STRATEGY AND INTEGRATED FINANCIAL RATIO PERFORMANCE MEASURES: EMPIRICAL EVIDENCE OF THE FINANCIAL PERFORMANCE SCORECARD AND HIGH PERFORMANCE COMPANIES

Belverd E. Needles Jr., Mark L. Frigo
and Marian Powers

ABSTRACT

Following our prior research (Frigo et al., 2002; Needles et al., 2002), we continue to examine the link between strategy and financial performance, as well as, the underlying performance drivers that describe how a company executes strategy to create financial value. We also present a structured, theoretical framework for integrated financial ratio analysis that links financial objectives, performance drivers and performance measures for value creation. We investigate empirically companies in the United States S&P 500 and companies that have displayed characteristics of return-driven,

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high performance companies. We find support for the hypothesized relationships in the model and of above-mean performance by high performance companies across all performance measures.

Our prior research (Frigo et al., 2002; Needles et al., 2002) examines the connection between strategy, strategic performance drivers and financial ratios for companies in a mature economy (United States) and an emerging economy (India). In both studies, we found that the financial performance of the companies selected clearly reflected the expected performance characteristics of companies that emphasize strategic directions of operational excellence and product leadership (innovation), the expected performance characteristics were not as strong for the strategic direction of customer intimacy. This paper reports on this further research and is directly related to the theme of the research conference: "Understanding the drivers of corporate performance, the linkages between them, and how to measure their impact on profitability."

In this study, we continue to examine the relationship of strategy and financial performance, as well as, the underlying performance drivers and measures that describe how a company executes strategy to create financial value. Previously, we studied companies representing three strategy categories based on the Discipline of Market Leadership (DML) (Treacy & Wiersema, 1995): (1) Operational Excellence; (2) Product Leadership; and (3) Customer Intimacy. Our hypothesis was that if an organization is truly a "market leader," does financial performance follow? We examined the strategy of companies using the DML concepts since it provides a suitable framework for studying strategic performance drivers that may be used in executing the strategy. We noted that the DML categories have been incorporated in the balanced scorecard customer value proposition (Kaplan & Norton, 2001, pp. 86–89). The links between strategy and financial performance can be studied by considering the performance measures, both financial and non-financial, that are included in strategy maps within a balanced scorecard framework or value drivers within a value-based management framework.

We further develop our theoretical framework for integrated financial ratio analysis that links strategy for financing, investing, and operating activities using performance drivers and performance measures for financial value creation or destruction. We investigate these relationships empirically for companies in the United States using the S&P 500. This approach allows us to look at a broad spectrum of companies and industries. Also, we examine "high performance" companies and examine how the financial performance of these companies differs from other companies in the same industry.

PREVIOUS RESEARCH

As noted above, this research extends previous research, which has investigated the relationship of strategy and financial ratio analysis (Frigo et al., 2002; Needles et al., 2002). Further, it is related to previous research by Nissim and Penman (1999, 2001) in which they:

> Produce a structural approach to financial statement analysis for equity valuation. The structure not only identifies relevant ratios, but also provides a way of organizing the analysis task. The result is a fundamental analysis that is very much grounded in the financial statements; indeed fundamental analysis is cast as a matter of appropriate financial statement analysis. The structural approach contrasts to the purely empirical approach in Ou and Penman (1989). That paper identified ratios that predicted earnings changes in the data; no thought was given to the identification. The approach also contrasts to that in Lev and Thiagarajan (1993) who defer to "expert judgment" and identify ratios that analysts actually use in practice (p. 110).

Our approach is consistent, but not the same, as that of Nissim and Penman and incorporates the Dupont model, as does Nissim and Penman. Also, like Nissim and Penman, we base our model on accrual accounting, which implies the residual income model, but, as Nissim and Penman say, do not "suggest that this model is the only model, or even the best model, to value equities" (2001, p. 111). Further, we do not develop the algebraic formulas supporting these relationships, as they may be seen in Nissim and Penman.

INTEGRATED FINANCIAL RATIO ANALYSIS

Financial statements provide important information about a company's ability to achieve its primary strategic objective, which is to create value for its owners. The intelligent user of financial statements will be able to discern how well the company has performed in achieving this objective. Financial analysis provides the techniques to assist the user in this task. Figure 1 shows the roles that financial statements and financial analysis play in linking the strategic goals and activities to cost of capital and value creation. In short, the financial statements reflect how well a company's management has carried out the strategic and operating plans of the businesses. This performance is in turn evaluated by the market place and a value is placed on the company.

Analysts have traditionally conducted ratio analysis by examining ratios related to various aspects of a business' operations. For example, return on assets might be used to evaluate a company's profitability and receivable turnover to evaluate liquidity. However, these analyses are often made without regard to how these ratios interact with each other to give an overview of a company's performance.

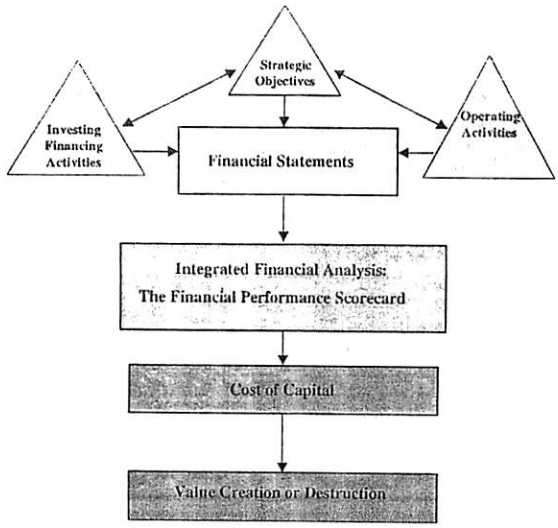

Fig. 1. The Components of Value Creation or Destruction. *Source:* © 2003, Needles & Powers.

Integrated financial ratio analysis, which we call the Financial Performance Scorecard (FPS), is a structure or framework for considering the interaction of financial ratios with particular emphasis on the drivers of performance and their relationship to performance measures. These performance measures are reflected ultimately in a return that is compared with a benchmark cost of capital. If the return exceeds cost of capital value has been created. If the return is less than cost of capital, then value has been destroyed (Adman & Haight, 2002; Gebhardt, Lee & Swaminathan, 2001). Cost of capital was used as a criterion for selecting the leading companies, but for purposes of evaluating the FPS in this study, we will assume that the cost of capital is determinable and given.

The FPS is based on the notion that management has certain financial objectives that must be achieved in order to create value and that these financial goals are interrelated. Further, underlying the performance measures that are widely used by analysts and in the financial press to assess a company's financial performance are certain financial ratios called performance drivers, which are critical to achieving the performance measures; hence, the term "performance drivers." While we hypothesize that the performance measures of "high performance companies" will uniformity excel on the basis of performance measures, the companies will not display uniform characteristics when it comes to performance drivers because these measures are more a function of the various strategies companies may

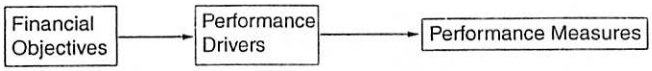

Fig. 2. Relationship of Financial Objectives, Performance Drivers, and Performance Measures.

employ to achieve high performance. The relationships of financial objectives, performance drivers, and performance measures may be visualized as shown in Fig. 2.

Figure 3 expands upon Fig. 1 to show the detail of the FPS. The inner circle (green) shows the five financial objectives and the related performance drivers. The outer circle (blue) shows the performance measures. The performance measures

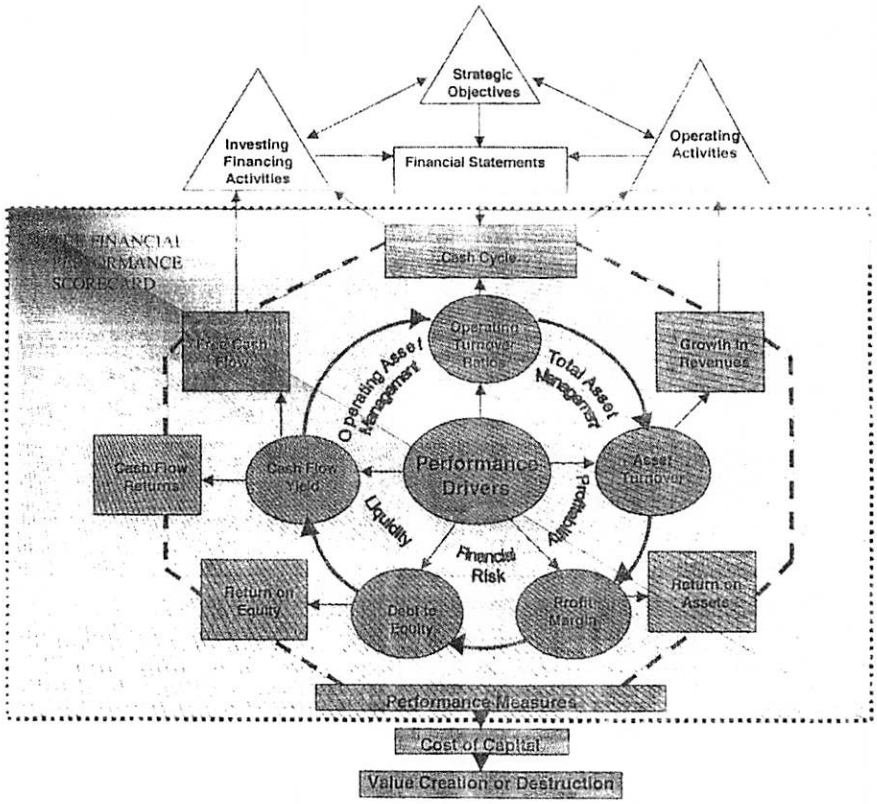

Fig. 3. Integrated Financial Ratio Analysis: The Financial Peformance Scorecard (FPS). *Source:* © 2003. Needles & Powers.

are compared against the benchmark of cost of capital to determine if value has been created or destroyed. The components of the FPS may be summarized as follows:

Financial Objective	Performance Drivers	Performance Measures
Total asset management	Asset turnover	Growth in revenues
Profitability	Profit margin	Return on assets
Financial risk	Debt to equity	Return on equity
Liquidity	Cash flow yield	Free cash flows Cash flow returns
Operating asset management	Turnover ratios	Cash cycle

The financial objectives and their related performance drivers and performance objectives will be discussed in the following sections.

DISCUSSION OF THE FINANCIAL PERFORMANCE SCORECARD

Growth in revenues is a common measure of performance (see, for example, *Business Week*, 2002; Forbes, 2003; Zack, 2002). However, research has shown that the more fundamental driver of growth in revenues is asset turnover. (Fairfield & Yohn, 1999; Jansen & Yohn, 2002). Thus, management's objective is to manage the total assets of the business to achieve the most efficient use of assets in generating revenues. Similarly, return on assets is probably the most common measure of profitability, but the underlying drivers of return on assets are asset turnover and profit margin (Brief & Lawson, 1992; Kissin & Penman, 2001; Selling & Stickney, 1989), according to the following formula:

$$\text{Return on assets} = \text{asset turnover} \times \text{profit margin}.$$

The key variable influencing the goal of profitability is profit margin, whereas, as already mentioned, asset turnover is related to the goal of total asset management. Thus, in combination the goal is profitable growth in sales, which is a function of both asset turnover and profit margin.

Return on equity is often cited as a profitability measure, but here the key driver is debt to equity, and the goal is management's target for financial risk. Return on equity may be derived though the following formula:

$$\text{Return on equity} = \text{return on assets} \times (1 + \text{debt to equity})$$

Penman (1991) studied return on assets and found it to be a good measure of profitability but not a good measure of risk. He drew the opposite conclusion with regard to return on equity. This is consistent with our classification of return on assets as a profitability measure and return on equity as a financial risk measure.

Free cash flows and cash flow returns on sales and assets (Madden, 1999) are often used as measures of value of liquidity. However, the more fundamental driver of these performance measures is cash flow yield, which is computed as follows:

$$\text{Cash flow yield} = \frac{\text{cash flows from operating activities}}{\text{net income}}.$$

The cash flow yield is an important ratio for several reasons. One reason is that the long-run survival (and value) of a business depends on its ability to generate cash flows from its operations, and it begins with profitable operations that enable it to generate these cash flows. The cash flow yield measures whether net income has underlying cash flows from operations. A key component of free cash flows is cash flows from operating activities, which stems from a company's ability to generate cash. Further, cash flow yield is the driver of cash flow return on sales and cash flow return on assets, as may be seen from the following formulas:

$$\text{Cash flow return on sales} = \text{Cash flow yield} \times \text{Profit margin}$$

$$\text{Cash flow return on assets} = \text{Cash flow yield} \times \text{Return on assets}$$

The goal of liquidity is closely related to the goal of operating asset management. Operating asset management is judged by management control of the cash cycle, which is the time required to make or buy products, finance the products, and sell and collect for them, as illustrated in Fig. 2. The cash cycle is driven by three turnover ratios: inventory turnover, receivables turnover and payables turnover. Using these turnover ratios, the total days of financing of operating assets may be determined as follows:

$$\begin{aligned}\text{Financing period} = {} & \text{average days' inventory on hand} \\ & + \text{average days receivable outstanding} \\ & - \text{average days payable}\end{aligned}$$

To limit the scope of this paper, this last objective, operating asset management, and its related measures will be addressed in a future paper.

EMPIRICAL OBJECTIVES

We divided the empirical research into two parts. The first part provides evidence with regards to the components of the FPS. In particular, it examines the

relationships of the performance drivers and performance measures. We expect the performance drivers will be independent of each other because each gives a view of a component of a company's strategic objectives. Further, we expect the performance measures to be independent if they measure different aspects of a company's performance. We expect performance measures that include a common performance driver to be correlated. To test these propositions, we examine the correlation of the ratios for all companies, selected industries, and the industry leaders. We further conducted a rank correlation to determine if the performance drivers and measures rank companies in a similar manner.

The second part looks at the relationship of the performance of the "high performance" companies to that of their respective industries. Since performance drivers are most closely related to differences in a company's strategy (for instance, product innovation vs. operating efficiency, tolerance for financial risk, etc.), we expect there to be variation in performance drivers but we expect "high performance" companies to excel above their industry peers on performance measures which are overall measures of success or failure. We will also examine industry effects for those industries in which we have a sufficient sample.

EMPIRICAL SAMPLE

As noted, our analysis focused on two groups of companies: Companies in the S&P 500 and "high performance" companies. The source of the data was CompuStat database. For the first group, we included companies in the S&P 500 index for which data exists consecutively from the year 1996 to the year 2001. Based on this condition, data for 349 companies existed.

The second group consisted of the thirty-eight high-performance companies. These companies appear in Appendix A. The first source consists of companies that met the following stringent criteria, as part of an ongoing research study called "The Return Driven Strategy Initiative" (Frigo, 2002; Frigo & Litman, 2002; Litman & Frigo, 2004):

- Cash Flow Return on Investment (CFROI) had to exceed twice the cost of capital consistently for over ten years straight (Rate of Return on Equity was used for financial services firms).
- Growth rates must exceed twice the GDP growth rate over the same period.
- Total Shareholder Returns (TSR) had to exceed market performance over the time period – consistent with the growth and return levels.

These companies were identified by screening over 15,000 equities in North America, Europe and Asia over the last 20–30 years. The ongoing research in the

Return Driven Strategy Initiative on these companies is being spearheaded at The Center for Strategy, Execution and Valuation in the Kellstadt Graduate School of Business at DePaul University. The "Return Driven Strategy Companies" identified demonstrate balanced superior performance in returns and growth over a sustained period of time. According to Return Driven Strategy, the pathway to superior financial value creation is through the customer, by fulfilling unmet needs in increasing market segments. The strategic competencies to achieve superior performance rest on operations, innovation of offerings and branding (Frigo, 2002). The connection between financial ratio analysis is most directly seen in operations. For a company like Dell, operational excellence is clearly reflected in the ratios that drive profitability, cash flow and asset utilization. Dell must innovate its offerings to fulfill unmet customer needs, but it does so focusing on its cash conversion cycle and profitability.

Appendix B contains the formulas used to calculate ratios in this study. In the first part, ratios were calculated for each year and partial analysis was made of the mean results for the years 1997–2001. Each ratio was calculated for years 1997–2001 (Year 1996 was used to calculate averages that were used in the formulas). The means for each ratio were calculated for the period of years 1997–2001. This period was used because it was the most recent period for which data was available and it contained a mixture of years with stronger (1997–1999) and weaker economies (2000–2001). Then, to test whether the findings hold for both strong and weak economies, the same procedure was followed except that the analysis was conducted using a three-year average for each ratio using three groups: first average group: 1997–1999 (stronger economy); second average group: 1998–2000 (stronger economy); and third average group: 1999–2001 (weaker economy).

In doing the analyses, companies were grouped by the first two digits of the SIC code. Forty-eight industries were identified based on this grouping. Use of the first three digit of the SIC code did not provide enough companies in many industries to provide reliable industry averages.

The database allows the user to construct a report for any industry, time period, and a ratio or rank by which the results are to be sorted. Pearson and Spearman rank correlations may then be conducted on rankings of each ratio in the industry report and between leading companies' ratios in the industry.

We studied both of these groups together as companies representing high performance companies. We hypothesized that these companies would show superior financial performance based on the financial performance ratios within industries.

The second part of the study examines the relative performance of the high performance companies in relation to the mean performance of their industry

peers. We included only those industries (two-digit code) for which we had seven or more companies and at least one leading company. Using this screen, we have eleven industries and thirty-one high performance companies, as shown in Appendix C. When we had more than one high performance company, we averaged the ratios of the companies.

DISCUSSION OF RESULTS

The results of the analyses are discussed in three sections: (1) all companies and selected industries; (2) high performance companies; and (3) comparison of industry leaders to their respective industries.

We tested ratios whose correlation was more then 0.5 for statistical significance. We ran correlation significance test – linear regression. We examined SIG (< 0.05) and t ($T > 1$). We used stepwise variable selection method. We found that all correlations more than 0.5 were significant both for SIG and t tests. SIG was significant at the 0.001 level in almost all cases. We also calculated Pearson and Spearman correlations (basically they are the same except Spearman correlation calculations produce correlation coefficient, that does not provide much information for data interpretation but it can be used for data manipulation). In all tables we use the correlation value (they are the same for both Pearson and Spearman correlations). The rank correlations were extremely low. Thus, we did not find that ratios were useful in ranking companies' performance.

All Companies and Selected Industries

The results of the first part of the analysis are presented in Tables 1–7. We first examined the correlation of the ratio values. In this analysis, we expected there would be little correlation among the four performance drivers and among the performance measures, except where the performance measures had one or more common components. These expectations were confirmed by the analysis, as can be seen in the upper left quadrant of Table 1a–d, of all companies for the entire period 1997–2001, and for the three year averages. Using five-year averages (Table 1a), there is virtually no correlation among the performance drivers, indicating that they are independent of each other. Among the performance measures, there is also very little correlation, except for return on assets with profit margin (0.63), return on assets with cash flow return on total assets (0.78), cash flow return on stockholders equity with return on equity (0.83), and free cash flow with return on assets (0.51) and cash flow return on total assets (0.84).

These correlations were significant at the 0.001 level. As we expected ratios with a common driver were highly correlated. One of the two drivers of return on assets in profit margin. The latter four results stem from the common driver of cash flow yield. The same patterns are observed when three-year period are observed (Table 1b–d). In other words, cash flow measures tended to be correlated with other cash flow measures. These results tended to hold across all groupings of companies.

There are some relationships in the above analysis for all companies where we would expect higher correlations because of common drivers. It could be argued that the lack of correlation is due to offsetting industry effects. To examine this issue, we performed the same analysis for four selected industries:

Chemicals, etc. (Industry 28)
Engines, machinery, and equipment (Industry 35)
Measurement devices, etc. (Industry 38)
Advertising and other services (Industry 73)

These are the four industries for which there are at least three high performance companies. The results for the five-year period 1997–2001 are found in Table 2. First, although some industry effect is evident from the slightly higher correlations than with all companies, the correlations among performance drivers, with few exceptions are low, confirming the conclusion of independence. (The negative correlation of asset turnover to debt to equity and profit margin to cash flow yield in industry 28 and profit margin to debt to equity in Industry 38 appear to be anomalies. Industries 35 and 73 have no correlations above 0.5. An industry effect among performance measures is observed in that the five relationships that were significant for all industries all show higher correlations when examined for each of the four individual industries. Further, other relationships come more strongly into play. Both profit margin and free cash flow seem to be more important when analyzed on an industry to industry basis. Both of these measures are more highly correlated with the other performance measures. We conducted this same analysis for each three-year period and on all industries for which we have at least seven companies and found consistent results.

The results of the rank correlations of all companies for the entire period 1997–2001, and for the three year averages appear in Table 3a–d. These rank correlations are close to zero in all cases, indicating that either that the performance drivers and performance measures are independent or that the combining of companies from many industries. To test the latter proposition, we present the rank correlation analysis for the five-year period-1997–2001-of the four selected industries in Table 4. With regard to performance drivers most correlations are low and

there are few correlations above 0.5, which occurred randomly in different cells for different industries. Among performance measures, the correlations are also generally very low, with very few exceptions mainly involving cash flow measures. Some of these exceptions are difficult to explain such as the negative correlation between growth in revenues and return on equity for Industry 74. We also did this analysis for the three-year averages and found lower rank correlations. Further, there is little industry effect on rank correlations. Our conclusion is that financial ratios are do not rank companies performance in the same way even though each may be an important measure of performance. These results emphasize the importance of examining multiple measures of performance when evaluating the performance of a company.

High Performance Companies

The correlation analysis for all high performance companies is found in Table 5a–d. As we expected there are few high correlations among the four performance drivers (see Table 5a) and none are significant at the 0.005 level. With regard to performance measures, higher correlations are expected where the related ratios have common drivers. We found high correlation in the same five cells that we identified previously for all countries. High correlations usually involve "return" ratios such as with profit margin with return on assets (0.70), return on equity (0.46), cash flow return on assets (0.56) and return on assets with return onequity (0.69), cash flow return on assets (0.89), and free cash flow (0.77). These correlations are significant at the 0.001 level. These conclusions are generally consistent for the three-year averages (Table 5b–d). An interesting result, which contrasts with that of all companies, is the negative correlation between debt to equity and most other performance measures. We believes this result stems from the financial strength of the high performance companies which allows them to function with less debt than less successful companies.

We also conducted a rank correlation on the high performance companies, as shown in Table 6a–d. As with the rank correlation results for all companies, the correlations are for low for all combinations of ratios. This further validates the conclusion the ratios are independent.

Comparison of High Performance companies to Their Respective Industries

We expected high performance companies to differ on performance drivers and to excel on performance measures. Table 7a–d shows the difference in percentage

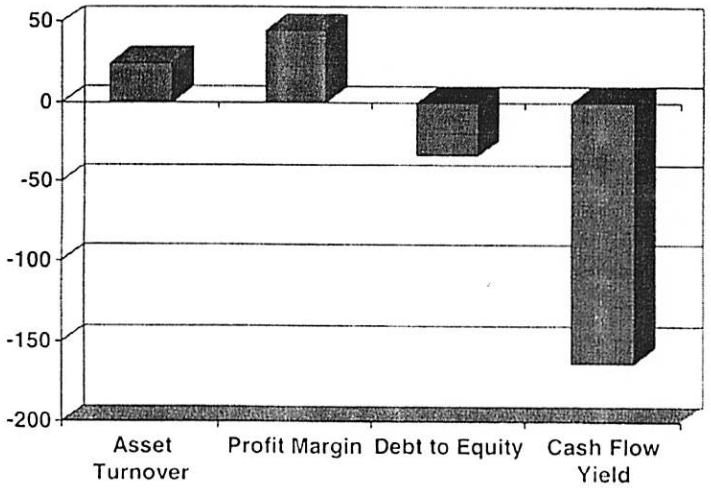

Fig. 4. Performance Drivers – High Performance Companies Compared to S&P 500 (in Percentages).

terms between industry leaders ratio values and the values for S&P 500 companies in the same industry based on two-digit SIC code (see Appendix B). Differences in performance drivers for all companies (last line in Table 7a) are illustrated in Fig. 4. In accord with our expectations, there is less uniformity with regard to performance drivers than with performance measures. For instance, only in five of the eight industries do the high performance companies exceed excel on the asset turnover. However, on average for all industries the high performance companies' asset turnover is positive. With regard to profit margin the high performance companies excel in all industries. It appears that profit margin is a key differentiator of high performing companies. Further, high performance companies in all industries bear less financial risk as measured by the debt to equity ratio than the industry average.

One performance driver, cash flow yield, is lower for the leading companies in all industries. This result runs counter to our predisposition. Further examination of the data shows that non-high performing countries composing the industry average tend to have lower net income in relation to leading companies. We also expect that the superior growth rate of the high performance measures makes demands for increased working capital that are not required by low growth companies. In addition, the role of one time charges, such as restructuring may bias the results. Future studies of the cash cycle of high performance companies, which as noted, was beyond the scope of the present study, may shed more light on this issue. The relationship among income-based returns and cash flows returns

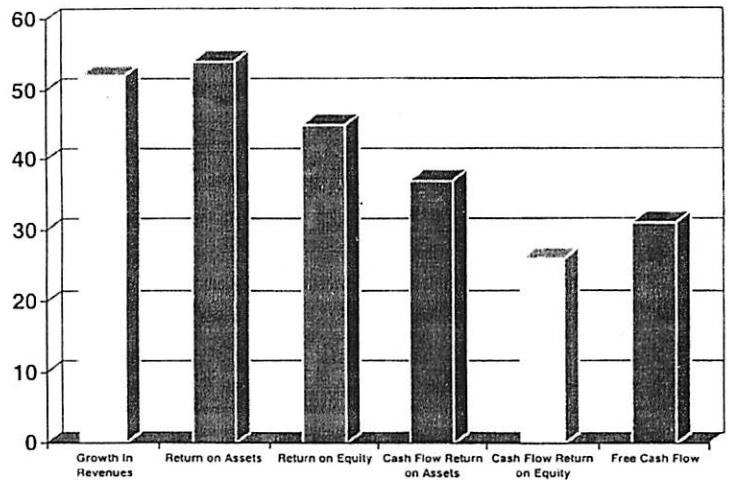

Fig. 5. Performance Drivers – High Performance Companies Compared to S&P 500 (in Percentages).

put forth in the FPS, however, are validated by the fact that cash flow returns for leading companies do not tend exceed the industry average by as much as they do for return on assets and return on equity.

With very few exceptions in Table 7a–d, the high performance companies exceed the industry averages across all six performance measures and across all industries. This conclusion also held for the five-year period and for the three three-year periods in at least sixty-three of the sixty-six cells. Further, when the averages are taken for all industries, the leaders excel across all performance measures. Finally, by averaging across the eleven industries (representing 83 S&P 500 companies and 22 high performance companies) in the last line of each table, the positive results with regard to asset turnover, profit margin, and all the performance measures can be clearly seen. The overall superior performance of the high performance companies for the five-year period may be seen in Fig. 5.

CONCLUSIONS

The empirical results confirm the basic propositions of the FPS and the criteria for choosing high performance companies. The results confirm the basic propositions of the FPS by demonstrating that the performance drivers and performance measures are independent of each other as shown by low correlation among each other or rank correlation. This proposition held true for both for all companies,

for selected industries, and for industry leaders, which show independence among the ratios with low correlations among performance drivers, except asset turnover and profit margin, and performance measures. The criteria for choosing high performance companies were validated by the performance measures in the FPS model. The high performance companies exceed the industry averages across all performance measures and across all industries. The high performance companies show mixed results with regard to performance drivers when compared with industry drivers. High performance companies excel on profit margin, are lower on the cash flow yield, have lower financial risk, and have mixed results for asset turnover. We believe these results are due in part to the different strategies that companies may employ.

LIMITATIONS AND FUTURE RESEARCH

This exploratory study, which we consider part on on-going research in the area of strategy and financial performance measurement, has several limitations, some of which we expect to study in future research. First, we were limited to two SIC industry codes due to the small sample size. This was due to our limiting our sample to S&P 500 companies. If we expand our sample size sufficiently to analyze at the three-digit SIC level, we expect to find similar results o this study. Second, our individual industry studies were limited to eleven industries. No other industry had more than three members. A larger sample would enable us to include more industries. Again, we believe the breath of the eleven industries we were able to study gives us confidence that we will reach the same conclusions with a larger sample. Third, we limited our ratio analysis to the items from the database without adjustment. For instance, we did not adjust net income for special items or look at operating income. If we were to adjust are unusual items, we believe we would achieve stronger results. Fourth, we need to explore most closely the effects of negatives on the ratios and their relationships, especially in the area of cash flow yield. Fifth, we have not studied one component of the FPS, the operating asset objective, the related operating ratios, and the cash cycle. We expect this complex subject to be the object of a separate paper. This study will likely shed more light on the role and importance of the cash flow yield as measure of financial performance.

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Table 1. Correlation Tables – All Companies.

Correlation for the Ratio Values	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Return on Total Assets	Cash Flow Return on Stockholders' Equity	Free Cash Flow
(a) Data for the period 1997–2001 – all companies.										
Asset turnover	1.00									
Profit margin	−0.21	1.00								
Debt to equity	−0.33	0.06	1.00							
Cash flow yield	−0.08	−0.10	0.00	1.00						
Growth in revenues	−0.01	0.09	0.08	−0.08	1.00					
Return on assets	0.32	0.63	−0.26	−0.12	0.10	1.00				
Return on equity	0.02	0.34	−0.15	−0.05	0.01	0.33	1.00			
Cash flow return on total assets	0.35	0.44	−0.29	−0.13	0.09	0.78	0.26	1.00		
Cash flow return on stockholders' equity	0.02	0.12	−0.01	−0.04	0.00	0.14	0.83	0.30	1.00	
Free cash flow	0.36	0.20	−0.32	−0.08	0.15	0.51	0.15	0.84	0.28	1.00
(b) Data for the group one – period 1997–1999 – all companies.										
Asset turnover	1.00									
Profit margin	−0.20	1.00								
Debt to equity	−0.40	0.08	1.00							
Cash flow yield	−0.08	−0.11	0.00	1.00						
Growth in revenues	0.04	−0.04	0.08	−0.09	1.00					
Return on assets	0.33	0.60	−0.31	−0.12	0.06	1.00				
Return on equity	0.05	0.46	−0.01	−0.07	−0.03	0.51	1.00			
Cash flow return on total assets	0.34	0.44	−0.35	−0.12	0.06	0.78	0.39	1.00		
Cash flow return on stockholders' equity	0.02	0.21	−0.05	−0.06	−0.05	0.24	0.78	0.43	1.00	
Free cash flow	0.35	0.18	−0.39	−0.07	0.10	0.50	0.21	0.83	0.37	1.00

Table 1. (*Continued*)

Correlation for the Ratio Values	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Return on Total Assets	Cash Flow Return on Stockholders' Equity	Free Cash Flow
(c) Data for the group two – period 1998–2000 – all companies.										
Asset turnover	1.00									
Profit margin	−0.22	1.00								
Debt to equity	−0.34	0.06	1.00							
Cash flow yield	−0.08	−0.11	0.00	1.00						
Growth in revenues	−0.01	0.01	0.07	−0.06	1.00					
Return on assets	0.32	0.61	−0.25	−0.11	0.04	1.00				
Return on equity	0.01	0.29	−0.17	−0.05	−0.03	0.30	1.00			
Cash flow return on total assets	0.34	0.45	−0.27	−0.15	0.11	0.78	0.24	1.00		
Cash flow return on stockholders' equity	0.01	0.14	−0.06	−0.06	−0.01	0.15	0.89	0.31	1.00	
Free cash flow	0.36	0.21	−0.34	−0.12	0.18	0.53	0.15	0.84	0.26	1.00
(d) Data for the group three – period 1999–2001– all companies.										
Asset turnover	1.00									
Profit margin	−0.18	1.00								
Debt to equity	−0.26	0.05	1.00							
Cash flow yield	−0.08	−0.09	0.00	1.00						
Growth in revenues	0.01	0.10	0.02	−0.02	1.00					
Return on assets	0.29	0.71	−0.17	−0.11	0.10	1.00				
Return on equity	−0.02	0.18	−0.21	−0.02	0.01	0.14	1.00			
Cash flow return on total assets	0.35	0.44	−0.22	−0.08	0.14	0.75	0.11	1.00		
Cash flow return on stockholders' equity	−0.01	0.05	−0.07	0.00	0.03	0.03	0.93	0.13	1.00	
Free cash flow	0.37	0.22	−0.26	−0.06	0.20	0.50	0.09	0.84	0.15	1.00

Table 2. Correlation Tables for Selected Industries.

Correlation for the Ratio Values	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Return on Total Assets	Cash Flow Return on Stockholders' Equity	Free Cash Flow
(a) Data for the group one – period 1997–2001; Industry 28.										
Asset turnover	1.00									
Profit margin	−0.04	1.00								
Debt to equity	−0.64	−0.20	1.00							
Cash flow yield	−0.28	−0.56	0.42	1.00						
Growth in revenues	−0.10	0.56	−0.30	−0.40	1.00					
Return on assets	0.30	0.93	−0.37	−0.63	0.53	1.00				
Return on equity	−0.57	0.39	0.73	−0.11	0.15	0.23	1.00			
Cash flow return on total assets	0.33	0.79	−0.31	−0.44	0.37	0.86	0.24	1.00		
Cash flow return on stockholders' equity	−0.60	0.20	0.83	0.10	−0.02	0.02	0.96	0.14	1.00	
Free cash flow	0.20	0.60	−0.21	−0.21	0.21	0.59	0.17	0.84	0.17	1.00
(b) Data for the group one – period 1997–2001; industry 35.										
Asset turnover	1.00									
Profit margin	−0.23	1.00								
Debt to equity	−0.30	−0.26	1.00							
Cash flow yield	0.25	−0.38	0.04	1.00						
Growth in revenues	0.32	0.28	−0.46	−0.08	1.00					
Return on assets	0.39	0.76	−0.46	−0.31	0.56	1.00				
Return on equity	0.29	0.61	0.14	−0.27	0.14	0.73	1.00			
Cash flow return on total assets	0.59	0.44	−0.56	−0.19	0.74	0.86	0.48	1.00		
Cash flow return on stockholders' equity	0.58	0.27	0.03	−0.17	0.40	0.62	0.75	0.72	1.00	
Free cash flow	0.56	0.39	−0.61	−0.05	0.76	0.80	0.38	0.96	0.62	1.00

Table 2. (*Continued*)

Correlation for the Ratio Values	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Return on Total Assets	Cash Flow Return on Stockholders' Equity	Free Cash Flow
(c) Data for the group one – period 1997–2001; industry 38.										
Asset turnover	1.00									
Profit margin	0.17	1.00								
Debt to equity	0.06	−0.69	1.00							
Cash flow yield	0.05	−0.18	0.49	1.00						
Growth in revenues	−0.20	0.27	−0.26	−0.29	1.00					
Return on assets	0.33	0.97	−0.65	−0.16	0.31	1.00				
Return on equity	0.58	0.60	−0.02	0.19	0.09	0.71	1.00			
Cash flow return on total assets	0.21	0.57	−0.27	0.00	0.64	0.66	0.58	1.00		
Cash flow return on stockholders' equity	0.26	−0.07	0.54	0.40	0.29	0.05	0.54	0.64	1.00	
Free cash flow	0.22	0.52	−0.24	0.00	0.60	0.60	0.57	0.95	0.66	1.00
(d) Data for the group one – period 1997–2001; industry 73.										
Asset turnover	1.00									
Profit margin	−0.08	1.00								
Debt to Equity	−0.39	−0.24	1.00							
Cash flow yield	−0.11	−0.28	−0.27	1.00						
Growth in revenues	0.30	0.50	0.17	−0.19	1.00					
Return on assets	0.34	0.86	−0.48	−0.36	0.46	1.00				
Return on equity	0.09	0.77	0.00	−0.48	0.42	0.82	1.00			
Cash flow return on total assets	0.33	0.77	−0.71	0.01	0.36	0.89	0.56	1.00		
Cash flow return on stockholders' equity	−0.05	0.64	0.18	−0.30	0.38	0.59	0.85	0.44	1.00	
Free cash flow	0.51	0.64	−0.75	0.07	0.33	0.83	0.49	0.96	0.37	1.00

Table 3. Rank Correlation – All Companies.

Rank Correlation	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Return on Total Assets	Cash Flow Return on Stockholders' Equity	Free Cash Flow
(a) Data for the period 1997–2001 – all companies.										
Asset turnover	1.00									
Profit margin	0.01	1.00								
Debt to equity	−0.01	0.02	1.00							
Cash flow yield	0.04	−0.01	0.03	1.00						
Growth in revenues	−0.01	0.08	0.09	−0.03	1.00					
Return on assets	0.01	0.05	−0.06	−0.10	−0.06	1.00				
Return on equity	−0.07	−0.02	−0.02	−0.02	−0.02	0.11	1.00			
Cash flow return on total assets	0.09	−0.10	0.00	0.02	−0.08	0.05	0.00	1.00		
Cash flow return on stockholders' equity	0.05	−0.04	−0.04	−0.05	0.01	0.00	0.03	0.16	1.00	
Free cash flow	0.14	−0.04	0.01	0.03	−0.05	0.05	−0.07	0.09	0.09	1.00
(b) Data for the group one – period 1997–1999 – all companies.										
Asset turnover	1.00									
Profit margin	−0.04	1.00								
Debt to equity	0.04	0.09	1.00							
Cash flow yield	−0.02	−0.05	−0.02	1.00						
Growth in revenues	−0.06	−0.05	0.13	−0.03	1.00					
Return on assets	0.09	−0.04	−0.02	0.00	0.00	1.00				
Return on equity	0.01	−0.06	0.00	−0.08	−0.08	0.10	1.00			
Cash flow return on total assets	0.19	0.06	0.08	0.15	−0.05	0.03	−0.06	1.00		
Cash flow return on stockholders' equity	0.03	0.00	−0.04	0.05	−0.14	0.04	0.06	0.05	1.00	
Free cash flow	0.23	−0.03	0.07	0.02	−0.07	0.07	−0.04	0.16	0.05	1.00

Table 3. (*Continued*)

Rank Correlation	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Return on Total Assets	Cash Flow Return on Stockholders' Equity	Free Cash Flow
(c) Data for the group two – period 1998–2000 – all companies.										
Asset turnover	1.00									
Profit margin	−0.02	1.00								
Debt to equity	0.04	0.05	1.00							
Cash flow yield	−0.03	0.00	0.08	1.00						
Growth in revenues	0.03	0.01	0.01	−0.01	1.00					
Return on assets	0.03	−0.05	−0.04	−0.05	−0.10	1.00				
Return on equity	−0.04	−0.05	−0.11	−0.01	0.00	−0.01	1.00			
Cash flow return on total assets	0.15	−0.04	−0.03	0.07	−0.16	0.13	−0.04	1.00		
Cash flow return on stockholders' equity	0.01	−0.07	0.05	0.01	0.00	−0.04	−0.09	0.11	1.00	
Free cash flow	0.08	−0.09	0.05	0.08	−0.04	−0.02	−0.05	0.20	0.08	1.00
(d) Data for the group three – period 1999–2001– all companies.										
Asset turnover	1.00									
Profit margin	0.08	1.00								
Debt to equity	0.02	−0.06	1.00							
Cash flow yield	−0.02	−0.03	0.10	1.00						
Growth in revenues	0.05	−0.11	0.02	−0.06	1.00					
Return on assets	0.00	0.02	−0.10	0.02	−0.04	1.00				
Return on equity	−0.04	0.01	−0.04	−0.02	0.06	−0.05	1.00			
Cash flow return on total assets	0.10	0.06	0.05	0.06	−0.05	0.04	−0.02	1.00		
Cash flow return on stockholders' equity	−0.04	0.01	0.02	0.00	−0.01	−0.04	−0.03	0.10	1.00	
Free cash flow	0.14	−0.07	0.05	0.03	−0.07	−0.04	−0.13	0.09	0.02	1.00

Table 4. Rank Correlation Tables for Selected Industries.

Rank Correlation	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Return on Total Assets	Cash Flow Return on Stockholders' Equity	Free Cash Flow
(a) Data for the group one – period 1997–2001; industry 28.										
Asset turnover	1.00									
Profit margin	0.18	1.00								
Debt to equity	−0.04	−0.02	1.00							
Cash flow yield	−0.05	0.00	0.01	1.00						
Growth in revenues	−0.35	−0.18	−0.25	−0.24	1.00					
Return on assets	0.03	−0.13	0.10	−0.16	0.03	1.00				
Return on equity	0.42	0.37	0.13	−0.05	−0.64	0.21	1.00			
Cash flow return on total assets	0.14	−0.21	−0.05	−0.14	0.05	0.05	0.10	1.00		
Cash flow return on stockholders' equity	−0.07	−0.15	−0.01	−0.02	−0.09	−0.08	0.18	−0.02	1.00	
Free cash flow	0.06	−0.17	−0.18	−0.08	0.00	−0.13	0.01	0.19	0.03	1.00
(b) Data for the group one – period 1997–2001; industry 35.										
Asset turnover	1.00									
Profit margin	0.13	1.00								
Debt to equity	−0.06	0.16	1.00							
Cash flow yield	0.05	−0.56	0.10	1.00						
Growth in revenues	0.03	0.51	0.31	−0.26	1.00					
Return on assets	0.09	0.74	0.03	−0.49	0.28	1.00				
Return on equity	0.35	0.20	−0.03	−0.19	0.07	0.40	1.00			
Cash flow return on total assets	0.54	0.47	0.13	−0.30	0.04	0.58	0.28	1.00		
Cash flow return on stockholders' equity	0.09	0.29	0.24	−0.06	0.05	0.26	0.34	0.40	1.00	
Free cash flow	0.33	0.20	0.06	−0.07	−0.02	0.45	−0.01	0.55	0.32	1.00

Table 4. (Continued)

Rank Correlation	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Return on Total Assets	Cash Flow Return on Stockholders' Equity	Free Cash Flow
(c) Data for the group one – period 1997–2001; industry 38.										
Asset turnover	1.00									
Profit margin	0.03	1.00								
Debt to equity	−0.36	0.02	1.00							
Cash flow yield	0.13	0.04	0.00	1.00						
Growth in revenues	−0.08	0.21	−0.09	0.45	1.00					
Return on assets	−0.14	0.79	−0.02	0.30	0.16	1.00				
Return on equity	0.07	0.04	0.22	−0.09	0.29	−0.04	1.00			
Cash flow return on total assets	−0.03	0.42	0.14	0.02	−0.01	0.36	0.26	1.00		
Cash flow return on stockholders' equity	0.12	−0.14	−0.12	0.23	0.26	−0.20	0.14	0.02	1.00	
Free cash flow	0.08	0.56	0.11	0.10	0.18	0.32	0.34	0.67	−0.04	1.00
(d) Data for the group one – period 1997–2001; industry 73.										
Asset turnover	1.00									
Profit margin	0.20	1.00								
Debt to equity	0.48	−0.13	1.00							
Cash flow yield	−0.20	−0.08	−0.21	1.00						
Growth in revenues	−0.02	−0.19	−0.16	0.65	1.00					
Return on assets	−0.51	−0.02	−0.60	0.59	0.46	1.00				
Return on equity	−0.28	−0.11	0.01	−0.29	−0.38	−0.02	1.00			
Cash flow return on total assets	0.01	0.12	0.05	0.06	0.06	−0.24	−0.15	1.00		
Cash flow return on stockholders' equity	0.20	0.31	−0.06	−0.02	0.15	−0.22	0.03	0.42	1.00	
Free cash flow	0.05	−0.34	0.55	0.37	0.07	0.02	−0.09	−0.02	−0.33	1.00

Table 5. Correlation Tables – Industry Leaders.

Correlation for the Ratio Values	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Return on Total Assets	Cash Flow Return on Stockholders' Equity	Free Cash Flow
(a) Data for the period 1997–2001– industry leaders.										
Asset turnover	1.00									
Profit margin	−0.47	1.00								
Debt to equity	−0.28	−0.13	1.00							
Cash flow yield	0.01	−0.06	0.37	1.00						
Growth in revenues	0.28	0.00	−0.09	0.23	1.00					
Return on assets	0.15	0.70	−0.49	−0.19	0.16	1.00				
Return on equity	0.13	0.46	−0.06	0.01	−0.07	0.66	1.00			
Cash flow return on total assets	0.29	0.56	−0.45	0.01	0.21	0.89	0.62	1.00		
Cash flow return on stockholders' equity	0.20	0.17	0.27	0.41	0.07	0.28	0.77	0.49	1.00	
Free cash flow	0.35	0.40	−0.47	0.11	0.25	0.77	0.44	0.92	0.45	1.00
(b) Data for the group one – period 1997–1999 – industry leaders.										
Asset turnover	1.00									
Profit margin	−0.51	1.00								
Debt to equity	−0.32	−0.15	1.00							
Cash flow yield	−0.10	−0.27	0.31	1.00						
Growth in revenues	0.26	−0.12	−0.17	0.03	1.00					
Return on assets	0.08	0.73	−0.51	−0.43	0.07	1.00				
Return on equity	0.07	0.49	−0.12	−0.28	−0.03	0.72	1.00			
Cash flow return on total assets	0.23	0.46	−0.48	−0.25	0.02	0.82	0.63	1.00		
Cash flow return on stockholders' equity	0.13	0.02	0.24	0.13	−0.08	0.18	0.69	0.49	1.00	
Free cash flow	0.31	0.31	−0.48	−0.18	0.05	0.71	0.45	0.91	0.42	1.00

Table 5. (*Continued*)

Correlation for the Ratio Values	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Return on Total Assets	Cash Flow Return on Stockholders' Equity	Free Cash Flow
(c) Data for the group two – period 1998–2000 – industry leaders.										
Asset turnover	1.00									
Profit margin	−0.52	1.00								
Debt to equity	−0.31	−0.16	1.00							
Cash flow yield	−0.08	−0.31	0.33	1.00						
Growth in revenues	0.17	−0.27	−0.11	0.08	1.00					
Return on assets	0.08	0.72	−0.52	−0.47	−0.15	1.00				
Return on equity	0.04	0.47	−0.11	−0.28	−0.32	0.68	1.00			
Cash flow return on total assets	0.22	0.54	−0.51	−0.25	−0.03	0.84	0.53	1.00		
Cash flow return on stockholders' equity	0.10	0.04	0.32	0.21	−0.14	0.12	0.65	0.36	1.00	
Free cash flow	0.33	0.33	−0.50	−0.15	0.03	0.70	0.37	0.90	0.35	1.00
(d) Data for the group three – period 1999–2001– industry leaders.										
Asset turnover	1.00									
Profit margin	−0.51	1.00								
Debt to equity	−0.29	−0.13	1.00							
Cash flow yield	−0.15	−0.28	0.30	1.00						
Growth in revenues	0.09	−0.28	−0.05	0.15	1.00					
Return on assets	0.06	0.73	−0.48	−0.47	−0.22	1.00				
Return on equity	0.02	0.53	−0.04	−0.35	−0.49	0.67	1.00			
Cash flow return on total assets	0.21	0.46	−0.55	−0.21	0.05	0.76	0.31	1.00		
Cash flow return on stockholders' equity	0.05	−0.02	0.45	0.24	−0.19	−0.05	0.50	0.11	1.00	
Free cash flow	0.30	0.24	−0.54	−0.07	0.11	0.58	0.14	0.89	0.16	1.00

Table 6. Rank Correlation – Industry Leaders.

Rank Correlation	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Return on Total Assets	Cash Flow Return on Stockholders' Equity	Free Cash Flow
(a) Data for the period 1997–2001– industry leaders.										
Asset turnover	1.00									
Profit margin	−0.10	1.00								
Debt to equity	0.11	0.06	1.00							
Cash flow yield	−0.04	−0.12	0.40	1.00						
Growth in revenues	−0.18	−0.02	0.05	0.44	1.00					
Return on assets	0.25	0.24	0.28	0.12	−0.07	1.00				
Return on equity	0.12	0.15	−0.12	−0.20	−0.12	−0.09	1.00			
Cash flow return on total assets	0.19	0.03	0.13	−0.11	−0.05	0.34	0.07	1.00		
Cash flow return on stockholders' equity	−0.09	0.00	0.37	0.11	−0.12	0.03	−0.16	−0.04	1.00	
Free cash flow	0.31	−0.13	0.26	0.25	−0.01	0.30	0.08	0.42	0.11	1.00
(b) Data for the group one – period 1997–1999 – Industry leaders.										
Asset turnover	1.00									
Profit margin	0.25	1.00								
Debt to equity	0.31	0.18	1.00							
Cash flow yield	0.11	−0.03	0.33	1.00						
Growth in revenues	0.13	0.01	−0.16	−0.24	1.00					
Return on assets	0.02	−0.14	0.04	0.03	−0.42	1.00				
Return on equity	0.02	−0.02	−0.13	−0.29	−0.15	0.12	1.00			
Cash flow return on total assets	0.31	0.05	0.12	0.09	−0.26	0.31	−0.28	1.00		
Cash flow return on stockholders' equity	0.06	0.01	0.11	−0.11	0.02	0.26	0.11	0.08	1.00	
Free cash flow	0.32	−0.19	−0.01	0.09	−0.20	0.14	0.15	−0.09	−0.12	1.00

Table 6. (*Continued*)

Rank Correlation	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Return on Total Assets	Cash Flow Return on Stockholders' Equity	Free Cash Flow
(c) Data for the group two – period 1998–2000 – industry leaders.										
Asset turnover	1.00									
Profit margin	0.08	1.00								
Debt to equity	0.35	0.02	1.00							
Cash flow yield	0.07	−0.15	0.26	1.00						
Growth in revenues	−0.28	−0.14	−0.15	−0.10	1.00					
Return on assets	0.34	0.20	0.06	−0.06	0.03	1.00				
Return on equity	0.02	0.18	0.08	−0.07	−0.02	0.16	1.00			
Cash flow return on total assets	0.13	0.04	0.06	0.11	−0.30	0.55	−0.17	1.00		
Cash flow return on stockholders' equity	0.34	−0.21	0.10	0.06	0.12	0.07	−0.03	−0.04	1.00	
Free cash flow	0.35	0.11	−0.10	−0.10	0.03	0.35	0.16	0.23	0.09	1.00
(d) Data for the group three – period 1999–2001– industry leaders.										
Asset turnover	1.00									
Profit margin	0.21	1.00								
Debt to equity	0.35	−0.08	1.00							
Cash flow yield	−0.11	−0.13	0.14	1.00						
Growth in revenues	−0.05	0.02	0.11	0.30	1.00					
Return on assets	0.16	0.25	0.05	0.16	−0.02	1.00				
Return on equity	−0.32	0.12	−0.18	0.31	−0.06	0.02	1.00			
Cash flow return on total assets	0.27	0.17	0.22	−0.03	−0.03	0.34	−0.21	1.00		
Cash flow return on stockholders' equity	0.00	0.16	0.09	0.01	0.11	0.00	−0.01	−0.03	1.00	
Free cash flow	0.32	−0.17	−0.09	0.10	−0.03	0.30	−0.18	0.27	−0.01	1.00

Table 7. Comparison of Industry Leaders with Industry Averages.

Industry#	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Returns on Total Assets	Cash Flow Returns on Stockholders' Equity	Free Cash Flow
(a) Percentage difference between industry leaders and S&P500 companies average ratios values (by industry and all) – years 1997–2001.										
20.00	−31.50	49.51	−305.07	−34.60	−30.16	38.86	96.15	20.56	86.87	4.90
28.00	*−6.63*	*34.39*	*−20.41*	*−58.91*	*61.49*	*32.08*	*41.22*	*20.36*	*24.60*	*13.48*
35.00	*41.02*	*18.49*	*−65.26*	*−49.75*	*67.83*	*50.07*	*49.38*	*46.88*	*48.32*	*36.37*
36.00	−23.39	82.33	−1014.05	−14.29	89.11	71.40	56.18	60.54	30.62	55.34
37.00	43.87	43.31	−282.84	−49.56	47.12	61.39	38.71	55.96	14.41	54.41
38.00	*3.01*	*19.01*	*−35.23*	*−195.79*	*61.15*	*24.11*	*7.11*	*24.22*	*7.55*	*17.18*
53.00	28.46	28.18	−43.27	−71.50	57.84	53.96	47.08	29.52	18.45	25.98
73.00	17.85	53.14	−33.91	−37.87	47.76	50.38	37.77	31.49	15.96	25.16
All	23.61	45.45	−33.76	−163.53	52.01	54.49	44.61	37.27	25.87	30.56
(b) Percentage difference between industry leaders and S&P500 companies average ratios values (by industry and all) – years 1997–1999.										
20.00	−24.97	52.52	−153.75	−43.09	100.95	45.13	59.97	25.22	29.08	10.93
28.00	*−3.47*	*38.54*	*−65.54*	*−64.09*	*63.14*	*35.98*	*37.05*	*22.31*	*21.87*	*15.08*
35.00	*43.06*	*16.95*	*−43.16*	*−37.93*	*71.10*	*51.16*	*52.91*	*48.09*	*53.57*	*39.11*
36.00	−18.29	73.56	−328.89	−6.97	46.80	67.09	52.23	60.81	39.67	53.42
37.00	41.36	30.07	−219.77	−2.65	−9.80	52.97	19.71	53.52	14.37	52.42
38.00	*1.19*	*19.95*	*−38.97*	*−247.99*	*61.99*	*25.34*	*0.79*	*23.77*	*0.92*	*14.32*
53.00	30.61	7.80	−32.54	−35.68	44.71	42.70	33.04	33.79	23.43	28.67
73.00	18.99	37.37	−41.23	−38.05	32.41	44.06	29.15	30.98	13.84	24.89
All	27.45	45.24	−25.14	−167.97	55.91	55.53	43.79	39.33	28.26	32.67

Table 7. (Continued)

Industry#	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow Returns on Total Assets	Cash Flow Returns on Stockholders' Equity	Free Cash Flow
(c) Percentage difference between industry leaders and all S&P500 companies average ratios values (by industry and all) – years 1998–2000.										
20.00	−29.47	41.79	−376.05	−13.29	69.40	29.56	67.22	20.12	34.22	−0.31
28.00	*−3.06*	*37.97*	*−44.59*	*−69.55*	*49.93*	*36.20*	*47.57*	*24.87*	*30.64*	*18.91*
35.00	*42.42*	*8.25*	*−69.71*	*−62.46*	*63.89*	*45.67*	*43.56*	*46.45*	*49.70*	*38.06*
36.00	−26.99	71.63	−400.30	−4.25	39.35	63.37	44.01	60.58	36.50	54.85
37.00	44.91	33.97	−228.38	−16.01	56.53	55.73	26.97	55.59	16.14	53.98
38.00	*4.36*	*5.81*	*−19.75*	*31.66*	*70.04*	*12.47*	*−14.05*	*21.46*	*3.93*	*15.72*
53.00	29.20	24.14	−30.97	−49.06	56.58	49.51	42.92	26.12	14.76	26.86
73.00	18.85	39.22	−21.28	−43.36	43.14	43.14	28.71	30.63	16.54	23.49
All	26.78	43.83	−28.08	−175.86	52.66	54.00	43.05	39.68	28.43	33.74
(d) Percentage difference between industry leaders and all S&P500 companies average ratios values (by industry and all) – years 1999–2001.										
20.00	−33.26	40.63	−409.31	−10.87	−51.78	23.43	223.09	19.28	223.23	0.08
28.00	*−2.13*	*39.08*	*−19.99*	*−45.32*	*59.09*	*37.54*	*63.75*	*29.77*	*55.01*	*25.36*
35.00	*41.35*	*11.46*	*−91.59*	*−41.32*	*71.39*	*43.45*	*36.33*	*44.63*	*39.14*	*37.45*
36.00	−29.43	86.21	−1559.25	−10.73	99.04	70.97	51.76	59.77	21.32	56.24
37.00	47.30	53.89	−285.79	−95.36	83.19	67.23	53.52	58.09	19.17	56.44
38.00	*8.41*	*9.83*	*−19.78*	*8.36*	*76.48*	*15.72*	*−3.77*	*26.28*	*13.02*	*22.59*
53.00	28.59	44.29	−37.89	−96.28	69.96	62.92	58.29	25.13	13.25	26.28
73.00	18.29	62.19	−17.94	−40.42	66.48	55.24	44.90	33.21	22.20	28.72
All	25.52	48.99	−34.21	−186.60	53.78	56.27	52.50	40.47	34.45	34.90

APPENDIX A: RETURN-DRIVEN HIGH PERFORMANCE COMPANIES

Frigo Companies

Company Symbol	SIC Code	Description
ABT	2834	*Abbott Laboratories:* This company is a leading maker of drugs, nutritionals, and hospital and laboratory products.
ADP	7374	*Automatic Data Processing, Inc:* ADP, one of the world's largest independent computing services companies, provides a broad range of data processing services.
AMGN	2836	*Amgen Inc.:* The world's leading biotech company, Amgen has major treatments for anemia, neutropenia, rheumatoid arthritis, and psoriatic arthritis.
AXP	6199	*American Express Company:* This company, a leader in travel-related services, is also active in investment services, expense management services, and international banking.
AZN	2834	*AstraZeneca PLC:* Formed through the April 1999 merger of Zeneca Group PLC of the U.K. and Astra AB of Sweden, AZN ranks among the world's leading drug companies.
BBBY	5700	*Bed Bath & Beyond Inc.:* BBBY operates a nationwide chain of nearly 400 superstores selling better-quality domestics merchandise and home furnishings at prices below those offered by department stores.
BVF	2834	*Biovail Corporation:* This company is engaged in formulation, clinical testing, registration and manufacture of drug products using advanced drug delivery technologies.
CTAS	2320	*Cintas Corporation:* This leader in the corporate identity uniform business also provides ancillary services including entrance mats, sanitation supplies, and first aid products and services.
DELL	3571	*Dell Computer Corporation:* Dell is the leading direct marketer and one of the world's 10 leading manufacturers of PCs compatible with industry standards established by IBM.

APPENDIX A (*Continued*)

Company Symbol	SIC Code	Description
DHR	3823	*Danaher Corporation:* This company is a leading maker of tools, including Sears Craftsman hand tools, and of process/ environmental controls and telecommunications equipment.
ESRX	6411	*Express Scripts, Inc.:* This company offers prescription benefits, vision care, and disease state management services.
FNM	6111	Fannie Mae: FNM, a U.S. government-sponsored enterprise (GSE), uses mostly borrowed funds to buy a variety of mortgages, thereby creating a secondary market for mortgage lenders.
FRX	2834	*Forest Laboratories, Inc.:* This company develops and makes branded and generic ethical drug products, sold primarily in the U.S., Puerto Rico, and Western and Eastern Europe.
GE	9997	General Electric Company: This industrial and media behemoth is also one of the world's largest providers of financing and insurance.
GPS	5651	*The Gap, Inc.:* This specialty apparel retailer operates The Gap Stores, Banana Republic, and Old Navy Clothing Co., offering casual clothing to upper, moderate and value-oriented market segments.
HD	5211	*The Home Depot, Inc.:* HD operates a chain of more than 1,400 retail warehouse-type stores, selling a wide variety of home improvement products for the do-it-yourself and home remodeling markets.
HDI	3751	*Harley-Davidson, Inc.:* This leading maker of heavyweight motorcycles also produces a line of motorcycle parts and accessories.
INTC	3674	*Intel Corporation:* Intel is the world's largest manufacturer of microprocessors, the central processing units of PCs, and also produces other products that enhance PC capabilities.
ITW	3540	*Illinois Tool Works Inc.:* ITW operates a portfolio of more than 600 industrial and consumer businesses.

APPENDIX A (*Continued*)

Company Symbol	SIC Code	Description
JNJ	2834	*Johnson & Johnson:* The world's largest and most comprehensive health care company, JNJ offers a broad line of drugs, consumer products and other medical and dental items.
JNY	2330	*Jones Apparel Group, Inc.:* This company is the world's largest manufacturer of women's apparel, footwear and accessories, with brands such as Jones New York, Nine West, Rena Rowan, and Evan-Picone.
KO	2080	*The Coca-Cola Company:* Coca-Cola is the world's largest soft-drink company and has a sizable fruit juice business. Its bottling interests include a 40% stake in NYSE-listed Coca-Cola Enterprises.
LLY	2834	*Eli Lilly and Company:* This major worldwide maker of prescription drugs produces Prozac antidepressant, Zyprexa antipsychotic, diabetic care items, antibiotics, and animal health products.
MDT	3845	*Medtronic, Inc.:* This global medical device manufacturer has leadership positions in the pacemaker, defibrillator, orthopedic, diabetes management and other medical markets.
MRK	2834	*Merck & Co., Inc.:* Merck is one of the world's largest prescription pharmaceuticals concerns. The company plans to spin off its Medco PBM subsidiary.
MSFT	7372	*Microsoft Corporation:* Microsoft, the world's largest software company, develops PC software, including the Windows operating system and Office application suit.
MXIM	3674	*Maxim Integrated Products, Inc:* This company is a worldwide leader in design, development and manufacture of linear and mixed-signal integrated circuits.
OMC	7311	*Omnicom Group Inc:* OMC owns the DDB Worldwide, BBDO Worldwide and TBWA Worldwide advertising agency networks; it also owns more than 100 marketing and specialty services firms.

APPENDIX A (*Continued*)

Company Symbol	SIC Code	Description
ORCL	7372	*Oracle Corporation:* This company is the world's largest supplier of information management software.
PAYX	8721	*Paychex, Inc:* This company provides computerized payroll accounting services to small and medium-size concerns throughout the U.S.
PFE	2834	*Pfizer Inc.:* PFE, the world's largest drug company, with about 11% of the global market, acquired Pharmacia in April 2003, in exchange for 1.8 billion PFE shares.
PII	3790	*Polaris Industries Inc:* This company manufactures snowmobiles, all-terrain vehicles, personal watercraft, motorcycles and related accessories for recreational and/or utility use.
RHI	7363	*Robert Half International Inc.:* RHI is the world's largest specialized provider of temporary and permanent personnel in the fields of accounting and finance
SGP	2834	*Schering-Plough Corporation:* This company is a leading producer of prescription and OTC pharmaceuticals and has important interests in sun care, animal health, and foot care products.
SYK	3842	*Stryker Corporation:* Stryker makes specialty surgical and medical products such as orthopedic implants, endoscopic items and hospital beds, and operates a chain of physical therapy clinics.
SYY	5140	*Sysco Corporation:* Sysco is the largest U.S. marketer and distributor of foodservice products, serving about 415,000 customers.
WMT	5331	*Wal-Mart Stores, Inc.:* Wal-Mart is the largest retailer in North America, operating a chain of discount department stores, wholesale clubs and combination discount stores and supermarkets.
WYE	2834	*Wyeth:* This company (formerly American Home Products Corp.) is a leading maker of prescription drugs and over-the-counter medications.

APPENDIX B

Formulas for Ratio Computations

Performance Drivers	
Asset turnover	Net sales/average total assets
Profit margin	Net Income/Net sales
Debt to equity	(Total assets – stockholders' equity)/ stockholders' equity
Cash flow yield	Cash flows from operating activities/net income (In the analysis, if either numerator or denominator of cash flow yield were negative the ratio was excluded.)
Valuation performance measures	
Growth in revenues	Change in net sales/net sales
Return on assets	Net Income/average total assets
Return on equity	Net income/average stockholders' equity
Cash flow returns	Cash flows from operating activities/average total assets Cash flows from operating activities/average stockholders' equity
Free cash flow	Cash flows from operating activities – Dividends + sales of Capital assets – purchases of capital assets (In the analysis, to adjust for size of company, free cash flow was divided by average total assets.)
Operating asset and financing ratios	
Receivables turnover	Net sales/Average Accounts Receivable
Average days' uncollected	365/Receivables turnover
Inventory turnover	Cost of sales/Average Accounts Inventory
Average days' inventory on hand	365/Inventory turnover
Payables turnover	(Cost of sales + or – change in inventory)/average accounts payable
Average days' payable	365/Payables turnover
Financing period	Average days' dales uncollected + Average days' inventory on hand – Average days' payable

APPENDIX C: INDUSTRY SAMPLES

2–SIC Codes	Include Industries	*N* of Companies in s&p 5000	*N* of Companies in Industry Leaders
20	Food and kindred products, can, frozn presrv fruit & veg, grain mill products, sugar & confectionery prods, fats and oils, beverages, malt beverages, distilled and blended liquor, misc food preps, kindred pds	15	1
26	Paperboard mills, paper mills, paper and allied products, convert paper, paprbrd, ex boxes	10	1
28	Chemicals & allied prods, indl inorganic chemicals, plastic matl, synthetic resin, plastics, resins, elastomers, pharmaceutical preparations, biological pds, ex diagnstics, soap, detergent, toilet preps, special clean, polish preps, perfume, cosmetic, toilet prep paints, varnishes, lacquers, industrial organic chemicals, Misc chemical products,	32	11
33	Blast furnaces & steel works, steel works & blast furnaces, prim smelt, refin nonfer metl, rolling & draw nonfer metal, drawng, insulatng nonfer wire	10	1
34	Metal cans, cutlery, hand tools, gen hrdwr, heating eq, plumbing fixture, misc fabricated metal prods	7	1
35	Engines and turbines, farm machinery and equipment, construction machinery & eq, oil & gas field machy, equip, metalworking machinery & eq, special industry machy, nec, general industrial mach & eq, pumps and pumping equipment, general indl mach & eq, nec, computer & office equipment, electronic computers, computer storage devices, computer communication equip, computer peripheral eq, nec, office machines, nec,	20	3

36	Electr, oth elec eq, ex cmp, electrical indl apparatus, household appliances, electric lighting,wiring eq, tele & telegraph apparatus, radio, tv broadcast, comm eq, semiconductor, related device,	17	2
37	Motor vehicles & car bodies, motor vehicle part, accessory, aircraft, aircraft engine, engine parts, aircraft parts, aux eq, nec, ship & boat bldg & repairing, motorcycles, bicycles & parts, guided missiles & space vehc, misc transportation equip	16	2
38	Srch, det, nav, guid, aero sys, industrial measurement instr, elec meas & test instruments, lab analytical instruments, surgical, med instr, apparatus, ortho, prosth, surg appl, suply, electromedical apparatus, photographic equip & suppl	17	3
53	Department stores, variety stores, misc general mdse stores	9	1
73	Advertising agencies, help supply services, cmp programming, data process, prepackaged software, cmp integrated sys design, cmp processing, data prep svc	14	5