's choice of a product-market scope and its resource requirements. The economic nature of the industry or industries in which the firm operates determines the patterns of its financial statements reflected in traditional financial ratio analysis. Based on a business economic analysis of the industry and the firm's competitive position, projections of financial relationships provide a basis for valuation estimates. Since these are subject to error and change, further analysis based on identification of the key drivers of value are made. This facilitates study of the impact of operating performance on the value driver levels and the resulting valuations. Intrinsic value estimates are related to alternative performance measurements. Compensation systems should be linked to performance metrics. Periodic reviews lead to strategy revisions as well as to changes in policies and operations. Repeated iterations of the process shown in Figure 1 are made.

Multiple methods of performance measurements are widely used in the literature. They are: (1) discounted cash flow (DCF) valuation using intrinsic value analysis (IVA); (2) returns to shareholders (RTS); (3) economic profit (EP) or economic value added (EVA®), measured on an average and on an incremental basis; (4) the relationship between the market value of the firm's financial instruments and the book value of the firm's operating assets. This relationship has been variously called market value added (MVA), the *q* ratio, and the market-to-book ratio. All measurements should be based on projections or expectations.

This paper will compare the strengths and limitations of each performance measure. We use data for Hershey Foods to quantify the comparisons and relationships. In the third edition of Copeland et al (2000), data for Hershey was also used; we extend their study. Martin and Petty (2000) also made illustrative calculations for different companies for different measures; by using one company we can more directly compare alternative performance measures. Ittner and Larcker (1998, 2001) provide useful reviews of the current state of the literature. Our aim is to lay a foundation for additional company samples or generalized research. We discuss each of the four measures in turn, followed by comparisons between them as a basis for our conclusions.

Valuation Measurements

The uses of the four valuation measurements are first reviewed.

Intrinsic Value Analysis

We make discounted cash flow (DCF) intrinsic value estimates of Hershey Foods for the seven year period 1994-2000. This period reflects strategy changes which resulted in major restructuring activities by Hershey. Our discounted cash flow analysis reflects the fundamental strategy shifts of Hershey. The pasta and restaurant business were unrelated to Hershey's core chocolate business so were divested. Hershey also divested some foreign operations that it had not been managing effectively. It formulated some strategic objectives: (1) Broaden the scope of its chocolate products. (2) Further develop its lines of non-chocolate candy, chewing gum, and other confectionery products. (3) Make entries into high growth segments of other related snack products.

Divestitures of its restaurant and pasta businesses improved Hershey's gross margin. Hershey also sold off its chocolate operations in Germany and Italy to an affiliate of Huhtamäki Oy (based in Finland). Concurrently, it acquired Huhtamäki's Leaf North America (Leaf) confectionery operations. In addition, the parties entered into a trademark and technology license agreement under which Hershey will manufacture and/or market and distribute in North, Central and South America Huhtamäki's strong confectionery brands including *Good & Plenty*, *Heath*, *Jolly Rancher*, *Milk Duds*, *Payday* and *Whoppers*.

In December 2000, Hershey completed the purchase of the breath freshener mints and gum businesses of Nabisco, Inc. The businesses included *Ice Breakers* and *Breath Savers Cool Blasts* intense mints, *Breath Savers* mints, and *Ice Breakers, Carefree, Stick*Free, Bubble Yum* and *Fruit Stripe* gums.

As a result of this restructuring, Hershey transformed itself into solely a chocolate and confectionery company while enhancing its domestic market share to 26.8% compared to Mars at 17.0% domestic market share. These strategy changes took Hershey out of two unrelated businesses (pasta and restaurants). Hershey moved from chocolate into broader candy markets. This major strategy shift improved profit margins. It also initiated some penetration into the broader snack market which grows at a 6% rate per annum compared to a 2% growth rate for the food industry as a whole.

These strategy changes are reflected in the valuation calculations presented in Table 1. The methodology employed is the widely used discounted cash flow (DCF) analysis which could be expressed in spreadsheets or in equivalent formulas (see Copeland et al, 2000; Cornell, 2001; Rappaport, 1998). The formula employed in Table 1 uses two stages. Stage 1 is a period of competitive advantage during which the firm has favorable growth and profitability rates. Stage 2 is the terminal period beginning at the end of Stage 1 and running to infinity with lower growth rates and profitability. A formula which utilizes the value drivers shown in Panel A of Table 1 is:

$$
\begin{aligned}
V_0 &= R_0[m_s(1-T_s)+d_s-I_{ws}-I_{fs}-I_{os}]\sum_{t=1}^{n}\frac{(1+g_s)^t}{(1+k_s)^t} \\
&\qquad + \frac{R_0(1+g_s)^n(1+g_c)[m_c(1-T_c)+d_c-I_{wc}-I_{fc}-I_{oc}]}{(k_c-g_c)(1+k_s)^n} \\
&= \frac{R_1[m_s(1-T_s)+d_s-I_{ws}-I_{fs}-I_{os}]}{1+k_s}\left(\frac{(1+h)^n-1}{h}\right) \\
&\qquad + \frac{R_0(1+g_s)^n(1+g_c)[m_c(1-T_c)+d_c-I_{wc}-I_{fc}-I_{oc}]}{(k_c-g_c)(1+k_s)^n}
\end{aligned}
$$

The symbols in the formula are defined in Table 1. A numerical example of the use of the formula using 2000 as the base year is:

$$
\begin{aligned}
V_0 &= 4516.4\ [0.15(1-0.388)+0.03-0.002-0.028-0.001][1/(1+0.095)][(0.9772^{10}-1)/-0.0228] \\
&\qquad + 4220.976\ [(1+0.07)^{10}][1+0.045][0.146(1-0.388)+0.029-0.002-0.029-0.001]/[(0.095-0.045)\ (1+0.095)^{10}] \\
&= 4516.4\ (0.0908)\ (0.9132)\ (9.0327)+4220.976\ (1.9672)\ (1.045)\ (0.0864)\ [(20)\ (0.4035)] \\
&= 3382.7 + 6046.9 \\
&= \$9{,}430 \text{ million}
\end{aligned}
$$

The calculations reflect both the historical data and projections. Since the number of years of competitive advantage shown in the base year 2000 column is 10 years, the calculations reflect yearly projections for 2001 to 2010 and for the terminal stage. To make the projections for the 17 value drivers, we drew on company presentations, analysts' reports, and our own studies of the economics of the industry and firm. The measurement procedures reflect standard DCF methodology, widely used and described in the valuation literature.

The behavior of the value drivers in Table 1 reflects the results of the operating and financial restructuring by Hershey during the 1990s. Hershey concentrated its business on its core competency of producing, marketing, and distributing chocolate and confectionery products. Management was able to improve growth, margins, and the period of competitive advantage while reducing investment needs (both working and fixed capital) and the cost of capital. Steady improvement lead to an ever-increasing intrinsic value per share.

As illustrated by the formulas, calculations are made for the two stages as shown in Panel B, Lines 1 and 2 to obtain the enterprise operating value presented in Line 3. Excess cash in the form of marketable securities is added in Line 4 to obtain the enterprise value shown in Line 5. Deducting total interest bearing debt, we obtain the equity value in Line 7. Line 8 presents the yearend number of shares outstanding for Hershey for each year. Note, the number of shares declines over the years reflecting the share repurchase program employed. In Line 9, the intrinsic value per share results for Hershey are presented. By intrinsic value per share we mean a financial economist's effort to make an objective estimate of the economic value per share based on the underlying determinants reflected in the value drivers.

In Lines 10 and 11 of Table 1, we compare our estimates of intrinsic value with the actual closing price per share for Hershey over the 1994-2000 period. Martin and Petty (2000, pp. 184-195) summarized the results of other studies comparing valuation estimates to actual market values. The best performance appears to be the Kaplan and Ruback (1995) study. Approximately 60% of their DCF forecasts were within ±15% of actual transaction values. With one exception, all of our estimates were within that range. Our estimates were based on steady improvements of the value drivers over the restructuring activity of Hershey during the 1990s. The actual market prices anticipated future improvements in value drivers more fully than our projections. The market reacted much more severely to the failures of the new inventory and shipping system installed by Hershey in 1999. Because of the glitches, Hershey was unable to ship products during the critical August to October sales opportunities associated with Back-to-School and Halloween. The market appeared to overact to some temporary bad news.

A major strength of the DCF models is that they seek to identify the underlying determinants of value. Since the expectations or projections inherently are subject to errors, the framework can be used as a valuable management planning and control system. An ongoing monitoring of expectations compared with changing estimates of the value drivers can be used in an information flow system. Policies and decisions can be revised in a feedback process to improve performance. The DCF estimates of intrinsic value can be used as a part of strategic planning processes to estimate the valuation consequences of alternative strategic plans.

Table 1A presents a spreadsheet valuation consistent with the parameters of Table 1. Table 1B provides an underlying strategic financial plan supportive of the expectations resulting in the $60.85 per share valuation.

Returns to Shareholders

Returns to shareholders (RTS) are measured by annual capital gains plus dividend yields. The logic of this performance metric is that it calculates the economic income to investors for specified time periods. In Table 2 we make these calculations for Hershey based on the yearend closing prices, shares outstanding, and dividend yield for the years 1980-2000. Because of stock market fluctuations, the results behave erratically. Two methods are employed to deal with this instability.

One is to calculate averages over longer time periods. In Table 3 we calculate the unweighted arithmetic average annual returns for 5- and 10-year time segments. We also calculate the compounded annual returns to shareholders using the endpoints of each time segment. We obtained similar results. The returns to shareholders of Hershey for the decade of the 80s were robust. The decline in the 1991-1995 segment stimulated the restructuring activities. Improvement was achieved during the following five years. For the entire 20 years, the returns were about 22% per annum. When returns to shareholders over long time periods are measured for industry segments, some economic meaning to the results can be inferred. Returns over long periods represent what the market required based on the risk and economic characteristics of the industry. Brealey and Myers (2000, pp. 548-549) discuss how industry returns may be used to calculate the required return on equity for the railroad industry, the oil industry, and for industry segments within firms.

The most meaningful use of returns to shareholders involves comparisons with benchmarks. Table 4 compares the RTS measures for Hershey against the S&P500 and the Value Line food processing index for the years 1992-2001. For the entire time period, the RTS for Hershey shareholders was slightly above the S&P500. Benchmarked against the food processing period, the RTS for Hershey shareholders was about the same. Thus for the 1990s, the Hershey RTS was somewhat better than a broad index and about the same in relation to the food processing index. The beta risk measures of the food processing industry are similar to those of the chocolate and confectionary product industry.

Individual year results are not dependable guides because of market volatility. Groups of years can be selected to provide valuable information on firm performance and economic processes. Table 5 shows RTS measure comparisons for periods ranging from 1 year to 10 years. For the longer periods, the results approximate average performance in relation to benchmark indexes.

The use of the RTS measure permits a reasonably firm conclusion. Hershey's performance was comparable to the broader industry segment of which it is a part. It was superior to the broader S&P 500 index. It would be useful to make a similar comparison with four or five firms with products more closely comparable to Hershey's. However, there are no other major public chocolate and confectionary companies in the U.S. The RTS measure is a useful indicator of performance. It can readily be applied by using appropriate benchmarks, groups of firms, or indexes. As a performance metric, it compares the economic returns to investors in a firm relative to alternative benchmark investments. Hershey competes for the consumer's dollar; it also competes for the investor's dollar.

Economic Profit Measures

Economic profit has been distinguished from accounting measures of net income by deducting a charge for the use of capital invested. For example, suppose the accounting net income is $120. If the firm has a book total investment of $1000 appropriately measured and a cost of capital of 10%, the deduction would be $100. The net $20 would represent economic profit or residual income. This concept was applied by Donaldson Brown, the senior officer of General Motors, in the 1920s as a guide to allocating resources among the multiple divisions. It also began to be applied by General Electric in the 1950s. The consulting firm, Stern Stewart, has employed the concept in a measure called economic value added whose abbreviation EVA® has been copyrighted. In applying the concept, Stern Stewart makes adjustments to NOPAT which also affect the measurement of the invested capital base. Adjustments to NOPAT seek to capitalize expenses such as R&D and advertising over the estimated lives during which they contribute to revenues. The exact calculation of the popularized Economic Value Added® is an unsettled issue. A recent survey of 29 EVA® users revealed that all 29 calculated NOPAT and Invested Capital in slightly different ways (Weaver 2001). We have chosen a standard approach that excludes non-US GAAP adjustments such as capitalizing advertising and R&D.

In Table 6, the measure of economic profit is calculated for Hershey for the years 1981-2000. First, NOPAT (Line 3) is calculated as before and excludes one-time events such as gains or losses from divestitures, restructuring charges, etc. as well as all interest income or expense. Next the invested capital (IC, Line 7) is calculated as the sum of operating working capital, net property plant and equipment, and other assets net. Said differently, invested capital represents total assets less non-interest bearing liabilities or simply the book value of equity plus all interest bearing debt. The average of the beginning and ending invested capital figures are used in subsequent calculations. The return on average invested capital (ROIC, Line 9) is defined as the ratio of NOPAT to average invested capital. We use an average in the denominator since NOPAT is received throughout the year.

The WACC is specified in Line 10 and estimated to have declined over this twenty year period. The difference between ROIC and WACC is multiplied times the average invested capital in Line 8 to obtain the average economic profit in Line 12. While average economic profit may be a valuable tool for performance monitoring, we also calculate economic profit based on the beginning balance of invested capital. This measure relates directly to the valuation using economic profit. The measures track each other very closely and demonstrate that Hershey's economic profit was moderate until after the restructuring activities during the 1990's. For sensitivity analysis, alternative costs estimates can be employed.

The Properties of Economic Profits (EP)

In his book on EVA® or EP, Stewart (1991) states that "MVA marches in lockstep with EVA, thus confirming the usefulness of EVA as a measure of corporate performance" (p. 209). He defines market value added (MVA) as the excess of the market value of the firm (V) over its book capital.

The nature of the relationship between EP and MVA is facilitated by a simple example in which:

r	=	return on capital (ROIC)	=	12%
k	=	cost of capital (WACC)	=	10%
C_o	=	capital investment	=	\$1,000

This firm was created by a capital investment of \$1000, so for this example the investment also represents the total capital of the firm. The net present value (NPV) is calculated by subtracting the investment from the gross present value (GPV):

$$NPV = GPV - \text{Investment Outlay or Capital}$$
$$= \frac{rC_o}{k} - C_o = \frac{0.12(1{,}000)}{0.10} - 1{,}000 = 1{,}200 - 1000 = \$200$$

EP or EVA® is defined as before and calculated as:

$$EP \text{ or } EVA = (r - k)C_0 = (0.12 - 0.10)\ 1{,}000 = \$20$$

NPV is the discounted value of EVA® (\$20/0.10) which equals \$200. Grinblatt and Titman (2002) prove the same result for the finite period case (pp. 341-342). In both the finite and infinite period examples, certainty is implicit. The value of the firm (V) is the book capital of \$1000 plus the NPV of \$200 which total \$1200. Recall that MVA is ($V - C_o$) which is the NPV of \$200 (\$1200 - \$1000). Thus, in application, market value added (MVA) reflects expectations of future cash flows and discount rates.

Table 7 prepares a valuation of Hershey Foods using discounted economic profit instead of discounted cash flows. The model is similar to the illustrations of table 1 or the underlying model of table 1a, in that there is an explicit 10-year period. However, this approach does not capitalize year 11's cash flow as a perpetual residual value. This model captures the assumptions of the residual period and extends the financial strategic plan into the future for 250 years. Table 7 shows the first 10 years as well as years 50, 100, 150, 200, and 250. The resulting value is consistent with the enterprise operating value presented before at $9,430 million.

Since economic profit (regardless of how it is named) is equivalent to an NPV measure, it is an equivalently sound guide to investment decision making as is traditional discounted cash flow analysis. Both economic profit and traditional intrinsic value (or strategic financial modeling) can be used to measure the effectiveness of investment decisions at the level of the firm or to segments such as divisions or plants.

<u>Tests of EP Measures</u>

Economic profit or economic value added has been widely evaluated and tested. Rappaport (1998) argues that even after adjustments for multi-year effects of R&D, as well as advertising and reversing cumulative goodwill amortization, the "shortcomings of EVA" remain those of "a historical, sunk-cost measure" (p. 226). Young and O'Byrne (YO) (2001) argue that with appropriate accounting adjustments such as sinking-fund depreciation which makes ROIC equal to the economic return, the criticisms of EVA® no longer hold. They also question the empirical study of Biddle, Bowen, and Wallace (1997) which found that earnings data have more explanatory power for changes in stock prices than EVA® (YO, pp. 263-267). Wallace (1997) studied the internal incentive effects of adopting performance measures based on residual income. He found that firms do get what they measure and reward. Managers make decisions consistent with the performance measures adopted. Hogan and Lewis (2000) studied 51 firms adopting economic profit plans. They have a control group of firms based on industry, size, and pre-event performance. They found significant performance improvements for firms which adopt economic profit plans. They also found similar performance improvements for control firms. They conclude that economic profit plans are no better than alternative plans in improving shareholders' wealth.

While the approaches to value based management differ among theorists and practitioners, consulting firms use a wide range of approaches. Their analyses include strategy, financial ratio analysis, and nonfinancial criteria. Their accumulated experience enables both the new and the traditional plans to make significant contributions to the improvement of firm performance.

Market Valuation Ratios

Other studies of performance, particularly academic research studies, have a measure of market value in the numerator. The *q* (or Tobin's *q*) ratio has been widely used to analyze the sources of differential firm efficiency related to variables such as diversification, percentage of equity ownership by top management, etc. In theory, the *q* ratio is defined as the market values of equity and debt divided by the current replacement value of assets. In practice, the denominator is difficult to calculate. In their early use of the *q* ratio at the firm level, Lindenberg and Ross (LR) (1981), arbitrarily select a beginning date on which the replacement costs of fixed assets and inventories are assumed to be their book values. For each subsequent year, the previous year estimate is adjusted for general price level changes and for technological changes plus the increase in investments less deductions for depreciation. Subsequent refinements in the LR estimate were made by Chung and Pruitt (1994), Howe and Vogt (1996), Lewellen and Badrinath (1997), and Lee and Tompkins (1999).

Whited (2001) measures Tobin's *q* as the ratio of the market value of assets divided by the book value of assets, "following the literature on corporate diversification." (p. 1670) The market value of assets is obtained "by adding to the book value of assets the market value of common equity and subtracting the book value of common equity and balance-sheet deferred taxes" (p.1671). This is equivalent to adding to the book value of assets the difference between the market and book value of equity. The denominator would be equivalent to the book values of equity plus debt. Whited observes that constructing *q* using the algorithms of Lewellen and Badrinath in estimating the replacement costs of assets would have reduced the number of observations without significant change in the qualitative results (p. 1670, fn 2).

Whited replicates the results of the previous literature on corporate diversification. When Whited employs measurement error consistent estimators, the earlier findings no longer hold. We use the Whited definition of the *q* ratio in Table 8 since it is highly correlated with the other measures of *q* and does not require the complex estimates of the current replacement costs of investments.

Accordingly, in Table 8, the *q* ratio as measured by Whited and the M/B ratio are calculated. The data were obtained from the Hershey financial statements for 1980-2000. Generally over the 20 year period both ratios moved upward.

The explanation for the difference is the share repurchase program of Hershey during this period. Evidence of the magnitude of the share repurchase program is provided by the steady decline in the number of Hershey common shares outstanding from 180.4 million in 1991 to 136.3 million by 2000. When shares are repurchased, the book based equity account is reduced by the market value of the shares repurchased. Since 1993, when Hershey first began share repurchases, book equity was artificially reduced by a multiple of the reduction in the number of shares outstanding. Hence, share repurchase programs in practice inflate both the *q* ratio and the M/B ratio.

Relationships Between Performance Measures

At this stage, we have four valuation approaches: (1) intrinsic value, (2) returns to shareholders, (3) economic profit, and (4) the market value added measures. Approaches (2) and (4) directly include market or stock price information whereas the first and third approaches are driven from company information contained within its financial strategic plan.

Historical Relationships

Table 9A presents a correlation matrix for market valuation measures. For Hershey Foods over the period 1983 through 2000, these metrics were all highly related except for return to shareholders. For example, the market value of equity (MV-EQ) and Market Value Added (MVA) had a 0.9910 R-squared, but MV-EQ compared to RTS (return to shareholders) had an R-squared of only 0.0001.

In Table 9B, we present regression analysis to explain the movements in operating metrics and measures of market valuation (Market Value Added, the Q-Ratio, and Stock Price). The results of Table 9B support the following conclusions:

1. Regardless which market metric is used, traditional metrics such as EBITDA, Operating Profit After Tax (OPAT), and a simple NOPAT performed as well or better than Free Cash Flow and simple Economic Profit. Although not reported, the simple NOPAT and EP performed as well or better than their more sophisticated versions.
2. Return on Equity using INEX (net income excluding special items and extraordinary items) continued to be the most significant return metric followed closely by OPAT Return on Capital. The simple calculation of ROIC had t-stats that did not meet the significance test, and the more sophisticated version was significant in two of the three cases but with a negative X-coefficient.

While the analysis above provides interesting insights for Hershey Foods, it is limited in scope due to its historical nature and its limited 18 observations.

<u>Relationships from the Strategic Plan</u>

The first section of this paper developed the valuation based not in history, but in fundamental valuation driven by a projected (and extrapolated) strategic financial plan (Table 1B). Given this strategic financial plan (SFP), we demonstrated the equivalence of intrinsic valuation (equation or spreadsheet) with the economic profit (or EVA®) approaches in measuring the value of the corporation. This value is not a function of how we measure its results; rather it is a function of the strategies that the firm employs and the successful realization/implementation of those strategies.

In application, operational performance and all the performance measures can usefully be buttressed by financial ratio analysis. Table 10 presents a compact financial ratio analysis in the form of the traditional DuPont system. It depicts the projected one year performance for Hershey Foods Corporation to a more detailed level than the condensed pro-forma financial statements. The elements of cost of goods sold are identified. Targets for R&D, marketing, and administration are set. Taxes are managed. Working capital elements are tightly managed. Fixed assets are acquired based on net present value principles. These elements are structured into the relationship between OPAT and total assets. The return on assets (ROA) is depicted as a relationship between revenues and the effective utilization of operating total assets. The analysis is extended to include the impact of operating leverage and results in Operating Return on Capital (or OROC).

Table 10 provides a basis for a control system to monitor and assure that the value drivers inherent in the valuation are established, communicated, and targeted. An effort is made to continuously improve OROC by the use of multiple performance metrics with targets for both the long and short term. Responsibility is assigned both on a primary and secondary basis.

Each of the performance measures has something to contribute. Each also has limitations. Our data for Hershey show that each provides information useful for increasing shareholder value. While some accounting measures are useful vehicles since they underlie the intrinsic valuation of the firm, the ultimate tests are market based. The market value and intrinsic value changes are the ultimate reference guides. They are logically related to the other key inputs of OROC, economic market metrics, and returns to shareholders. Clearly, the use of one measure alone when multiple measures can be readily calculated is unnecessarily self limiting. A combination of performance measures can provide useful information for planning and control systems. Multiple measures provide a more solid basis for the development of incentive compensation programs discussed below.

It is clear that each performance measure provides useful information, but also has limitations. The question might be posed, "since none of the measures is perfect what would you recommend as the performance metric of choice?"   Our answer is to employ a multiple of performance measures to obtain a more complete and reliable assessment of performance. This is particularly important when performance measures are used in incentive programs discussed next.

Incentive Compensation

Performance metrics are interrelated with incentive compensation. Measures of performance achievement provide a basis for incentive compensation plans. Sound incentive compensation programs stimulate superior performance. Some general principles are widely accepted. Hall and Liebman (1997) developed data for the years 1980 to 1994 using Compustat, corporate proxies, plus stock price and stock return information from CRSP. They reject the common view that there is essentially no correlation between firm performance and CEO pay. The older view resulted from the Jensen and Murphy (1990) finding that CEO wealth increases by only $3.25 for each $1,000 increase in firm value, and other findings that the elasticity of CEO salary and bonus with respect to a firm's market value is 0.1. When the value of stock and stock option holdings are taken into account, the median elasticity of CEO compensation with respect to firm value rises to 3.9 which is 30 times larger than previous estimates. They find that CEO wealth changes substantially with changes in firm value. They find a difference of about $4 million in compensation for a moderately above average performance relative to a moderately below average performance. The difference rises to more than $9 million for 90th percentile performance versus 10th percentile stock price performance. The Jensen and Murphy data was for 1969-83 before the rise and use of stock options. They find that while salary and bonus is relatively insensitive to changes in firm performance, it rapidly doubled during the 15 year period.

The level of CEO compensation increased substantially between 1980 and 1994. The rise in the use of stock option grants was associated with sharply rising stock prices. Direct compensation including the value of annual stock option grants increased by 136% (median) and 209% (mean) in real terms. The mean elasticity of CEO compensation with respect to firm market value increased from 1.2 to 3.9 between 1980 and 1994.

They find that these large increases in CEO pay during the 15 year period are small relative to the market value of the firm and the number of employees. They note that if annual CEO direct compensation were reduced to 1980 levels with the annual savings returned to shareholders, their returns would increase by only 0.04 percentage points. If the savings were distributed to workers, the median per worker gain would be $63.

Hall and Liebman observe that a defect of CEO compensation schemes is that "relative pay" is not a substantial component of CEO compensation. They find that changes in direct pay, which have a relative pay component, are small relative to changes in the value of stock and stock option holdings which have no relative pay component. This leads them to suggest that the use of options with an exercise price that adjusts for market or industry index would increase relative pay in CEO contracts.

Others have also endorsed the use of stock option indexed programs, despite adverse accounting effects. In contrast to fixed price options, the annual cost of indexed options must be charged to current earnings. Indexed options are central to the proposals for incentive compensation by a number of writers (see Rappaport, 1999; Rappaport and Mauboussin, 2001). However, the use of indexed options has some costs. Meulbroek (2001) argues that the firm-specific risks that align incentives impose costs on executives since they can no longer fully diversify their portfolios. Financial engineering can eliminate the systematic portion of risk to executives but cannot eliminate the firm-specific exposures. Executives will value their equity-based compensation at less than its market value. Thus a firm faces a trade off between incentive alignment and the cost of paying executives with instruments that otherwise could be sold at a higher price.

Up to this point the discussions have been limited to incentive compensation for top level executives. For executives of operating divisions or segments, stock price data are not available. The calculations of intrinsic shareholder value nevertheless can be performed. Only the discount factor requires market data. This can be obtained from estimates of the cost of capital for "pure play" companies. Beta adjustments can be made using the standard formulas for the relationship between levered and unlevered betas. Calculations can be made for the value and changes in value of the segment. If performance measurement problems are severe, the possibility of a spin-off can be considered.

For other critical employees and managers, contributions to enterprise value can be estimated. A clear example is the materials in the annual reports of Ruby Tuesday, a chain of restaurants operating in the East. Figure 2 represents communications provided to all employees. This broad sharing of information carries positive benefits for employee involvement. Also notable is a list of indicators that are likely to be highly correlated with financial results: sales levels, food quality ratings, customer satisfaction scores, employee turnover, team satisfaction scores. In addition, financial metrics are employed. These include EPS growth targets, pretax sales margin, and return on equity. Each of these metrics is subject to limitations and misuse. However, imperfect metrics can still provide powerful incentives and motivations if used as guidelines and as instruments of communication. Used with judgment and continuous monitoring such metrics can make valuable contributions to performance.

Relationships

On conceptual and analytical criteria most writers emphasize the preeminence of intrinsic valuation approaches using spreadsheets or formulas. Intrinsic value measures should relate to returns to shareholders as well as to market value changes. However, market expectations sometimes run ahead of or behind intrinsic value measurements. As a consequence there are no perfect consistencies between intrinsic value, returns to shareholders, and changes in market value.

Economic profit or economic value added programs have been effectively promoted. Since they involve a return on invested capital and a discount factor, ROIC and WACC also need to be measured. The intrinsic value measures are most sensitive to estimates of sales growth and the NOI margin. In turn, the NOI margin depends on the control of costs. The return metrics require effective management of working capital and fixed investments which are analyzed in the DuPont chart shown in Table 10.

Thus all of the alternative measures of performance can provide useful inputs to a program of value based management. Even measures subject to ambiguity or abuse can provide useful inputs. They can also be used for motivation. We use the Ruby Tuesday (RT) example because of its success in the highly competitive restaurant business. Between 9/30/91-9/30/01, RT achieved a 19.87% annualized growth in equity values compared to the S&P 500 of 12.41% and the restaurant index of 8.25%.

The outstanding performance of RT demonstrates that multiple measures of performance, in addition to indicators such as measures of customer satisfaction and effective human resource program, can reinforce financial measures. RT has been innovative in incentive management as well. More than 55% company owned franchises permit managers to invest their own funds, for which they receive a percentage of the profits. In addition, RT has stock option programs that include non-executives. A committee appointed by the board has authority to determine the officers and employees to whom stock incentives are granted.

Thus a complete value based management system includes financial measures, indicators of external economic and financial developments, as well as active top management and board involvement on a continuing basis.

Conclusions

This unifying theory of value based management (VBM) identifies multiple approaches. Four have been widely used in practice. One is intrinsic value analysis (IVA) also called shareholder value added (SVA). Two is returns to shareholder (RTS). Three is economic profit. Four is the relationship between the market value of the firm's financial instruments and the book value of the firm's operating assets. This relationship has been called market value added (MVA), the *q* ratio, and the market-to-book ratio. Statistically, MVA, the *q* ratio, and M/B measure the same thing. Analysis of the structure of income, costs, and investments is employed in implementing the previous four approaches.

In application, the four approaches to VBM have a high degree of similarity. Each embraces and utilizes the framework we present in Figure 1. The key elements include strategic review and organizational structure related to strategy performance measurements, incentive compensation systems related to performance measures, implementation (involvement and support of top executives and training throughout the organization), and continuous review and renewal. The company profiles in Martin and Petty (2000) illustrate this generalization. The four VBM approaches are all represented.

In the success stories by proponents of the alternative approaches to VBM, the multiple elements of applications are illustrated. For example, Briggs & Stratton (air-cooled gasoline engines) had lagged in recognition of its changed competitive environment, had not focused on its core competencies, and attempted to solve its problems by automating its production processes. Capital invested to net income increased from 300% to over 900% during the 80's (Stern et al, 2001). At Herman Miller (office furniture) losses resulted from undisciplined multiple product proliferation. The problems involved strategy, structure, and financial control (Stern et al, 2001). Similar stories for seven companies are told of adopters of the balanced scorecard (Kaplan and Norton, 1996). The balanced scorecard also has multiple metrics including nonfinancial criteria (see also Eccles et al, 2000).

Despite the similarities in methodology, each of the proponents of a particular emphasis of VBM argues for its distinctive superiority and for defects or limitations in the approaches of its competitors. Intrinsic value analysis (IVA) or shareholder value added (SVA) performs a DCF valuation of cash flows over long time horizons. Changes in value can also be measured yearly by reference to returns to shareholders (RTS) or by market value added (MVA), the market-to-book ratio, and the *q* ratio. Market prices may overstate or understate intrinsic value for periods of time.

Economic profit (EP) or economic value added (EVA®) can be criticized for focusing on a single metric which includes an accounting return. In utilization, economic value added includes strategy, structure, financial ratio analysis, and roadmaps to value creation that include consideration of a wide range of stakeholders (employees, customers, suppliers, community) (Stern et al, 2001). In practice, it would be difficult to distinguish between the applications of the balanced scorecard versus economic value added. Interestingly, Rappaport's (1998) final chapter includes compilations of "the shareholder scoreboard" based on returns to shareholders (percentage changes in capital gains plus dividends for selected time periods). Stewart (1991) ends his book with a scorecard entitled "Performance 1000" based on market value added (MVA).

In theory the four alternative approaches to VBM are somewhat different. In practice, the implementations have similarities in methodology and coverage. They all center on strategic financial planning and appear to make valuable contributions to performance improvement and to value creation. The empirical evidence argues for an eclectic approach to value based management. Intrinsic value DCF analysis, returns to shareholders or the shareholder scoreboard, economic value added, and the market-to-book analysis have all enhanced value. Each could contribute to effective information planning and control processes.

The downturn beginning in 2000 emphasizes that external economic indicators are an important part of value based management. Also indicators of performance in relation to stakeholders such as employees and consumers are useful. If a firm does not score well in these areas, it is not likely to score well in the effort to add to shareholder value. With the aid of computers, multiple performance measures can be employed. This also permits communication of financial goals and performance widely throughout the organization. Continuous information exchange stimulates managers and informs top executives. Value based management requires multiple performance measures with support from top executives who interact over a wide range of managers on an informed basis.

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Figure 1
A Unifying Theory of Value Based Management (VBM)

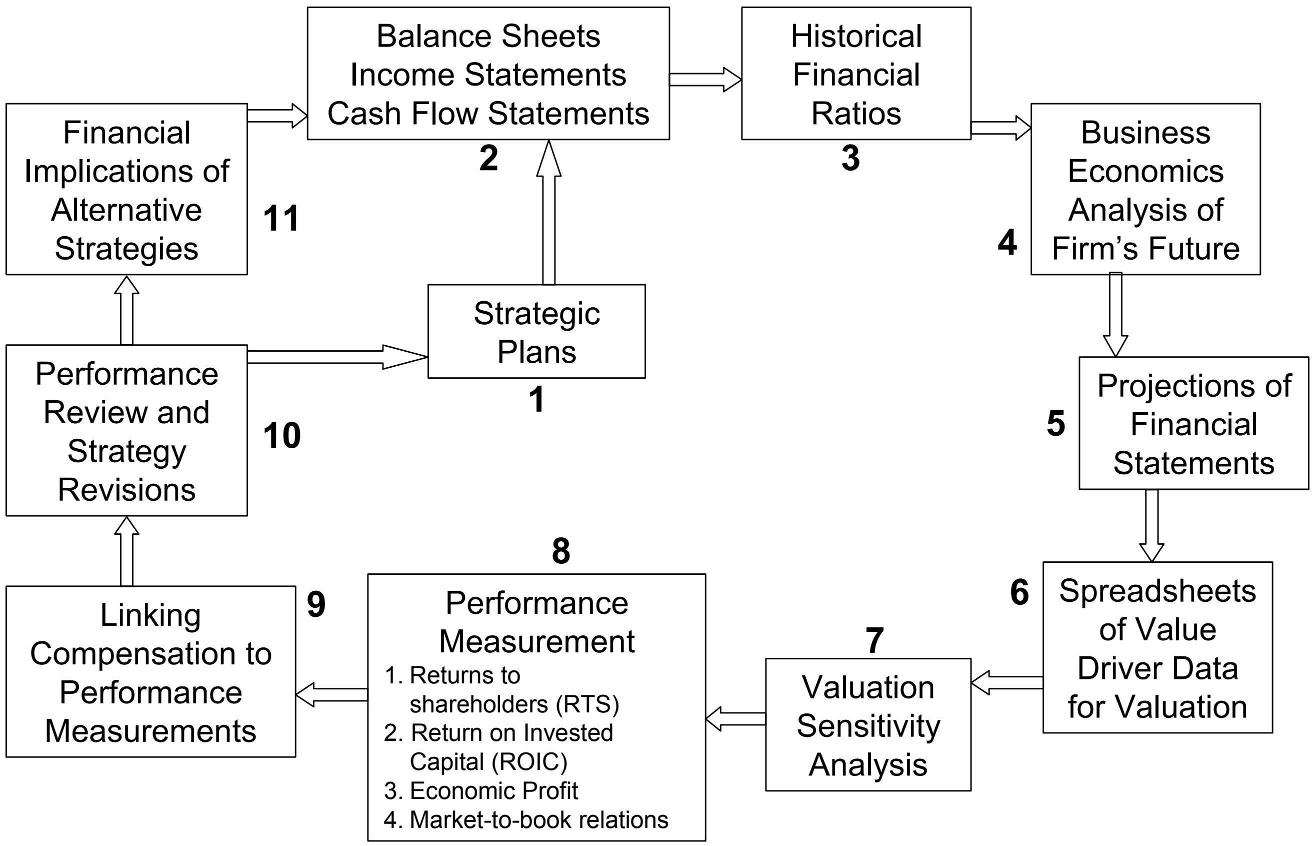

Table 1
Intrinsic Value Estimates, 1994-2000
(Dollar Amounts in Millions Except Per Share)

		1994	1995	1996	1997	1998	1999	2000
Panel A - Value Drivers								
R_0 =	Base year revenues	$ 3,606	$ 3,691	$ 3,989	$ 4,302	$ 4,436	$ 3,971	$ 4,221
Initial Growth Stage								
m_s =	Net operating income margin	13.9%	14.3%	14.4%	15.0%	15.0%	15.0%	15.0%
T_s =	Tax rate	45.4%	33.8%	38.3%	36.2%	24.0%	37.9%	38.8%
g_s =	Growth rate	5.1%	5.4%	6.0%	6.6%	6.8%	6.8%	7.0%
d_s =	Depreciation	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
I_{ws} =	Working capital requirements	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
I_{fs} =	Capital expenditures	3.7%	3.5%	3.4%	3.1%	2.6%	2.6%	2.8%
I_{os} =	Change in other assets, net	0.1%	1.0%	0.1%	0.1%	0.1%	0.1%	0.1%
k_s =	Cost of capital	10.0%	9.9%	9.8%	9.5%	9.5%	9.5%	9.5%
n =	Number of growth years	5	6	7	9	9	9	10
Terminal stage								
m_c =	Net operating income margin	12.0%	12.2%	14.3%	14.6%	14.6%	14.6%	14.6%
T_c =	Tax rate	38.8%	38.8%	38.8%	38.8%	38.8%	38.8%	38.8%
g_c =	Growth rate	4.0%	4.1%	4.2%	4.3%	4.3%	4.4%	4.5%
d_c =	Depreciation	2.9%	2.9%	2.9%	2.9%	2.9%	2.9%	2.9%
I_{wc} =	Working capital requirements	0.10%	0.12%	0.14%	0.15%	0.16%	0.18%	0.20%
I_{fc} =	Capital expenditures	2.4%	2.5%	2.6%	2.6%	2.7%	2.7%	2.9%
I_{oc} =	Change in other assets, net	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
K_c =	Cost of capital	10.0%	9.9%	9.8%	9.5%	9.5%	9.5%	9.5%
1 + h =	Calculation relationship = $(1+g_s)/(1+k_s)$	0.9555	0.9591	0.9654	0.9735	0.9753	0.9753	0.9772
Panel B - Calculating Firm Value								
1.	Present value of initial growth stage cash flov	$ 1,038	$ 1,661	$ 1,991	$ 3,110	$ 4,059	$ 2,976	$ 3,383
2.	Present value of terminal value	3,805	3,941	5,112	6,090	6,307	5,750	6,047
3.	Enterprise operating value	$ 4,843	$ 5,602	$ 7,103	$ 9,200	$10,366	$ 8,726	$ 9,430
4.	Add: Marketable securities	-	-	-	-	-	-	-
5.	Entity value	$ 4,843	$ 5,602	$ 7,103	$ 9,200	$10,366	$ 8,726	$ 9,430
6.	Less: Total interest-bearing debt	505	796	996	1,317	1,282	1,118	1,136
7.	Equity value	$ 4,338	$ 4,806	$ 6,107	$ 7,883	$ 9,084	$ 7,608	$ 8,294
8.	Number of shares	173.5	154.5	152.9	142.9	143.1	138.5	136.3
9.	Intrinsic value per share	$ 25.00	$ 31.11	$ 39.94	$ 55.16	$ 63.48	$ 54.93	$ 60.85
10.	Actual closing price per share	$ 24.19	$ 32.50	$ 43.75	$ 61.94	$ 62.19	$ 47.44	$ 64.38
11.	Percent difcference from closing price	3.4%	-4.3%	-8.7%	-10.9%	2.1%	15.8%	-5.5%

Table 1A

DCF Spreadsheet Valuation of Hershey

($ millions)

Panel A - Valuation Assumptions

	2001E	2002E	2003E	2004E	2005E	2006E	2007E	2008E	2009E	2010E	2011E
Net revenues (growth rates)	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	4.5%
Tax rate	38.8%	38.8%	38.8%	38.8%	38.8%	38.8%	38.8%	38.8%	38.8%	38.8%	38.8%
(As a % of revenues)											
NOI	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	14.6%
NOPAT	9.2%	9.2%	9.2%	9.2%	9.2%	9.2%	9.2%	9.2%	9.2%	9.2%	8.9%
Depreciation	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	2.9%
Change in working capital	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%
Capital expenditures	-2.8%	-2.8%	-2.8%	-2.8%	-2.8%	-2.8%	-2.8%	-2.8%	-2.8%	-2.8%	-2.9%
Change in other assets net	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%

Panel B - Spreadsheet Data

	2001E	2002E	2003E	2004E	2005E	2006E	2007E	2008E	2009E	2010E	2011E
Net revenues	**$ 4,516.5**	**$ 4,832.6**	**$ 5,170.9**	**$ 5,532.9**	**$ 5,920.2**	**$ 6,334.6**	**$ 6,778.0**	**$ 7,252.5**	**$ 7,760.1**	**$ 8,303.3**	**$ 8,677.0**
NOI	677.5	724.9	775.6	829.9	888.0	950.2	1,016.70	1,087.87	1,164.02	1,245.50	1,266.84
Income taxes	262.9	281.3	300.9	322.0	344.6	368.7	394.5	422.1	451.6	483.3	491.5
NOPAT	**$ 414.6**	**$ 443.6**	**$ 474.7**	**$ 507.9**	**$ 543.5**	**$ 581.5**	**$ 622.2**	**$ 665.8**	**$ 712.4**	**$ 762.2**	**$ 775.3**
Depreciation	135.5	145.0	155.1	166.0	177.6	190.0	203.3	217.6	232.8	249.1	251.6
Change in working capital	(9.0)	(9.7)	(10.3)	(11.1)	(11.8)	(12.7)	(13.6)	(14.5)	(15.5)	(16.6)	(17.4)
Capital expenditures	(126.5)	(135.3)	(144.8)	(154.9)	(165.8)	(177.4)	(189.8)	(203.1)	(217.3)	(232.5)	(251.6)
Change in other assets net	(4.5)	(4.8)	(5.2)	(5.5)	(5.9)	(6.3)	(6.8)	(7.3)	(7.8)	(8.3)	(8.7)
Free cash flows	**$ 410.1**	**$ 438.8**	**$ 469.5**	**$ 502.4**	**$ 537.6**	**$ 575.2**	**$ 615.4**	**$ 658.5**	**$ 704.6**	**$ 753.9**	**$ 749.3**
WACC	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%	
Discount factor	0.9132	0.8340	0.7617	0.6956	0.6352	0.5801	0.5298	0.4838	0.4418	0.4035	
Present value	$ 374.5	$ 366.0	$ 357.6	$ 349.4	$ 341.5	$ 333.7	$ 326.1	$ 318.6	$ 311.3	$ 304.2	

Present value - free cash flow	$ 3,382.9
Present value - residual value	$ 6,046.9
Enterprise operating value	$ 9,429.8

Residual value = $14,985.5 (FCF yr11) / (COC - g) = $749.3 / (.095 - .045)

Table 1B

Hershey Foods Hypothetical Strategic Plan

($ millions)

	2000-Act	2001E	2002E	2003E	2004E	2005E	2006E	2007E	2008E	2009E	2010E	2011E
Sales	$4,221.0	$4,516.4	$4,832.6	$5,170.9	$5,532.8	$5,920.1	$6,334.5	$6,778.0	$7,252.4	$7,760.1	$8,303.3	$8,676.9
Net Operating Income (15%)	615.0	677.5	724.9	775.6	829.9	888.0	950.2	1,016.7	1,087.9	1,164.0	1,245.5	1,266.8
Interest expense	68.4	78.4	69.1	59.1	48.3	36.7	24.2	10.8	(3.6)	(19.2)	(35.9)	(53.8)
Pretax income	546.6	599.1	655.8	716.5	781.6	851.3	926.0	1,005.9	1,091.5	1,183.2	1,281.4	1,320.6
Income taxes (38.8%)	212.1	232.4	254.4	278.0	303.3	330.3	359.3	390.3	423.5	459.1	497.2	512.4
Net income	$334.5	$366.6	$401.3	$438.5	$478.4	$521.0	$566.7	$615.6	$668.0	$724.1	$784.2	$808.2
Cash and cash equivalents	$32.0	$197.4	$383.4	$591.4	$822.8	$1,079.5	$1,363.2	$1,675.8	$2,019.3	$2,396.0	$2,808.3	$3,267.2
Other operating current assets	1,263.4	1,303.4	1,343.4	1,383.4	1,423.4	1,463.4	1,503.4	1,543.4	1,583.4	1,623.4	1,663.4	1,738.2
Total current assets	1,295.4	1,500.8	1,726.8	1,974.7	2,246.2	2,542.9	2,866.6	3,219.2	3,602.7	4,019.4	4,471.6	5,005.4
Property, plant, and equipment, net	1,585.4	1,576.4	1,566.7	1,556.3	1,545.3	1,533.4	1,520.8	1,507.2	1,492.7	1,477.2	1,460.6	1,460.6
Other assets	567.0	552.0	537.0	522.0	507.0	492.0	477.0	462.0	447.0	432.0	417.0	435.7
Total assets	$3,447.8	$3,629.2	$3,830.5	$4,053.1	$4,298.5	$4,568.3	$4,864.4	$5,188.4	$5,542.4	$5,928.6	$6,349.2	$6,901.7
Short-term debt	$258.1	$208.1	$158.1	$108.1	$58.1	$8.1	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Other operating current liab	508.8	539.7	570.1	599.7	628.7	656.8	684.2	710.6	736.1	760.6	784.0	841.5
Total current liabilities	766.9	747.9	728.2	707.9	686.8	665.0	684.2	710.6	736.1	760.6	784.0	841.5
Long-term debt	877.7	877.7	877.7	877.7	877.7	877.7	835.8	785.8	735.8	685.8	635.8	635.8
Other long-term liabilities	628.2	608.7	588.9	568.7	548.1	527.2	505.9	484.1	461.9	439.1	415.8	425.9
Total liabilities	2,272.8	2,234.2	2,194.7	2,154.2	2,112.6	2,069.8	2,025.8	1,980.5	1,933.7	1,885.4	1,835.5	1,903.1
Stockholders' equity	1,175.0	1,395.0	1,635.8	1,898.9	2,186.0	2,498.6	2,838.6	3,207.9	3,608.7	4,043.2	4,513.7	4,998.7
Total liabilities and equity	$3,447.8	$3,629.2	$3,830.5	$4,053.1	$4,298.5	$4,568.3	$4,864.4	$5,188.4	$5,542.4	$5,928.6	$6,349.2	$6,901.7
Net income	$334.5	$366.6	$401.3	$438.5	$478.4	$521.0	$566.7	$615.6	$668.0	$724.1	$784.2	$808.2
Depreciation	176.0	135.5	145.0	155.1	166.0	177.6	190.0	203.3	217.6	232.8	249.1	251.6
Source (use) working capital	(8.0)	(9.0)	(9.7)	(10.3)	(11.1)	(11.8)	(12.7)	(13.6)	(14.5)	(15.5)	(16.6)	(17.4)
Source (use) other oper assets & liab.	(90.3)	(4.5)	(4.8)	(5.2)	(5.5)	(5.9)	(6.3)	(6.8)	(7.3)	(7.8)	(8.3)	(8.7)
Total cash flow from operations	412.2	488.6	531.8	578.1	627.7	680.8	737.7	798.6	863.8	933.6	1,008.4	1,033.8
Capital expenditures	(138.0)	(126.5)	(135.3)	(144.8)	(154.9)	(165.8)	(177.4)	(189.8)	(203.1)	(217.3)	(232.5)	(251.6)
Total cash (used for) investing	(271.8)	(126.5)	(135.3)	(144.8)	(154.9)	(165.8)	(177.4)	(189.8)	(203.1)	(217.3)	(232.5)	(251.6)
Debt repayment	45.8	(50.0)	(50.0)	(50.0)	(50.0)	(50.0)	(50.0)	(50.0)	(50.0)	(50.0)	(50.0)	0.0
Cash dividends paid	(144.9)	(146.7)	(160.5)	(175.4)	(191.3)	(208.4)	(226.7)	(246.2)	(267.2)	(289.6)	(313.7)	(323.3)
Repurchase of common stock	(127.4)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total cash (used for) financing	(226.5)	(196.7)	(210.5)	(225.4)	(241.3)	(258.4)	(276.7)	(296.2)	(317.2)	(339.6)	(363.7)	(323.3)
Cash flow	($86.1)	$165.5	$186.0	$207.9	$231.5	$256.7	$283.7	$312.6	$343.6	$376.7	$412.2	$458.9

Table 2
Hershey, Returns to Shareholders Relationships, 1980-2000
(Adjusted for stock-splits)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
1. Closing Price	$1.96	$3.00	$4.70	$5.27	$6.44	$8.58	$12.31	$12.25	$13.00	$17.94	$18.75
2. Common Shares Outstanding (millions)	169.9	188.0	188.0	188.0	188.0	188.0	180.4	180.4	180.4	180.4	180.4
3. Dividend per share	$0.13	$0.15	$0.17	$0.18	$0.21	$0.24	$0.26	$0.29	$0.33	$0.37	$0.50
4. Dividend yield		7.4%	5.6%	3.9%	3.9%	3.7%	3.0%	2.4%	2.7%	2.8%	2.8%
5. Capital gain		53.2%	56.6%	12.2%	22.1%	33.3%	43.4%	-0.5%	6.1%	38.0%	4.5%
6. Total return to shareholders		60.6%	62.2%	16.1%	26.1%	37.0%	46.5%	1.8%	8.8%	40.8%	7.3%

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
1. Closing Price	$22.19	$23.50	$24.50	$24.19	$32.50	$43.75	$61.94	$62.19	$47.44	$64.38
2. Common Shares Outstanding (millions)	180.4	180.4	175.2	173.5	154.5	152.9	142.9	143.1	138.5	136.3
3. Dividend per share	$0.47	$0.52	$0.57	$0.63	$0.69	$0.76	$0.84	$0.92	$1.00	$1.08
4. Dividend yield	2.5%	2.3%	2.4%	2.6%	2.8%	2.3%	1.9%	1.5%	1.6%	2.3%
5. Capital gain	18.3%	5.9%	4.3%	-1.3%	34.4%	34.6%	41.6%	0.4%	-23.7%	35.7%
6. Total return to shareholders	20.8%	8.2%	6.7%	1.3%	37.2%	37.0%	43.5%	1.9%	-22.1%	38.0%

Data Source: Compustat

Table 3
Total Returns to Shareholders (TRS)

Period	Average Annual Return	Compound Annual Return
1980-1990	30.7%	29.1%
1991-1995	13.3%	12.5%
1995-2000	19.6%	16.6%
1980-2000	24.0%	22.0%

Table 4
Annual RTS Measure Comparison

Year	Hershey - S&P500	Hershey - Food Index
1992	3.56%	-1.27%
1993	3.51%	16.73%
1994	-12.76%	-17.91%
1995	3.34%	13.49%
1996	44.08%	39.92%
1997	-16.14%	-28.22%
1998	2.72%	9.05%
1999	-49.53%	-31.23%
2000	4.66%	3.25%
2001	44.53%	3.53%
Average	2.80%	0.73%

Table 5
RTS Measure Comparison for Selected Periods

Period	Hershey - S&P500	Hershey - Food Index
1991-2001	1.87%	-0.91%
1992-2001	1.68%	-0.87%
1993-2001	1.46%	-3.18%
1994-2001	3.86%	-0.70%
1995-2001	3.94%	-2.95%
1996-2001	-2.23%	-9.62%
1997-2001	0.73%	-5.70%
1998-2001	0.19%	-10.00%
1999-2001	25.86%	3.39%
2000-2001	44.53%	3.53%
Average	8.19%	-2.70%

Table 6
Calculation of Economic Profit - Average and Beginning Invested Capital
(Dollar Amounts in Millions - Varying Cost of Capital)

		1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
1.	NOI	$ 167	$ 179	$ 205	$ 220	$ 245	$ 271	$ 294	$ 266	$ 310	$ 351
2.	Cash Tax Rate	42.2%	38.1%	40.7%	37.4%	35.2%	38.9%	48.7%	36.7%	39.8%	42.6%
3.	NOPAT	$ 97	$ 111	$ 122	$ 138	$ 159	$ 166	$ 151	$ 168	$ 187	$ 201
4.	Operating Working Capital	$ 172	$ 153	$ 207	$ 210	$ 241	$ 203	$ 256	$ 358	$ 319	$ 385
5.	NPPE	440	540	575	643	702	793	863	736	830	952
6.	Other Assets, Net	18	(1)	(36)	(39)	(81)	(26)	90	229	221	244
7.	Invested Capital (IC)	$ 630	$ 692	$ 746	$ 814	$ 862	$ 970	$ 1,209	$ 1,323	$ 1,370	$ 1,581
8.	Average Invested Capital (AIC)	$ 576	$ 661	$ 719	$ 780	$ 838	$ 916	$ 1,090	$ 1,266	$ 1,347	$ 1,476
	Measures Based on Average Invested Capital										
9.	**AROIC = NOPAT / AIC**	**16.8%**	**16.8%**	**16.9%**	**17.7%**	**18.9%**	**18.1%**	**13.8%**	**13.3%**	**13.9%**	**13.7%**
10.	WACC	13.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%
11.	AROIC - WACC	3.8%	4.8%	4.9%	5.7%	6.9%	6.1%	1.8%	1.3%	1.9%	1.7%
12.	**AEP = AIC (AROIC - WACC)**	**$ 22**	**$ 31**	**$ 35**	**$ 44**	**$ 58**	**$ 56**	**$ 20**	**$ 16**	**$ 25**	**$ 24**
	Measures Based on Beginning Invested Capital										
13.	**BROIC = NOPAT / IC$_{(t-1)}$**		**17.6%**	**17.6%**	**18.5%**	**19.5%**	**19.2%**	**15.5%**	**13.9%**	**14.1%**	**14.7%**
14.	WACC		12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%
15.	BROIC - WACC		5.6%	5.6%	6.5%	7.5%	7.2%	3.5%	1.9%	2.1%	2.7%
16.	**AEP = IC$_{(t-1)}$ (BROIC - WACC)**		**$ 35**	**$ 39**	**$ 48**	**$ 61**	**$ 62**	**$ 34**	**$ 23**	**$ 28**	**$ 37**

		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
1.	NOI	$ 390	$ 428	$ 457	$ 475	$ 511	$ 563	$ 630	$ 643	$ 558	$ 615
2.	Cash Tax Rate	33.9%	34.2%	39.7%	45.4%	33.8%	38.3%	36.2%	24.0%	37.9%	41.8%
3.	NOPAT	$ 258	$ 282	$ 276	$ 259	$ 338	$ 347	$ 402	$ 489	$ 347	$ 358
4.	Operating Working Capital	$ 382	$ 409	$ 443	$ 500	$ 496	$ 509	$ 527	$ 722	$ 807	$ 787
5.	NPPE	1,146	1,296	1,461	1,468	1,436	1,602	1,648	1,648	1,510	1,585
6.	Other Assets, Net	199	141	42	(23)	(54)	45	(5)	(46)	(101)	(61)
7.	Invested Capital (IC)	$ 1,727	$ 1,846	$ 1,946	$ 1,945	$ 1,878	$ 2,156	$ 2,170	$ 2,324	$ 2,216	$ 2,311
8.	Average Invested Capital (AIC)	$ 1,654	$ 1,787	$ 1,896	$ 1,946	$ 1,912	$ 2,017	$ 2,163	$ 2,247	$ 2,270	$ 2,264
	Measures Based on Average Invested Capital										
9.	**ROIC = NOPAT / AIC**	**15.6%**	**15.8%**	**14.5%**	**13.3%**	**17.7%**	**17.2%**	**18.6%**	**21.7%**	**15.3%**	**15.8%**
10.	WACC	12.0%	11.0%	10.5%	10.0%	9.9%	9.8%	9.5%	9.5%	9.5%	9.5%
11.	ROIC - WACC	3.6%	4.8%	4.0%	3.3%	7.8%	7.4%	9.1%	12.2%	5.8%	6.3%
12.	**AEP = AIC (ROIC - WACC)**	**$ 59**	**$ 85**	**$ 76**	**$ 65**	**$ 149**	**$ 150**	**$ 196**	**$ 275**	**$ 131**	**$ 143**
	Measures Based on Beginning Invested Capital										
13.	**BROIC = NOPAT / IC$_{(t-1)}$**	**16.3%**	**16.3%**	**14.9%**	**13.3%**	**17.4%**	**18.5%**	**18.6%**	**22.5%**	**14.9%**	**16.2%**
14.	WACC	12.0%	11.0%	10.5%	10.0%	9.9%	9.8%	9.5%	9.5%	9.5%	9.5%
15.	BROIC - WACC	4.3%	5.3%	4.4%	3.3%	7.5%	8.7%	9.1%	13.0%	5.4%	6.7%
16.	**AEP = IC$_{(t-1)}$ (BROIC - WACC)**	**$ 68**	**$ 92**	**$ 82**	**$ 65**	**$ 146**	**$ 163**	**$ 197**	**$ 283**	**$ 126**	**$ 147**

Data Source: Compustat

Table 7

Economic Profit (EVA®) Valuation

(Estimates of Economic Profit for 250 years -- $ millions)

	2000-Act	2001E	2002E	2003E	2004E	2005E	2006E	2007E	2008E	2009E	2010E	2050	2100	2150	2200	2250
Net Operating Profit After Tax	$ 358.0	$ 414.6	$ 443.6	$ 474.7	$ 507.9	$ 543.5	$ 581.5	$ 622.2	$ 665.8	$ 712.4	$ 762.2	$ 4,315.3	$ 38,978.1	$ 352,075.3	$ 3,180,168.4	$ 28,725,304.8
Operating working capital	$ 786.6	$ 961.1	$ 1,156.7	$ 1,375.0	$ 1,617.5	$ 1,886.1	$ 2,182.4	$ 2,508.6	$ 2,866.6	$ 3,258.8	$ 3,687.7	$63,256.0	$701,435.3	$6,594,782.8	$60,071,349.7	$543,567,971.8
NPPE	1,585.4	1,576.4	1,566.7	1,556.3	1,545.3	1,533.4	1,520.8	1,507.2	1,492.7	1,477.2	1,460.6	1,460.6	1,460.6	1,460.6	1,460.6	1,460.6
Other assets, net	(61.2)	(56.7)	(51.9)	(46.7)	(41.2)	(35.2)	(28.9)	(22.1)	(14.9)	(7.1)	1.2	929.9	9,938.6	91,311.3	826,321.2	7,465,398.5
Cash and cash equivalents	(32.0)	(197.4)	(383.4)	(591.4)	(822.8)	(1,079.5)	(1,363.2)	(1,675.8)	(2,019.3)	(2,396.0)	(2,808.3)	(60,519.2)	(680,681.0)	(6,411,283.2)	(58,417,830.2)	(528,636,297.8)
Invested capital	$ 2,278.8	$ 2,283.3	$ 2,288.1	$ 2,293.3	$ 2,298.8	$ 2,304.7	$ 2,311.1	$ 2,317.9	$ 2,325.1	$ 2,332.9	$ 2,341.2	$ 5,127.3	$ 32,153.5	$ 276,271.6	$ 2,481,301.3	$ 22,398,533.1
Weighted average cost of capital		9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%
Capital charge (beginning invested capital)		$ 216.5	$ 216.9	$ 217.4	$ 217.9	$ 218.4	$ 219.0	$ 219.6	$ 220.2	$ 220.9	$ 221.6	$ 473.3	$ 2,930.3	$ 25,122.8	$ 225,580.1	$ 2,036,237.5
Economic profit		$ 198.1	$ 226.7	$ 257.3	$ 290.1	$ 325.1	$ 362.6	$ 402.7	$ 445.6	$ 491.5	$ 540.6	$ 3,841.9	$ 36,047.9	$ 326,952.5	$ 2,954,588.4	$ 26,689,067.3

Present value of economic profit stream	$ 7,150.9
Beginning invested capital	2,278.8
Enterprise operating value	$ 9,429.7

Table 8
Valuation Ratios
($ Millions)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
1. Yearend Market Value of Equity (MV-EQ)	$ 564	$ 883	$ 991	$ 1,210	$ 1,614	$ 2,221	$ 2,210	$ 2,345	$ 3,235	$ 3,382
2. Book Value of Equity	470	532	596	661	728	728	832	1,006	1,117	1,244
3. Interest Bearing Debt (IBD)	160	160	150	153	134	243	377	317	254	338
4. IBD + Market Value of Equity (1. + 3.)	724	1,043	1,141	1,363	1,748	2,464	2,587	2,662	3,489	3,720
5. Average Invested Capital (2. + 3.)	576	661	719	780	838	917	1,090	1,266	1,347	1,477
6. Market Value Added (MVA) (4. - 5.)	$ 148	$ 382	$ 422	$ 583	$ 910	$ 1,548	$ 1,497	$ 1,396	$ 2,142	$ 2,244
7. q-ratio	1.26	1.58	1.59	1.75	2.09	2.69	2.37	2.10	2.59	2.52
8. Market-to-Book Equity (M/B Eq) (1./2.)	1.20	1.66	1.66	1.83	2.22	3.05	2.66	2.33	2.90	2.72

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
1. Yearend Market Value of Equity (MV-EQ)	$ 4,002	$ 4,239	$ 4,293	$ 4,196	$ 5,022	$ 6,691	$ 8,853	$ 8,902	$ 6,568	$ 8,773
2. Book Value of Equity	1,335	1,465	1,412	1,441	1,083	1,161	853	1,042	1,099	1,175
3. Interest Bearing Debt (IBD)	391	560	534	505	795	995	1,317	1,282	1,118	1,136
4. IBD + Market Value of Equity (1. + 3.)	4,393	4,799	4,827	4,701	5,817	7,686	10,170	10,184	7,686	9,909
5. Average Invested Capital (2. + 3.)	1,654	1,876	1,986	1,946	1,912	2,017	2,163	2,247	2,271	2,264
6. Market Value Added (MVA) (4. - 5.)	$ 2,739	$ 2,924	$ 2,842	$ 2,755	$ 3,905	$ 5,669	$ 8,007	$ 7,937	$ 5,416	$ 7,645
7. q-ratio	2.66	2.56	2.43	2.42	3.04	3.81	4.70	4.53	3.39	4.38
8. Market-to-Book Equity (M/B Eq) (1./2.)	3.00	2.89	3.04	2.91	4.64	5.76	10.38	8.54	5.98	7.47

Table 9A

Correlation Matrix for Market Valuation Measures

(1983 - 2000)

	Market Value of Equity	Market Value Added	Q-Ratio	Market-to-Book Value of Equity	Stock Price	Returns to Share-holders
MV-EQ	1.0000					
MVA	0.9910	1.0000				
Q	0.9404	0.9635	1.0000			
M/B EQ	0.8884	0.9323	0.9389	1.0000		
STK PR	0.9883	0.9938	0.9405	0.9145	1.0000	
RTS	0.0001	0.0019	0.0254	0.0182	0.0002	1.0000

Table 9B
Regression Analysis:
Operating Performance vs. Market Metrics
(1983-2000)

	R-Squared	Intercept Coefficient	Intercept T*	X-Variable Coefficient	X-Variable T*
MVA					
Operating Metrics					
EBITDA	0.9061	(2,823)	**(5.299)**	12.20	**12.427**
OPAT	0.9153	(2,623)	**(5.355)**	24.75	**13.146**
Free Cash Flow	0.3609	2,146	**3.368**	18.44	**3.006**
WW NOPAT	0.8977	(2,503)	**(4.693)**	22.77	**11.847**
WW Economic Profit	0.8096	516	1.179	31.99	**8.248**
Returns					
OPAT Return on Capital	0.5676	(17,065)	**(3.811)**	136,401.35	**4.583**
INEX / Equity	0.8576	(4,295)	**(5.271)**	36,120.66	**9.816**
WW-Return on Invested Capital	0.1548	(3,555)	(0.870)	42,777.61	1.712
Hsy/SS - ROIC	0.2377	11,432	**3.136**	(62,013.45)	**(2.234)**
Q-Ratio					
Operating Metrics					
EBITDA	0.8193	0.7153	**2.633**	0.0043	**8.516**
OPAT	0.8253	0.7882	**3.050**	0.0086	**8.694**
Free Cash Flow	0.3169	2.4582	**10.154**	0.0064	**2.724**
WW NOPAT	0.8271	0.8078	**3.170**	0.0080	**8.747**
WW Economic Profit	0.7741	1.8538	**10.586**	0.0115	**7.405**
Returns					
OPAT Return on Capital	0.6079	(4.8930)	**(3.122)**	51.8816	**4.980**
INEX / Equity	0.8377	0.0953	0.298	13.1218	**9.088**
WW-Return on Invested Capital	0.1879	0.0748	0.051	17.3262	1.924
Hsy/SS - ROIC	0.1836	5.4837	**3.954**	(20.0288)	(1.897)
Stock Price					
Operating Metrics					
EBITDA	0.9144	(21.0793)	**(5.273)**	0.0963	**13.071**
OPAT	0.9219	(19.4531)	**(5.265)**	0.1951	**13.738**
Free Cash Flow	0.3660	18.1128	**3.633**	0.1459	**3.039**
WW NOPAT	0.8848	(18.0111)	**(4.052)**	0.1776	**11.088**
WW Economic Profit	0.7864	5.6947	1.565	0.2477	**7.676**
Returns					
OPAT Return on Capital	0.5508	(130.3511)	**(3.635)**	1,055.6372	**4.430**
INEX / Equity	0.8504	(32.1683)	**(4.904)**	282.5931	**9.538**
WW-Return on Invested Capital	0.1333	(22.6923)	(0.698)	311.9281	1.569
Hsy/SS - ROIC	0.2650	94.6656	**3.366**	(514.3773)	**(2.402)**

* t-stats in bold font are significant at least at the 5% level.

OPAT: Operating Profit (EBIT) After Tax
NOPAT: Net Operating Profit After Tax (Cash Taxes)
INEX: Net Income Excluding Special Items and Extraordinary Items

Table 10

Performance Monitoring - Operating Return on Capital

($ millions)

- OROC 16.71%
  - ROA 11.42%
    - OPAT Margin 9.18%
      - OPAT $414.6
        - Sales $ 4,516.4
          - Sales $4,516.4
        - minus
        - COGS $ 2,668.7
          - Labor $999.9
          - plus
          - Material $1,400.1
          - plus
          - Overhead $268.7
        - minus
        - SG&A $ 1,170.2
          - R&D $22.2
          - plus
          - Marketing $754.7
          - plus
          - Selling $278.2
          - plus
          - Admin $115.2
        - minus
        - Taxes $262.9
          - Taxes $262.9
      - divided by
      - Sales $ 4,516.4
    - multiplied by
    - Turnover 1.24
      - Sales $ 4,516.4
      - divided by
      - Total Assets $ 3,629.2
        - Current Assets $ 1,500.8
          - Cash $197.4
          - plus
          - Receiables $381.1
          - plus
          - Inventory $635.4
          - plus
          - Other CA $286.9
        - plus
        - NPPE $ 1,576.4
          - NPPE $1,576.4
        - plus
        - Other Assets $552.0
          - Goodwill $460.6
          - plus
          - Other Assets $91.4
  - multiplied by
  - Supplier Operating Leverage 1.46
    - Total Assets $ 3,629.2
    - divided by
    - Invested Capital $ 2,480.8
      - Total Assets $ 3,629.2
      - minus
      - Supplier Operating Liabilities $ 1,148.4
        - Payables $174.2
        - plus
        - Accruals $365.5
        - plus
        - Other LT Liabilities $291.7
        - plus
        - Deferred Income Tax $317.0

	Performance Metric		Responsibility	
	Objective	Target	Primary	Secondary
Sales $4,516.4	Sales growth	7.00%	Marketing	Sales
Labor $999.9	% of sales	22.14%	Plant Manager	VP, Production
Material $1,400.1	% of sales	31.00%	Plant Manager	VP, Production
Overhead $268.7	% of sales	5.95%	Plant Manager	VP, Production
R&D $22.2	% of sales	0.49%	VP, R&D	Marketing
Marketing $754.7	% of sales	16.71%	Brands Manager	Marketing
Selling $278.2	% of sales	6.16%	Sales	Marketing
Admin $115.2	% of sales	2.55%	All Admin Managers	All Vice Presidents
Taxes $262.9	Tax rate	38.80%	Tax Department	CFO
Cash $197.4	Dollar amount	$ 197.4	Treasurer	CFO
Receiables $381.1	Days outstanding	30.8	A/R Manager	Marketing
Inventory $635.4	Days outstanding	86.9	Inventory Manager	Production
Other CA $286.9	Dollar amount	$ 286.9	Controller	CFO
NPPE $1,576.4	Dollar amount	$ 1,576.4	Engineer	Controller
Goodwill $460.6	Dollar amount	$ 460.6	Controller	CFO
Other Assets $91.4	Dollar amount	$91.5	Controller	CFO
Payables $174.2	Days outstanding	23.8	Payables Manager	Controller
Accruals $365.5	Days outstanding	50.0	Controller	CFO
Other LT Liabilities $291.7	Days outstanding	48.0	Controller	CFO
Deferred Income Tax $317.0	Dollar amount	$ 317.0	Tax Department	CFO

Figure 2
Ruby Tuesday Strategic Plan
1999 Annual Report

Mission: To be our guests' first choice, a great place to work, a great investment.

Goals: To strengthen (1) our bond with our customers, (2) the skills, capabilities, and satisfaction of our teams, (3) our financial fundamentals, and (4) our capacity for high-return growth.

Target	Strategies	Performance Measures
1. Customers	1. Provide great food and great service in sparkling-clean restaurants, 2. Operate restaurants that are fun, fast, and casual, 3. Continue the development of our menu, and 4. Invite and inform with neighborhood marketing programs.	1. Same-store sales, 2. Monthly guest frequency, 3. Customer satisfaction scores, and 4. Food quality ratings.
2. Team Members	1. Hire and develop great talent – invest in people, 2. Have extensive partner plans to align management and shareholders' interests, 3. Build the strongest culture in the industry so that it's more than a job, it's about passion and desire, and 4. Training and team-member certification – developing future leaders.	1. Management turnover, 2. Hourly-employee turnover, 3. Team certification levels, 4. Female and minority management levels, and 5. Team satisfaction scores.
3. Investors	A. Financial Strategies 1. Set high performance sales and operating profit goals, 2. Intensely manage the exceptions – the under performers, and 3. Improve returns on invested capital. B. High-Return Growth Strategies 1. Develop restaurants that are more efficient and cost less, 2. Open company-owned units in existing markets, 3. Open company-owned units with managing partners who invest in the success of each restaurant, and 4. Develop the Ruby Tuesday brand through selective franchising and partnering.	1. Revenue growth of 10% for company-owned restaurants, 2. System-wide revenue growth of 15%, 3. EPS growth of 15-20%, annually, 4. Pre-tax margin of 7%, and 5. Return on equity of 20%.