Generic Strategies and Sustainability of Financial Performance

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Abstract

In this paper we investigate the relationship between the strategic positioning of firms and the sustainability of financial performance. If a firm adopting a cost leadership strategy attains its competitive advantage based on operational efficiency, its superior performance is likely to dissipate over time since such an advantage may be easily imitable (Porter, 1996). On the other hand, firms that adopt strategies based on differentiation may attain advantages that endure, and hence the performance of such firms is likely to be sustained over time (Ghemawat, 1986). We empirically examine this proposition using widely available archival financial data.

First, we develop measures using publicly available data for the constructs reflecting firms' realized strategic positioning. We employ these measures in empirical models to examine the sustainability of firms' financial performance. The results indicate that although pursuing both efficiency and differentiation strategies have a positive impact on contemporaneous performance, the differentiation strategy allows a firm to sustain its current performance in the future to a greater extent than an efficiency strategy. Since the greater ability to sustain earnings in the future may lead to a higher price-earnings ratio, we also examine the relationship between the strategic positioning of firms and their market-based valuations. The results indicate that capital market participants recognize that firms adopting a differentiation strategy are better able to sustain financial performance and accordingly give a higher price-earnings multiple to such firms.

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I. Introduction

A central question in the strategic management literature has been to identify the sources of competitive advantage that allow firms to sustain superior economic performance over periods of time. Porter (1980) posited that firms with competitive advantages based on either cost leadership or differentiation are able to outperform others. In more recent work, Porter (1996, 2001) further argues that technological innovations that permit the rapid diffusion of best practices make some operational improvements that enhance cost efficiency easily imitable. In the same vein, others (e.g., Ghemawat, 1986) have argued that some forms of competitive advantage are difficult to imitate and can therefore lead to sustained superior performance. We investigate in this paper how different business strategies affect sustainability of future earnings, and by extension, firm value. Specifically, we address an important empirical question in this paper: Is a firm that pursues a strategy based on differentiation more likely to sustain its financial performance longer than a firm that follows a strategy based on cost efficiency? We proceed to this question using archival data for a large sample of listed firms. For this purpose, we develop scales that measure the realized strategies of firms, and then link these scales to sustainability of current financial performance into the future. In additional tests we examine whether capital markets recognize this difference in the sustainability of performance and price the shares of these firms accordingly.

Porter (1980) presents a framework describing two generic strategies that a firm can use to achieve competitive advantage: cost leadership and differentiation. Firms adopting the cost leadership strategy aim to increase market share based on creating a low-cost position relative to their peers. To achieve cost leadership a firm must perform activities creating, producing, selling and delivering products and services faster, cheaper, and with fewer inputs than their rivals. Firms can adopt different tactics to achieve cost leadership: large scale facilities, process improvements, cost minimization, TQM, benchmarking, and overhead control. Cost leaders can achieve above-average returns by charging low prices for their products and seeking out customers who care more about price than about image or novelty. On the other hand, firms adopting the differentiation strategy achieve a competitive advantage by providing products or services that offer unique qualities desirable to customers which allow the firm to command a price premium. To realize either of these strategies, firms must make resource allocations that are consistent with the strategy and discernible in publicly reported financial information. In this paper, we use such data to document that the two dimensions, differentiation and efficiency, do not represent two ends of the same continuum, consistent with the observation of several firms (e.g. Caterpillar, Toyota) successful in the past that have chosen to focus on both differentiation as well as efficiency (Hall, 1980).

The principal question we address empirically is whether financial performance is sustained over time equally for the two types of strategies. A stream of literature maintains that whether a competitive advantage can be sustained depends on the possibility of competitors being able to imitate the position of advantage (e.g. Ghemawat, 1986, 1999;

Barney, 1991). If a competitive advantage can be easily imitated by competitors then this advantage would dissipate over time. Porter (1996) emphasizes the notion that simply performing similar activities better than rivals will not lead to sustainability of performance, since the rapid diffusion of best practices will allow competitors to quickly imitate management techniques, new technologies and input improvements. Since sources of operational efficiency can often be imitated by competitors, while cost efficiency may provide short-term benefits in financial performance, such benefit may not endure. To sustain financial performance, it may be necessary for firms to differentiate successfully in the activities performed and services rendered.

Our objective is to evaluate these research questions using publicly available financial data of a large sample of firms. Towards this end, we operationalize the realized strategies using financial data, and use these measures to assess the sustainability of performance across strategies adopted by firms. We find that the differentiation strategy allows a firm to sustain financial performance to a greater extent than an efficiency strategy. Extending our analysis to the valuation of firms by capital markets, we examine whether market participants price securities recognizing the differences in sustainability of firm performance. Overall, our findings suggest that market participants recognize that firms adopting a differentiation strategy are better able to sustain financial performance in the future, and accordingly give a higher price-earnings multiple to such firms than to firms following an efficiency strategy. In additional tests, we find some evidence suggesting that investors may not be fully incorporating such information on realized strategies; significant abnormal returns can be earned on firm portfolios using our publicly available measures of differentiation and efficiency strategies.

Our paper makes several contributions to the existing literature on the links between strategy and firm performance. The previous literature on this subject has focused mainly on the contemporaneous effects of strategy on performance and hence has not examined the sustainability of current performance into the future. We provide empirical evidence showing that, in general, differentiation is a source of sustainable performance. Achieving cost leadership via operational efficiencies does not allow firms to sustain performance over time to the same extent as a differentiation strategy. We also analyze and document the association between firm strategy and the valuation of firms by capital market participants. We do so by first looking at stock prices as a function of firm strategy and next by looking at abnormal future stock returns to portfolios formed based on our measures of firm strategy.

The rest of the paper is organized as follows. In the next section we develop our main hypotheses that examine the sustainability of financial performance based on the realized strategy of firms. In section 3, we describe the methodology used to derive our strategy measures. These scales are used in our empirical model which is presented in section 4. Section 5 discusses the empirical results from our analysis and section 6 presents our concluding remarks.

II. Hypotheses Development

To sustain superior performance a firm needs to maintain its unique position vis-à-vis its competitors. A difficulty lies in the inability of firms to restrain competitors from imitating or even improving on existing sources of its advantage. Systematic methods for obtaining information are generally available to all competitors and new techniques diffuse rapidly (Barney, 1986). Technological progress in the past few decades has enabled the quick diffusion of information. By easing and speeding the exchange of information, technology has enabled companies to quickly duplicate any new business processes or products, thus speedily leveling the playing-field. As a result, many firms have been unable to capitalize on the gains and successes from adopting innovative tools and techniques such as total quality management, time-based management, outsourcing and organizational reengineering to increase productivity, quality and efficiency, and translate them into sustainable profitability (Porter, 2001). Even so, some firms are able to generate superior performance over long time frames (e.g., Wiggins and Ruefli, 2002). The key question then becomes – what strategic positioning leads to sustained financial performance over time?

A firm uses a combination of various sources to gain competitive advantage through differentiation or operational efficiency. Cost leadership is often achieved through operational efficiencies, performing similar activities better and more efficiently than rivals (Porter, 1996). To the extent the sources of operational efficiency can be copied (D'Aveni, 1994) or rendered inoperable due to advent of newer and better sources (Hamel, 2000), the competitive advantage through adopting such a strategy is temporary, and long term sustained profitability is not feasible (Eisenhardt and Brown, 1998; Eisenhardt and Martin, 2000). Whether a competitive advantage is sustained depends on the possibility of competitive imitation. A competitive advantage is sustained only if it continues to exist despite efforts to duplicate that advantage (Lippman and Rumelt, 1982; Barney, 1991; Ghemawat, 1995).

Continuing improvement in operational efficiency at a pace faster than competitors is necessary to sustain superior profitability over time. The rapid diffusion of best practices, though, allows competitors to quickly imitate management techniques and practices. Most generic solutions that can be used in multiple settings diffuse the fastest (Porter, 1996). Competitors' response lag for imitating a competitive advantage plays an important role in the sustainability of an advantage. To the extent that a cost leadership strategy is built on such generic solutions related to operational efficiency, we expect that such a strategy would be more susceptible to imitation by competitors and peers, implying that the comparative cost advantages would dissipate over time.

One such source of cost leadership widely discussed in the literature is economies of scale (Porter, 1980). Barney (2002) maintains that economies of scale are relatively easy to duplicate. He argues that if some firms obtain a cost advantage based on economies of scale, and if the relationship between production scale and costs is widely understood among competing firms, then firms at a cost disadvantage will adjust their production to exploit these economies of scale. Moreover, an efficiency strategy built on economies of scale can guarantee superior performance if only one firm can achieve it (Porter, 1985) and this can only occur when the optimal scale of operations exceeds one-half of the market (Murray, 1988). Similarly, achieving cost efficiency through process improvements is not likely to yield an inimitable source of competitive advantage, especially if it is developed by suppliers and sold on the open market (Barney, 2002). Being first with a new process, even if it is protected by patents or copyrights, only provides a firm with a temporary cost advantage because imitation is inevitable (Murray, 1988). Another source of competitive advantage following a cost efficiency strategy is capitalizing on learning or experience effects. While some firms may be able to create a durable advantage following such a strategy, if an industry is not characterized by a sufficiently steep learning curve, such a strategy would collapse since it would not lead to any significant cost advantages that can be sustained (Murray, 1988).

In contrast, advantages attained through differentiation are more likely to be sustainable because unique activities or products valued by customers cannot be easily imitated by competitors (Grant, 1991; Porter, 1985). A strategy of differentiation is usually developed around firm-specific and product-specific innovations and marketing effort that may not be easy to imitate quickly. For instance, responses by competitors to pricing moves come almost immediately, while responses to innovation through R&D would take a much longer period. The longer it takes for a competitor to respond to a particular comparative advantage, the greater the opportunity for a firm to capitalize on the sustained advantages and to create new ones. Moreover, a focus on making reliable and high quality products will have a significant impact on sales, especially in more mature industries or in industries in which there is a high cost of poor performance (Porter, 1985). Barney (2002) describes specific sources such as location, reputation and distribution channel that yield sustainable competitive advantage through product differentiation. This leads us to the following research hypothesis:

H1: Firms pursuing a differentiation strategy are more likely to sustain their financial performance over time than firms pursuing an efficiency strategy.

In an efficient market, firm value is the present value of expected future net cash flows, discounted at the appropriate risk-adjusted rate of return. Various financial models translate expected future net cash flows in terms of expected future earnings where the expectation is based on a firm's current earnings (Kothari, 2001). If earnings are more persistent and current earnings are sustained into the future, then a higher weight is placed on current earnings in valuing a firm. Since we expect firms following a differentiation strategy to have more sustainable performance in the future, investors are likely to place a higher weight on the current earnings of such firms. This leads to a higher price-earnings multiple for differentiation firms than efficiency firms. The positive impact of a differentiation strategy, however, is likely to be attenuated by the higher riskiness of future net cash flows. Risk here refers to the systematic component of the cash flows' volatility (Kothari, 2001). Greater risk implies a higher discount rate, which reduces the present value of expected future earnings. Firms following a differentiation strategy may have more volatile earnings since the outcomes associated with innovative projects may be impacted more by the uncertainty associated with economy swings. This implies higher risk for differentiation firms which, in turn, may lead to a lower price-earnings multiple.

H2: Investors place a higher price-earnings multiple when valuing securities of a firm pursuing a differentiation strategy.

Our hypotheses are expressed in terms of the strategy pursued by a firm, regardless of its position relative to other firms in its industry. Because of industry history and norms or product-market attributes, some strategies are more common than others in each industry (Hambrick, 1983). For example, Porter (1980) posits that the emphasis on cost control and service orientation may be of greater strategic importance for firms competing within a fragmented industry than an emergent industry. In contrast, in industries such as the soft drinks, competition has traditionally been based on branding and not on price. In our empirical tests we examine the relationship between strategy and performance at the firm-level, and seek to capture both within- and across-industry variations in strategy.

III. Strategy Measures

An impediment to investigation of these issues has been the availability of comprehensive proxies for firm strategies. A principal contribution of this study is the identification of scales to measure the strategic positioning of firms across industries using publicly available archival data. There are several studies that have sought to develop similar strategy constructs, but most have done so based on either perceptual measures using surveys or by focusing on proprietary subsamples of data. Mintzberg (1987) distinguishes between *intended strategy* and *realized strategy*. Intended strategy is the traditional view of strategy as a statement of intent, while realized strategy views strategy as a pattern in a stream of decisions followed by actions. Realized strategies emerge through events and environment interactions as they unfold over time. Strategic choices are manifested in firms' resource allocation decisions which, in turn, impact the numbers reported in financial statements. Therefore, we may be able to infer a firm's strategy from its reported financial data. While the use of perceptual measures is consistent with measuring intended strategy, our operationalization based on archival data captures the realized strategies of firms. This addresses, in part, the concerns of perceptual biases that have been documented in the strategy literature (e.g., Reger and Huff, 1993; David et. al., 2002).

Porter's generic strategy framework of differentiation and cost efficiency strategies has been shown to be empirically congruent with the Miles and Snow (1978) typology of strategy (Shortell and Zajac, 1990; Galbraith and Schendel, 1983; David et. al., 2002) and is well accepted as internally consistent (Govindarajan, 1988; Miller, 1988). Both strategic frameworks have a single underlying dimension: the willingness of businesses to alter their products and markets (Hambrick, 1983). Prospectors aim to create uniqueness for their products and services and create a competitive advantage by being able to charge premium prices for the superiority of their products and services. Defenders, on the other hand, create a competitive advantage as they are able to price their products and services competitively by achieving lower costs. Thus the duality of the prospector/defender framework coincides with the differentiation/efficiency framework.

Porter (1980, 1985) posited that a firm may obtain a competitive advantage by creating a higher value for its customers than the cost of creating it, either by adopting a differentiation strategy or an efficiency strategy. Firms pursuing a differentiation strategy attempt to differentiate themselves from their rivals using a variety of sales, marketing and other related activities or product and technology innovations. Differentiation relates to the degree to which a product and its enhancements are perceived as unique. A firm adopting a differentiation strategy can command above-market prices made possible by the customers' perception of the product being special in some way (Berman et. al., 1999). Miller (1986) noted that there are at least two different types of differentiation strategies: those based on product innovation and those based on intensive marketing and image management. The key success factors which contribute to the profitability of a differentiator include creative flair, strong basic research and product engineering (Kotha and Vadlamani, 1995; Porter, 1980). A firm can differentiate itself by offering high quality and innovative products with superior design or brand image, technology or customer service, a strategy typically implemented by making investments in costly activities such as extensive research, product design, and marketing. These expenditures in turn enable the firm to earn price premiums relative to its competitors.

Hambrick (1983) argues that the main dimension of the cost leadership strategy is *efficiency*, the degree to which inputs per unit of output are low. Efficiency, can be subdivided into two categories: (a) c*ost efficiency* which measures the degree to which costs per unit of output are low, and (b) *asset parsimony* which measures the degree to which assets per unit of output are low. Together, cost efficiency and asset parsimony, capture a firm's cost leadership orientation. To the extent that firms following an efficiency strategy succeed in deploying the minimum amount of operating costs and assets needed to achieve the desired sales, they would be able to improve their financial performance (Hambrick, 1983; Miller, 1987; Porter, 1980). Such firms pay great attention to asset use, employee productivity and discretionary overhead. Their customers buy their products primarily because they are priced below their competitors' equivalent products, an advantage achieved through minimizing costs and assets per unit of output (Hambrick, 1983).

A summary of prior research using publicly available archival financial information to measure strategic positioning of firms indicates that the following six variables have been typically used to operationalize different strategies (see Table 1):

(1) Selling intensity (SG&A) is measured as the total sales, general and administrative expenditure (Compustat #89) divided by net sales (Compustat #12). SG&A reflects a firm's resource allocation on sales and marketing efforts. Firms pursuing a differentiation strategy will invest in a variety of advertising, marketing and related activities in order to differentiate themselves from competitors. A higher allocation of resources to SG&A indicates an effort to build and strengthen the firm's brand and product image. Higher SG&A thus indicates a greater likelihood that the firm is pursuing a differentiation strategy (David et al., 2002; Berman et al., 1999; Miller and Dess, 1993; Thomas et al., 1991; Hambrick et al., 1982).

(2) R&D intensity (R&D) is measured as the total research and development expenditure (Compustat #46) divided by net sales (Compustat #12). A key success factor for a differentiator is the ability to offer high quality and innovative products and services. It is therefore likely that such firms spend more on research and product design. Higher R&D expenditure is likely to indicate that a firm is pursuing a differentiation strategy (Hambrick, 1983; David et al., 2002; Hambrick et al., 1982; Ittner et al., 1997; Prescott, 1986; Thomas et al., 1991).

(3) *Gross margin* (*MARGIN*) is measured as net sales (Compustat #12) divided by cost of goods sold (Compustat #41). A firm pursuing a differentiation strategy is likely to create a unique perception of its products and services superior to its competitors, enabling it to command above-market prices, and greater profitability (Kotha and Vadlamani, 1995; Porter, 1980). Therefore, a higher MARGIN is likely to be associated with a differentiation strategy (Kotha and Nair, 1995; Nair and Filer,

2003). Some researchers have used the margin variable to measure cost efficiency (e.g., Hambrick, 1983; Berman et al, 1999), since a firm pursuing an efficiency strategy will aim to minimize its cost of goods sold relative to sales in order to improve gross margin.

(4) *Capital expenditure (CAPEX)* is measured as capital expenditure on property, plant and equipment (Compustat #128) divided by net sales (Compustat #12). Capital expenditure indicates the lack of asset parsimony (Berman et al., 1999; Hambrick, 1983; Hambrick et al., 1982; Kotha and Nair, 1995; David, et al., 2002).

(5) Capital intensity (CAPINT) is measured as net book value of plant and equipment (Compustat #8) divided by net sales (Compustat #12). Capital intensity indicates the lack of asset parsimony of the business (Hambrick, 1983; Hambrick et al., 1982; Miller and Dess, 1993; Prescott, 1986; David, et al., 2002).

(6) Assets-to-employee ratio (ASSETEMP) is measured as the total assets (Compustat #6) divided by total number of employees (Compustat #29). This ratio has commonly been used to measure the lack of asset parsimony of the business. (Nair and Filer, 2003; Berman et al., 1999; Kotha and Nair, 1995).

We compute the mean of the previous five years of data for each of the above six variables to capture the long term strategic orientation of firms. We conducted an exploratory factor analysis to capture the common patterns among the six variables. The results of the factor analysis implemented using these six variables are tabulated in Table 2. The variables load on two factors with eigen values greater than one. The R&D, SG&A, and MARGIN variables load together on Factor 1 which we label ‘Differentiation’. The other three variables, CAPEX, CAPINT, and ASSETEMP load together on Factor 2 which is labeled 'Efficiency' with higher loadings characterizing lower efficiency, since each of the variables represent the lack of efficiency. Note that the MARGIN variable loads highly on the 'Differentiation' dimension with a much smaller loading on the 'Efficiency' dimension. Internal consistency of the two factors is determined by computing the Cronbach alphas for each set of three variables with high loadings on each of the factors. Both the coefficients are greater than the recommended cut-offs of 0.70 (Nunnally, 1978). Next, we compute factor scores for each individual firm-year observation based on the factor loadings for each variable, and use the standardized factor scores as our measures of strategy, Differentiation_t and Efficiency_t. These measures capture the firms' long-term strategic orientation on the two dimensions.[1] For the Efficiency_t measure we invert the sign of the resultant factor scores such that a higher factor score implies higher efficiency and vice versa. This is done to facilitate easier interpretation in the subsequent analyses. An examination of factor scores for firms in our sample confirms the notion that firms belonging to particular industries may compete along similar dimensions. For instance, firms belonging to the Fama-French (1997) industry classification consisting of 'Healthcare' firms has a mean standardized Differentiation score of 1.21 which is more than one standard deviation above the zero mean for all firms. On the other hand, firms in the 'Wholesale and Retail' industry have an above average score of 0.40 on the Efficiency dimension.

[1] Both the standardized factor scores, Differentiation_t and Efficiency_t, have high first-order autocorrelation coefficients of 0.998 and 0.995 respectively. This validates our assumption that these measures capture long term positioning.

IV Empirical Model

We begin by developing an empirical model to evaluate our first research hypothesis on the sustainability of financial performance based on the generic strategies followed by firms. We use return on assets (ROA) as the measure of a firm's performance. Achieving a high ROA is an objective of most corporations (Hambrick, 1983; Berman et al., 1999). Furthermore, ROA is widely employed by managers and analysts as a measure of firms' performance (Bettis, 1981). Various studies in the strategic management literature have used ROA as a measure of financial performance of a firm (Bae and Gargiulo, 2004; Bettis, 1981; Hitt et al., 1997; Venkataraman and Ramanujam, 1986; Waddock and Graves, 1997).

To evaluate our research hypotheses we need to examine whether the extent to which current performance persists into the future depends on the two strategies. We estimate the following set of equations which includes future ROA, the dependent variable, for each of the five subsequent years as a function of its current performance:[2]

$$\mathrm{ROA}_{\mathrm{i,t+j}} = \alpha_{0\mathrm{j}} + \alpha_{1\mathrm{j}} ROA_{\mathrm{it}} + \varepsilon_{\mathrm{it}} \qquad j = 1, 2, 3, 4, 5 \qquad (1)$$

where $\alpha_{1j} = \beta_{0j} + \beta_{1j} Differentiation_{i,t} + \beta_{2j} Efficiency_{i,t}$ reflects the ability of firms to sustain ROA performance in the future based on the strategy followed in period t. $Differentiation_{i,t}$ and $Efficiency_{i,t}$ refer to the strategies followed by firm *i* in period *t* as determined by individual factor scores described in the previous section. $ROA_{i,t+j}$ for j=1,2,3,4,5 refers to the

[2] If $E(ROA_{t+j}) = \beta_j ROA_t$ then $\sum_{j=1}^{\infty} E(ROA_{t+j})/(1+r)^j = \left[\sum_{j=1}^{\infty} \beta_j \big/ (1+r)^j\right] ROA_t$ where r is the discount rate. We allow the persistence of ROA to not be time invariant. Accordingly, we specify the underlying stochastic process for ROA as follows: $ROA_{t+1} = \alpha_1 ROA_t + \varepsilon_1$ and $ROA_{t+2} = \gamma_2 ROA_{t+1} + \delta_2$. Hence, $ROA_{t+2} = \alpha_2 ROA_t + \varepsilon_2$ where $\alpha_2 = \alpha_1 * \gamma_2$ and $\varepsilon_2 = \gamma_2 * \varepsilon_1 + \delta_2$.

return on assets of firm *i* in periods t+1, t+2, t+3, t+4 and t+5 respectively. Expanding the coefficient terms we rewrite equation (1) as:

$$\begin{aligned} ROA_{t+j} &= \gamma_{0j} + \gamma_{1j} ROA_{it} + \gamma_{2j} ROA_{it} * Differentiation_{it} \\ &\quad + \gamma_{3j} ROA_{it} * Efficiency_{it} + \varepsilon_{it} \end{aligned} \qquad (2)$$

The coefficient α_{1j} on ROA_t in equation (1) reflects the persistence of earnings from period t to period t+j. Since the average value of the $Differentiation_{it}$ and $Efficiency_{it}$ scales is zero, the coefficients γ_{2j} and γ_{3j} on the terms involving the strategy variables in equation (2), therefore, measure the ability of firms to sustain current performance into the future over and above what is achieved by an average firm on each strategy dimension. Based on our hypothesis H1, we expect the coefficient γ_{2j} on $Differentiation_{it}$ to be positive and greater than the coefficient γ_{3j} on $Efficiency_{it.}$ This implies that the differentiation strategy has a positive impact on sustaining current performance into the future and that this impact exceeds the corresponding impact of the efficiency strategy. Since we expect that the performance of firms following an efficiency strategy will dissipate over time faster than for a differentiation strategy, we also expect the difference between coefficients γ_{2j} and γ_{3j} to grow over time.

V. Empirical Results

<u>Data</u>

We obtain data for the strategy and performance variables used in our study from the 2003 Compustat files. We collect stock price data from the 2003 CRSP monthly files. Our sample period covers the period from 1989 to 2003. We delete observations for which any of the following variables are missing: Total Assets (Compustat #6), Net Sales (Compustat #12), Total Employees (Compustat #29), Cost of Goods Sold (Compustat #41), Selling, General, and Administrative Expense (SG&A) (Compustat #189) and Capital Expenditure (Compustat # 128). We also eliminate firm-years in which net sales are less than $10 million and/or total assets are less than $5 million to restrict our analysis to sufficiently large-sized firms. This is common practice in the accounting and finance literatures because illiquid stocks are found to affect stock returns (Amihud and Mendelson, 1986). For the same reason, we delete firms for which the stock price is less than $2 to restrict the influence of large returns of penny stocks (Amihud and Mendelson, 1986). In addition, we trim the data to eliminate the effects of outliers by removing observations for which the value of any variable is in the top or bottom 0.5% of the variable's distribution (Chen and Dixon, 1972). We also delete firm-year observations in the financial services industry (SIC code from 6000 to 6999) because of differences in the interpretation of the financial reports of these industries from those of other industries (Subramanyam, 1996). The final sample contains a total of 12,869 firm-year observations.

Panel A of Table 3 reports the descriptive statistics of all the variables used in our analysis for this sample. Panel B tabulates the correlations between our main variables. The top right side of this panel displays the Pearson correlations while the bottom left side of the panel displays the Spearman correlations between the variables. The correlation analysis gives us some insights into the relationships between our variables of interest. Both $\text{Differentiation}_{it}$ and Efficiency_{it} have positive correlations with ROA_{it} (Pearson correlation = 0.249 and 0.051 respectively), ROA_{it+1} (Pearson correlation = 0.123 and 0.038 respectively),

ROA_{it+2} (Pearson correlation = 0.035 and 0.009 respectively), ROA_{it+3} (Pearson correlation = 0.030 and 0.003 respectively), ROA_{it+4} (Pearson correlation = 0.018 and 0.002 respectively), and ROA_{it+5} (Pearson correlation = 0.022 and -0.002 respectively) but the correlations are higher in the case of differentiation than for efficiency. Market price is measured 3 months after the end of the fiscal year because financial information for the fiscal year contained in a firm's annual report is typically released to the public before that date (Lev and Sougiannis, 1996). While there is a significant and positive correlation of $Differentiation_{it}$ with the market price (correlation = 0.025), there is a significant and negative correlation of $Efficiency_{it}$ with the price (correlation = -0. 136). This is consistent with our hypothesis H2 which suggests that investors price earnings more positively for firms following a differentiation strategy than an efficiency strategy.

Sustainability of Financial Performance

To examine which of two generic strategies, differentiation and/or efficiency, leads to sustained performance, we estimated the models described in equation (2) using the Fama-MacBeth (1973) year-to-year estimation method common in accounting and finance research. The Fama-MacBeth approach consists of two steps. In the first step cross sectional regressions are estimated to obtain parameter estimates for each time period. The second step consists of averaging the estimates from the cross-sectional regressions to obtain the final estimates for the coefficients and their t-statistics. A major benefit of using this procedure in the context of panel data is that the procedure considers cross-sectional and serial correlations and allows investigation into the time-variation of the effects of the regressors on the dependent variable. When estimating the models, we removed influential observations with studentized residuals greater than three or Cook's D statistic greater than one (Belsley, Kuh and Welsch, 1980). To examine whether heteroskasdicity is a problem in the estimation, we used White's (1980) test which did not reject the homoskedasticity assumption. We also applied the Belsley, Kuh, and Welsch (1980) diagnostics to check for multicollinearity. All the condition indices were less than three, well below the suggested cutoff of thirty. This suggests that multicollinearity was not a problem in our estimation.[3]

We first estimate the following model to examine the contemporaneous relation between the strategies followed by firms and the performance of firms:

$$\mathrm{ROA}_{\mathrm{i,t}} = \alpha_0 + \alpha_1 Differentiation_{\mathrm{i,t}} + \alpha_2 Efficiency_{i,t} + \varepsilon_{\mathrm{i,t}} \qquad (3)$$

where $\mathrm{ROA}_{i,t}$ is the return on assets of firm *i* in year *t*. Consistent with prior literature, we find that while both strategies have a positive impact on contemporaneous performance, the impact of the differentiation strategy is higher than that of the efficiency strategy. The estimated coefficient in Table 4 for the differentiation strategy variable is 0.0692 (Fama-MacBeth t-statistic = 16.55) and the estimated coefficient for the efficiency variable is 0.0031 (Fama-MacBeth t-statistic = 8.03).

We next estimate equation (2) to examine the sustainability of performance based on realized generic strategies. In Panel A of Table 5 we report the estimated coefficients for the effect of the strategies on firm performance in periods t+1, t+2, t+3, t+4 and t+5. As expected, we find that the estimated coefficient for ROA_{it}, measuring the persistence of the earnings stream, is significant and positive in all the years (0.8451, 0.6825, 0.5525, 0.4637

[3] For models in which $\mathrm{ROA}_{i,t}$ appears as a regressor, we delete firm-year observations with negative $\mathrm{ROA}_{i,t}$ since the persistence of losses has different properties and connotations than the persistence of profits (Hayn, 1995). We also conducted our hypothesis tests including firm-year observations with negative ROA_{it}. The basic tenor of our results remained unchanged.

and 0.4057; Fama-MacBeth t-statistic = 51.44, 25.12, 23.11, 22.55 and 16.39 for years t+1, t+2, t+3, t+4 and t+5 respectively). The coefficient for the interaction term ROA_{it}*$Differentiation_{it}$ is positive and significant in each of the years (0.0137, 0.0303, 0.0337, 0.0299 and 0.0428; Fama-MacBeth t-statistic = 1.56, 2.28, 3.38, 2.60 and 3.97 for years t+1, t+2, t+3, t+4 and t+5 respectively). The coefficient for the other interaction term ROA_{it}*$Efficiency_{it}$ is only significant at the 5% level in year t+1 (0.0195; Fama-MacBeth t-statistic = 1.93) and insignificant in all other years. Comparing the two coefficients, ROA_{it}*$Differentiation_{it}$ and ROA_{it}*$Efficiency_{it,}$ we find that the coefficient on ROA_{it}*$Differentiation_{it}$ is significantly higher than that on ROA_{it}*$Efficiency_{it}$ in years t+2, t+3, t+4, and t+5 (Chi-square values with 20 degrees of freedom = 30.90, 40.63, 37.12 and 44.19 respectively). We also examine the change in the difference between the two coefficients in two consecutive years. In each of the years the size of the difference is greater than that for the preceding year (Chi-square values with 20 degrees of freedom = 36.39, 43.21, 38.85, and 64.43 in years t+2, t+3, t+4 and t+5 respectively). Overall, the results are consistent with hypothesis 1 and indicate that while both differentiation and efficiency strategies are associated with superior contemporaneous performance, the differentiation strategy is more likely to enable firms to sustain this performance into the future. While both differentiation and efficiency strategies are associated with higher contemporaneous ROA, the impact of the efficiency strategy on the sustainability of performance in the future is less than that for the differentiation strategy. This result is consistent with the premise that the positive effects of the efficiency strategy in year *t* dissipate over time and do not enable firms to sustain financial performance in the future to the same extent as the differentiation strategy. In contrast, the coefficient on ROA_{it}*$Differentiation_{it}$ increases over time, indicating the considerable influence of the differentiation strategy in sustaining and even improving performance in the future.

While we do not include main effects of the strategy variables on ROA_{t+j} since we do not have any hypotheses regarding the associations of the variables with the dependent variable, we present the results when main effects are also included in the estimation of equation (2) in Panel B of Table 5. As seen from the results, the coefficients on the strategy variables are not significant in any of the models and their inclusion does not alter the conclusions drawn from the results. In additional tests we examine the robustness of our results by including control variables to represent the impact of relative size, measured as firm sales divided by industry sales, and growth opportunities (Baber et al., 1996) on the sustainability of ROA_t. The basic tenor of our results remains unchanged which suggests that the strategy variables capture information that is incremental to that contained in relative size and growth opportunities. To control for industry effects, we replace the strategy variables in equation (2) with industry-adjusted factor scores that are obtained by subtracting the industry (using 2-digit SIC codes) mean score from each firm's strategy score. Again, the basic thrust of our results remains unchanged.

<u>Strategic Postitioning and Risk</u>

Value implications of the strategic positioning may be difficult to assess because the positive impact of greater sustainability of performance may be attenuated by the increase in the riskiness. Thus, to understand the effects of the strategies on firm value, it is important to assess the risk associated with different strategies. Baird (1984) and Miller and Dess (1993) advocate 'stability' in firm performance as a measure of predictability of financial performance or lower risk for firms that seek to have not only high returns but steady sources of returns. To operationalize the stability of financial performance, we construct the measure 'ROAStability' as the reciprocal of the variance of ROA in the future five years (Miller and Dess, 1993). We estimate the following model to examine the impact of the strategies on the ROA stability measure.

$$ROAStability_{\mathrm{it}} = \alpha_0 + \alpha_1 Differentiation_{it} + \alpha_2 Efficiency_{\mathrm{it}} + \varepsilon_{\mathrm{it}} \qquad (4)$$

The finance literature discusses two types of risk (a) systematic risk, and (b) firm-specific risk (Brealey, et al. 2006). Portfolio theory in finance has shown that firm-specific risk is not priced since it can be eliminated by constructing a diversified portfolio. Hence, only systematic risk affects the valuation of firms. The systematic risk of a firm can be measured by the firm's beta (β) which measures how sensitive its stock is to market movements. Thus, we estimate another model replacing $\mathrm{ROAStability}_{\mathrm{it}}$ with firm betas in equation (4).

$$Beta_{\mathrm{it}} = \alpha_0 + \alpha_1 Differentiation_{it} + \alpha_2 Efficiency_{\mathrm{it}} + \varepsilon_{\mathrm{it}} \qquad (5)$$

Table 7 shows the results of the estimation of equations (4) and (5). Our results indicate that the differentiation strategy has a significant negative impact on the stability of the ROA. These results are consistent with the risk-return tradeoffs observed in finance research (e.g., Brealey et al., 2006). As the differentiation strategy provides higher, more sustained returns, it also increases the riskiness of the firm as measured by the volatility of the future ROA and firm betas. Overall, our analysis of the impact of the differentiation and the efficiency strategies on the performance of firms indicates that while both differentiation and efficiency have a significant and positive impact on the contemporaneous performance of firms, only the differentiation strategy has a sustained impact on ROA in future years, and that the impact of the differentiation strategy on the contemporaneous and future performance of the firm is greater than that of the efficiency strategy. Since the valuation of firms is typically discussed in the context of discounted cash flows (Brealey, et al., 2006) we also estimate equation (2) replacing ROA_{t+j} with cash flows from operations divided by average total assets (CFO_{t+j}). The results obtained are presented in table 6. While CFO*Differentiation is significantly positive in each of the years, CFO*Efficiency is significantly negative in each of the models.

<u>Capital Market Pricing</u>

Having examined the differences in the sustainability of financial performance based on the firms' realized strategies, we next analyze whether capital market participants recognize these differences when valuing firms. We examine the association of the strategy variables with stock prices to evaluate whether investors incorporate information related to the sustainability of performance in setting prices. To do this, we utilize a valuation model that captures the relation between current accounting information and prices and has been widely used in the accounting and finance literatures to assess the information content of variables with potential pricing implications (Ohlson, 1995). The valuation model incorporates the relevance of accounting data in the valuation of firms by following a three-link process: (1) current earnings are useful for predicting future earnings, (2) future earnings are an indicator of the future dividend-paying ability of firms, and (3) expected future dividends are discounted to the present to infer equity value. Hence, this model expresses the value of a firm's equity as a function of its earnings and book value, where the book value represents a stock measure that reflects the current value of equity, while earnings (a flow variable) measures increments to value based on the implication of current earnings on future earnings and after discounting these future earnings at a firm-specific discount rate. The relation between the value of the firm, its book value, and its earnings is represented as follows:

$$P_{it} = \alpha_0 + \alpha_1 BV_{it} + \alpha_2 EPS_{it} + \varepsilon_{it} \qquad (6)$$

where P_{it} is the stock price of firm *i* three months after fiscal year-end *t*; EPS_{it} is the earnings per share of firm *i* during the year *t*; BV_{it} is the book value (= assets – liabilities) per share of firm *i* at the end of the year *t*; and the residual ε_{it} reflects all other value-relevant information of firm *i* for year t that is orthogonal to the earnings and book value of the firm.

We are interested in examining whether investors price firms incorporating the implications of the differentiation and efficiency strategies on the sustainability of financial performance. Since the coefficient α_2 in equation (6) represents the discounted value of expected future earnings written as a function of their current earnings, differentiation firms may be expected to have a higher α_2 than efficiency firms based on our earlier results that documented that differentiation firms are better able to sustain their current financial performance. In other words, the coefficient α_2 is itself a function of the two strategy variables, differentiation and efficiency. Thus, we can write

$\alpha_2 = \beta_0 + \beta_1 * Differentiation + \beta_2 * Efficiency$ and then expand equation (6) to include the interaction terms of EPS with both Differentiation and Efficiency variables. This will enable us to evaluate whether capital market participants recognize the sustainability of financial performance of the firms adopting a differentiation strategy:

$$P_{it} = \gamma_0 + \gamma_1 BV_{\mathrm{it}} + \gamma_2 EPS_{it} + \gamma_3 EPS_{it} * Differentiation_{it} + \gamma_4 EPS_{it} * Efficiency_{\mathrm{it}} + \varepsilon_{\mathrm{it}} \quad (7)$$

where the coefficients γ_2 and γ_3 on the interaction terms $\mathrm{EPS_{it}}$*$\mathrm{Differentiation_{it}}$ and $\mathrm{EPS_{it}}$*$\mathrm{Efficiency_{it}}$ reflect the differences in the sustainability of earnings in the future depending on the realized strategy of firms. Based on our hypothesis 2, we expect a positive coefficient γ_2 for $\mathrm{EPS_{it}}$*$\mathrm{Differentiation_{it}}$ which is higher than the coefficient γ_3 for $\mathrm{EPS_{it}}$*$\mathrm{Efficiency_{it}}$.

Table 8 presents the results of estimating equations (6) and (7). The first column shows the results of estimating the basic model in equation (6). The estimated coefficients on BV and EPS are consistent with those found in other studies that utilize this model (e.g. Collins et al., 1997; Barth et al., 1998); the coefficient on BV is 0.3654 (Fama-MacBeth t-statistic = 10.20) and that on EPS is 7.8921 (Fama-MacBeth t-statistic = 16.62). In the second column, we present the results of estimating equation (7). The coefficient γ_2 on $\mathrm{EPS_{it}}$*$\mathrm{Differentiation_{it}}$ is positive and significant (mean estimated coefficient = 1.6608, Fama-MacBeth t-statistic = 7.03), while the estimated coefficient γ_3 for the $\mathrm{EPS_{it}}$*$\mathrm{Efficiency_{it}}$ is significantly negative (estimated coefficient = -0.5359, Fama-MacBeth t-statistic = -3.83). Our findings suggest that market participants recognize that firms which adopt a differentiation strategy are able to sustain these earnings in the future, thus giving them a higher price-earnings multiple. On the other hand, firms that adopt an efficiency strategy are given a relatively lower price-earnings multiple, indicating that investors place a lower weight on current earnings as they perceive that these earnings may not be sustainable in the future.

Portfolio Analysis

If market participants fully understand the value implications of the different realized strategies, they would be immediately incorporated in contemporaneous returns. Consequently, there should be no relation between the realized strategies and future abnormal returns. To examine the economic significance of our results and to provide a measure of the magnitude of possible mispricing of each type of firm strategy, we compute the abnormal returns for portfolios based on the two strategy measures. If investors do not fully incorporate the implications of realized strategies in the firms' current stock prices, this will result in a correction in stock prices in the future when information about earnings in those later periods becomes available to investors. To investigate this possibility, we form portfolios based on firm-year observations with each of differentiation and efficiency strategy variables and compute abnormal returns on a hedge portfolio formed by assuming a long position in the top 25% of the firms with the highest values for the strategy variable and an equal-sized short position in the lowest strategy quartile.

We compute abnormal cumulative portfolio returns at 12-month intervals adjusted for size and book-to-market, which capture the cross-sectional variation in average stock returns. The abnormal portfolio return is cumulated from the beginning of the fourth month after the fiscal year end in which the strategy was observed (Fama and French, 1992). We follow

Fama and French (1992, 1993, 1995) and Barber and Lyon (1997) to calculate size and book-to-market adjusted returns for each firm-year observation. Size for year t is the market value of equity at the end of June of year t. The book-to-market value for year t is the book value of equity at the end of the fiscal year ending in t-1 divided by the market value of equity at December of t-1. We then compute the mean portfolio returns for each year and the overall mean returns based on the distribution of yearly portfolio mean returns (Abarbanell and Bushee, 1998).

The hedge portfolio is formed by going long in the portfolio of highest quartile firms and going short in the portfolio of lowest quartile firms. The results in Table 9 indicate that the cumulative hedge portfolio returns for the differentiation strategy going 60 months into the future increases from 3.29% (t-statistic = 1.29) during the initial 12 month period to 21.87% (t-statistic = 3.39) during a 60 month period after portfolio formation. The hedge portfolio return for the efficiency strategy is positive and significant only in the initial 12 month period (hedge portfolio returns = 5.63%; t-statistics = 2.57) and insignificant in all other periods. The results suggest at first glance that capital market participants may not be capturing all the information about the sustainability of financial performance associated with firms' realized strategies as reflected in measures based on publicly available information. However, recall that the differentiation strategy is associated with higher volatility of earnings and the excess returns may be a result of greater riskiness of the investment.

VI Conclusion

Porter (1980) introduced a framework positing that firms which choose to implement strategies based on either differentiation or efficiency may enjoy superior financial performance. Strategies based on operational efficiencies, however, are easily imitable and the superior performance achieved through such strategies dissipates over time (Porter, 2001). On the other hand, strategies based on differentiation that achieve uniqueness in products and services rendered to customers allow firms to sustain superior performance over time (Porter, 1996). The primary objective of this study has been to empirically examine this notion and determine whether following a differentiation strategy, in fact, enables firms to sustain financial performance more than following an efficiency strategy does.

To evaluate these propositions for a comprehensive sample of firms, we began by developing scales to measure the realized strategies of firms using publicly available archival financial data. We used these scales to investigate the sustainability of financial performance based on the strategic positioning of firms. In further analysis, we examined whether capital market participants recognize the difference in the sustainability of the performance based on the strategic positioning of the firms. We found that a realized differentiation or an efficiency strategy was associated with firms attaining superior contemporaneous performance. However, the differentiation strategy was associated with firms sustaining their financial performance to a greater extent that an efficiency strategy.

We found that market participants recognize the differences in expected future performance associated with a realized differentiation strategy and a realized efficiency strategy, and accordingly place a higher price-earnings multiple for shares of firms with a realized differentiation strategy than for firms with a realized efficiency strategy. Portfolio analysis indicated that additional excess returns are earned following an investment strategy favoring differentiation firms over efficiency firms, but such a portfolio may be more risky.

Our study of a large sample of firms over ten years confirms the conventional wisdom that adopting a differentiation strategy enables a firm to sustain superior performance more than an efficiency strategy does. Important for managers is our finding that while differentiation is a source of sustainable performance, it also increases the volatility of earnings. In addition, the scales developed in this study to measure firms' strategic positioning using publicly available archival financial data should be useful to researchers who conceptualize new questions related to the realized strategies of firms and who plan to empirically evaluate them without resorting to surveys.

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Table 1: Summary of Prior Research Using Publicly Available Financial Variables to Measure Strategy

STUDIES (1)	**SG&A (2)**	**R&D (3)**	**MARGIN (4)**	**CAPEX (5)**	**CAPINT (6)**	**ASSET EMP (7)**	**OTHER VARIABLES (8)**
Berman et al. (1999)	✓		✓	✓		✓	
David et al. (2002)	✓	✓	✓	✓	✓		Market to book ratio
Hambrick (1983)		✓	✓	✓	✓		Inventory/Sales Receivables/Sales
Hambrick et al. (1982)	✓	✓		✓	✓		
Ittner et al. (1997)		✓					Market to book ratio
Kotha and Nair (1995)			✓	✓		✓	
Miller and Dess (1993)	✓	✓	✓		✓		Inventory/Sales Receivables/Sales
Nair and Filer (2003)			✓	✓		✓	
Prescott (1986)	✓	✓	✓		✓		Employees/Sales
Thomas et al. (1991)	✓	✓					Employees/Sales

Columns (2) through (7) indicate the six measures used to develop our strategy constructs that have been mentioned frequently in prior studies. Column (1) indicates the prior studies that have used these measures. Column (8) indicates other publicly available archival financial variables used in fewer studies which we have chosen not to include in our analysis. (Inclusion of these additional variables creates two additional factors associated with the efficiency strategy. Our basic results do not change materially with the additional factors.)

Table 2: Exploratory Factor Analysis for Strategy Measures

Variables	Efficiency Factor Loading	Differentiation Factor Loading	Final Communality
SG&A	-0.19	**0.89**	0.829
R&D	-0.04	**0.77**	0.590
MARGIN	0.23	**0.87**	0.810
CAPEX	**0.88**	0.03	0.775
CAPINT	**0.91**	-0.11	0.847
ASSETEMP	**0.68**	0.04	0.458
Variance Explained	**2.16**	**2.15**	
Cronbach Alpha	**0.77**	**0.80**	

Variable definitions

SG&A = average of SG&A (data #189) / sales (data #12) from t-1 to t-5
R&D = average of R&D expenditure (data #46)/ sales (data #12) from t-1 to t-5
MARGIN = average of sales (data #12) / cost of goods sold (data #41) from t-1 to t-5
CAPEX = average of capital expenditure (data #128) / sales (data #12) from t-1 to t-5
CAPINT = average of net property, plant & equipment (data #8) / sales (data #12) from t-1 to t-5
ASSETEMP = average of total assets (data #6) / number of employees (data #29) from t-1 to t-5

Table 3: Descriptive Statistics and Correlation Analysis
Sample Period: 1989-1998

Panel A : Descriptive Statistics

	N	MEAN	STD	Q1	MEDIAN	Q3
$Differentiation_{it}$	12,869	0	1	-0.671	-0.283	0.366
$Efficiency_{it}$	12,869	0	1	-0.126	0.291	0.528
$Price_{it}$	12,869	16.887	13.065	7.875	13.500	22.125
BV_{it}	12,869	8.638	7.460	3.987	6.569	10.824
EPS_{it}	12,869	0.998	0.923	0.410	0.760	1.290
ROA_{it}	12,869	0.073	0.053	0.035	0.063	0.097
ROA_{it+1}	12,024	0.058	0.073	0.026	0.058	0.093
ROA_{it+2}	11,291	0.050	0.273	0.022	0.056	0.091
ROA_{it+3}	10,566	0.047	0.283	0.020	0.054	0.088
ROA_{it+4}	9,859	0.044	0.292	0.019	0.052	0.087
ROA_{it+5}	9,185	0.044	0.301	0.018	0.052	0.086

Variable definitions*:*

Differentiation$_{it}$ is the factor score for the differentiation strategy of firm i in year t.
Efficiency$_{it}$ is the factor score for the efficiency strategy of firm i in year t.
Price$_{it}$ is the stock price of firm i 3 months after the fiscal year end
BV$_{it}$ is total common equity (Compustat#60) in year t, scaled by number of common shares outstanding adjusted for stock splits.
EPS$_{it}$ is earnings before extraordinary items (Compustat#18) in year t, scaled by number of common shares outstanding adjusted for stock splits.
ROA$_{it}$ is return on assets (Compustat#18/ Average total assets). Average total assets is calculated by adding the beginning and end of year total assets (Compustat#6) and dividing by two.

Panel B: Correlation Analysis

	$Differentiation_{it}$	$Efficiency_{it}$	$Price_{it}$	BV_{it}	EPS_{it}	ROA_{it}	ROA_{it+1}	ROA_{it+2}	ROA_{it+3}	ROA_{it+4}	ROA_{it+5}
$Differentiation_{it}$	1.000	0.001	0.025	-0.185	-0.113	0.249	0.123	0.035	0.030	0.018	0.022
$Efficiency_{it}$	0.008	1.000	-0.136	-0.095	-0.070	0.051	0.038	0.009	0.003	0.002	-0.002
$Price_{it}$	-0.011	-0.223	1.000	0.521	0.650	0.130	0.096	0.015	-0.001	-0.008	-0.010
BV_{it}	-0.213	-0.106	0.574	1.000	0.638	-0.252	-0.231	-0.079	-0.072	-0.061	-0.054
EPS_{it}	-0.113	-0.101	0.716	0.605	1.000	0.216	0.056	-0.041	-0.055	-0.058	-0.061
ROA_{it}	0.210	0.012	0.199	-0.282	0.393	1.000	0.756	0.613	0.526	0.465	0.391
ROA_{it+1}	0.172	0.017	0.136	-0.343	0.131	0.679	1.000	0.167	0.109	0.092	0.074
ROA_{it+2}	0.171	0.018	0.022	-0.371	0.008	0.529	0.687	1.000	0.037	0.029	0.031
ROA_{it+3}	0.159	0.010	-0.052	-0.378	-0.066	0.428	0.518	0.667	1.000	0.033	0.026
ROA_{it+4}	0.145	0.007	-0.091	-0.364	-0.097	0.362	0.432	0.510	0.659	1.000	0.030
ROA_{it+5}	0.152	0.006	-0.111	-0.361	-0.120	0.322	0.374	0.425	0.505	0.669	1.000

Top right of the table shows the Pearson correlation and bottom left of the table shows the Spearman correlations.

Table 4: Realized Strategies and Contemporaneous Performance

$$\mathrm{ROA}_{\mathrm{i,t}} = \alpha_0 + \alpha_1 Differentiation_{\mathrm{i,t}} + \alpha_2 Efficiency_{i,t} + \varepsilon_{\mathrm{i,t}}$$

Variables	Exp. Sign	Mean coefficient (Fama-MacBeth t-stat)
Intercept		0.0692*** (49.53)
$\text{Differentiation}_{it}$	+	0.0114*** (16.55)
Efficiency_{it}	+	0.0031*** (8.03)
Adjusted R^2		0.067
Mean No. of Observations		1270

***,**,* indicates significance using one-tailed p-values at the 1%, 5% and 10% levels, respectively.

Table 5: Sustainability of Financial Performance

Panel A

$$ROA_{t+j} = \gamma_{0j} + \gamma_{1j} ROA_{it} + \gamma_{2j} ROA_{it} * Differentiation_{it} + \gamma_{3j} ROA_{it} * Efficiency_{it} + \varepsilon_{it}$$

Independent Variables	Exp. Sign	Mean coefficient (Fama-MacBeth t-stat) **ROA_{it+1}**	Mean coefficient (Fama-MacBeth t-stat) **ROA_{it+2}**	Mean coefficient (Fama-MacBeth t-stat) **ROA_{it+3}**	Mean coefficient (Fama-MacBeth t-stat) **ROA_{it+4}**	Mean coefficient (Fama-MacBeth t-stat) **ROA_{it+5}**
Intercept		0.0004(0.20)	0.0071*(2.20)	0.0131***(4.39)	0.0178***(7.04)	0.0209***(16.27)
ROA_{it}	+	0.8451*** (51.44)	0.6825***(25.12)	0.5525***(23.11)	0.4637***(22.55)	0.4057***(16.39)
ROA_{it} *$Differentiation_{it}$	+	0.0137*(1.56)	0.0303**(2.28)	0.0337***(3.38)	0.0299**(2.60)	0.0428***(3.97)
ROA_{it} *$Efficiency_{it}$	+	0.0195**(1.93)	0.0209 (1.32)	0.0078 (0.46)	0.0038 (0.27)	0.0089 (0.85)
Adjusted R^2		0.55	0.34	0.23	0.27	0.14
Mean Number of Observations		1178	1110	1039	970	903
Test 1: $\gamma_{2j} = \gamma_{3j}$		30.35	30.90**	40.63***	37.12***	44.19***
Test 2: (γ_{2j} - γ_{3j}) = (γ_{2j-1} - γ_{3j-1})			36.39***	43.21***	38.85***	64.43***

***,**,* indicates significance using one-tailed p-values at the 1%, 5% and 10% levels, respectively.

<u>Notes</u>

(1) Test 1 examines the null hypothesis H_0: $\gamma_{2j} = \gamma_{3j}$. Numbers in tables are chi-square statistics with 2N degrees of freedom obtained by aggregating F-statistics over N years using $\chi^2 = \sum_{n=1}^{N} -2 \ln p_n$ where p_n is the p-value of the F-statistic for each year (Healy et al., 1987).

(2) Test 2 examines the null hypothesis H_0: (γ_{2j} - γ_{3j}) = (γ_{2j-1} - γ_{3j-1}). Numbers in tables are chi-square statistics with 2N degrees of freedom obtained by aggregating F-statistics over *N* years using $\chi^2 = \sum_{n=1}^{N} -2 \ln p_n$ where p_n is the p-value of the F-statistic for each year (Healy et al., 1987).

Panel B

$$ROA_{t+j} = \gamma_{0j} + \gamma_{1j} ROA_{it} + \gamma_{2j} Differentiation_{it} + \gamma_{3j} Efficiency_{it} + \gamma_{4j} ROA_{it} * Differentiation_{it} + \gamma_{5j} ROA_{it} * Efficiency_{it} + \varepsilon_{it}$$

Independent Variables	Exp. Sign	Mean coefficient (Fama-MacBeth t-stat) **ROA_{it+1}**	Mean coefficient (Fama-MacBeth t-stat) **ROA_{it+2}**	Mean coefficient (Fama-MacBeth t-stat) **ROA_{it+3}**	Mean coefficient (Fama-MacBeth t-stat) **ROA_{it+4}**	Mean coefficient (Fama-MacBeth t-stat) **ROA_{it+5}**
Intercept		0.0004 (0.17)	0.0068** (2.18)	0.0132*** (4.44)	0.0175***(6.84)	0.0209***(14.40)
ROA_{it}	+	0.8447***(46.11)	0.6852***(26.84)	0.5522***(22.82)	0.4698***(22.46)	0.4081*** (16.63)
$Differentiation_{it}$	0	-0.0017 (-1.33)	-0.0003 (-0.26)	-0.0001 (-0.09)	-0.0006 (-0.40)	-0.0008 (-0.44)
$Efficiency_{it}$	0	0.0000 (0.05)	0.0000 (0.03)	0.0009 (0.90)	0.0013 (0.95)	0.0004 (0.19)
ROA_{it} *$Differentiation_{it}$	+	0.0255***(2.51)	0.0332***(3.11)	0.0349**(2.25)	0.0386***(2.52)	0.0542***(3.21)
ROA_{it} *$Efficiency_{it}$	+	0.0149 (1.04)	0.0180 (0.78)	-0.0017 (-0.09)	-0.0174 (-0.81)	-0.0034 (-0.13)
Adjusted R^2		0.55	0.34	0.23	0.17	0.16
Mean Number of Observations		1017	962	899	839	779

Table 6: Sustainability of Financial Performance Using Cash Flows

$$CFO_{t+j} = \gamma_{0j} + \gamma_{1j} CFO_{it} + \gamma_{2j} CFO_{it} * Differentiation_{it} + \gamma_{3j} CFO_{it} * Efficiency_{it} + \varepsilon_{it}$$

Independent Variables	Exp. Sign	Mean coefficient (Fama-MacBeth t-stat) **CFO_{it+1}**	Mean coefficient (Fama-MacBeth t-stat) **CFO_{it+2}**	Mean coefficient (Fama-MacBeth t-stat) **CFO_{it+3}**	Mean coefficient (Fama-MacBeth t-stat) **CFO_{it+4}**	Mean coefficient (Fama-MacBeth t-stat) **CFO_{it+5}**
Intercept		0.0391*** (37.13)	0.0459***(16.57)	0.0532***(27.12)	0.0576***(27.58)	0.0597***(87.57)
CFO_{it}	+	0.5831*** (60.60)	0.5126***(32.26)	0.4509***(26.83)	0.4140***(26.18)	0.3903***(36.49)
CFO_{it} *$Differentiation_{it}$	+	0.0286***(4.72)	0.0301***(2.28)	0.0286***(2.51)	0.0317***(2.61)	0.0290**(2.20)
CFO_{it} *$Efficiency_{it}$	*0*	-0.0497***(-4.69)	-0.0630*** (-3.79)	-0.0636***(-4.23)	-0.0550***(-4.72)	-0.0495*** (-5.69)
Adjusted R^2		0.34	0.27	0.22	0.20	0.18
Mean Number of Observations		768	705	646	590	540

CFO_{it} is net cash flow from operating activities (Compustat # 308/ Average total assets). Average total assets is calculated by adding the beginning and end of year total assets (Compustat#6) and dividing by two.

Table 7: Realized Strategies and Risk

$$ROAStability_{\mathrm{i}} = \alpha_0 + \alpha_1 Differentiation_{i,t} + \alpha_2 Efficiency_{\mathrm{i,t}} + \varepsilon_{\mathrm{i,t}}$$

$$Beta_{\mathrm{it}} = \alpha_0 + \alpha_1 Differentiation_{it} + \alpha_2 Efficiency_{\mathrm{it}} + \varepsilon_{\mathrm{it}}$$

Dependent Variable	$ROAStability_i$	$Beta_i$
Independent Variables	Mean coefficient (Fama-MacBeth t-stat)	Mean coefficient (Fama-MacBeth t-stat)
Intercept	0.9947^{***}(4167.42)	0.8575^{***}(30.18)
$Differentiation_{it}$	-0.0024^{***}(-11.11)	0.0626^{***}(4.25)
$Efficiency_{it}$	-0.0000 (-0.13)	0.0051 (0.51)
Adjusted R^2	0.0479	0.0256
Mean Number of Observations	1282	1282

***,**,* indicates significance using one-tailed p-values at the 1%, 5% and 10% levels, respectively.

Table 8: Realized Strategies and Price-Earnings Multiple

$$P_{i,t} = \gamma_0 + \gamma_1 BV_{i,t} + \gamma_2 EPS_{i,t} + \gamma_3 EPS_{i,t} * Differentiation_{i,t} + \gamma_4 EPS_{i,t} * Efficiency_{i,t} + \varepsilon_{i,t}$$

Variables	Exp. Sign	Mean coefficient (Fama-MacBeth t-stat) **Model 1**	Mean coefficient (Fama-MacBeth t-stat) **Model 2**
Intercept		5.3796*** (15.13)	4.9780*** (18.81)
BV_{it}	+	0.3654*** (10.20)	0.3993*** (11.05)
EPS_{it}	+	7.8921*** (16.62)	8.1949*** (18.74)
EPS_{it} *$Differentiation_{it}$	+		1.6608*** (7.03)
EPS_{it} *$Efficiency_{it}$	-		-0.5359*** (-3.83)
Adjusted R^2		0.580	0.6064
Mean Number of Observations		1265	1265

***,**,* indicates significance using one-tailed p-values at the 1%, 5% and 10% levels, respectively.

P_{it} is the price three months after the fiscal year end
$BV_{i,t}$ is the book value per share of firm *i* at the end of the year *t*
$EPS_{i,t}$ is the earnings per share of firm *i* during the year *t*

Table 9: Abnormal Returns on Hedge Portfolios Formed Based on Realized Strategies

Period	Abnormal Return Differentiation Strategy (t-statistic)	Abnormal Return Efficiency Strategy (t-statistic)
t + 12 months	3.29% (1.29)	5.63%** (2.57)
t + 24 months	6.85% (1.43)	4.92% (1.57)
t + 36 months	12.13%* (2.01)	0.93% (0.21)
t + 48 months	14.34%** (2.50)	-1.23% (-0.31)
t + 60 months	21.87%*** (3.39)	-0.68% (-0.15)

***,**,* indicates significance using two-tailed p-values at the 1%, 5% and 10% levels, respectively.

Notes:

1. Portfolios are formed on the basis of strategy quartiles in period t.
2. Hedge portfolios are formed by going long on the portfolio consisting of the highest quartile of firms, and going short on the lowest quartile of firms.
3. Portfolio returns are cumulated from the beginning of the fourth month after the fiscal year end in period t. The abnormal returns for the hedge portfolios are calculated by taking the difference between returns for the strategy portfolio and a portfolio consisting of similar size and book-to-market firms (Fama and French, 1992, 1993, 1995; Barber and Lyon, 1997).
4. The hedge portfolio abnormal returns shown in the table are computed using the mean portfolio returns for each year in the panel and the overall mean returns based on the distribution of yearly portfolio mean returns (Abarbanell and Bushee, 1998).