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Corporate Management, Industry Competition and the Sustainability of Firm Abnormal Profitability

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Abstract. This paper models the sustainability of firm abnormal profitability and uses the effectiveness of corporate management capabilities as a test to examine its impact on the sustainability of firm abnormal profitability. The role of industry competition as a moderator between the effectiveness of corporate management capabilities and the sustainability of firm abnormal profitability is also examined. Consistent with the resource-based view of the firm, we found that the effectiveness of corporate management capabilities positively influence the sustainability of firm abnormal profitability. This implies that corporate management capabilities are important contributors to the entire bundle of firm-specific resources and capabilities which enable some firms to generate competitive advantages that are sustainable. The effectiveness of corporate management capabilities has a larger influence on the sustainability of firm abnormal profitability for firms in lowly competitive or monopolistic industries than firms in highly competitive industries. The findings support the notion that not only do firm capabilities yield sustainable competitive advantages and abnormal profitability, but also industry competition reinforces the impact of firm capabilities in yielding sustainable abnormal profitability.

Key words: corporate management, firm, industry competition, profitability, sustainability

1. Introduction

The resource-based view (RBV) of the firm, which has been popularized as an integrative and comprehensive theory of strategy has been the subject of growing interest in recent years. The basic insight provided by the RBV of the firm is that in the absence of government-imposed restrictions on competition, a firm is unlikely to earn and sustain higher than normal profits for an extended period of time unless it possesses resources and capabilities that are valuable, rare, difficult to imitate and imperfectly substitutable (Barney, 1991; Chi, 1994; Peteraf, 1993; Wernerfelt, 1984). The concepts of economic rent or abnormal profitability and sustainability are at the core of resource-based theory. Empirical tests of the RBV should be concerned with the impact of firm resources and capabilities on the *sustainability* or *persistence of abnormal profits* rather than the contribution of firm resources and capabilities to *total firm profitability*.

However, most of the empirical studies examining the concerns of RBV theory have focused on the relative profitability variance explained by firm resources and capabilities and/or industry structure on *business segment/firm profitability* (e.g., Brush et al., 1999; Claver et al., 2002; McGahan and Porter, 1997; Rumelt, 1991). These studies did not actually model and study the effects of firm resources and capabilities on firm profitability, but decomposed total firm profitability in firm and industry components represented by dummy or latent variables (see also Bowman and Helfat (2000) for summary and evaluation of these studies). Furthermore, most of the studies that have specifically examined the impact of firm resources and capabilities on firm profitability (e.g., Markides and Williamson; 1994; Mehra, 1996; Miller and Shamsie, 1996; Roberts, 1999; Yeoh and Roth, 1999) have not used the concepts of *firm abnormal profits* and/or the *sustainability of firm profitability*. The exception to these studies is the work of Roberts (1999) that used the concepts of firm abnormal profitability. However, Roberts (1999) did not specifically examine the impact of firm-specific resources and capabilities on the *sustainability* or *persistence of abnormal profits*. As a result, since the RBV of the firm is concerned with the sustainability of economic or abnormal profits, the literature provides relatively few robust tests of RBV theory.

In addition, despite the fact that both strategic management theorists and industrial organization (IO) economics-based theorists agree that both firm resources and capabilities, and industry structure complement one another in explaining the persistent differences and the sustainability of firm profitability (Henderson and Mitchell, 1997; Maijoor and van Witteloostuijn, 1996; Schendel, 1997; Spanos and Lioukas, 2001), none of the studies have attempted to examine the *interactive effects* of firm resources and/or capabilities and industry structure on the sustainability or persistence of firm abnormal profitability. Although Spanos and Lioukas (2001) have empirically shown that both industry and firm-effects are important in influencing firm performance, their study "sought to empirically decompose performance variation amongst firms and thus examine the relative impact of industry vs. firm's resources and capabilities" (Spanos and Lioukas, 2001, p. 908). The question of how industry effects interact with firm resources and capabilities in influencing the sustainability of abnormal profitability will be a welcome contribution to the literature.

This study contributes to the empirical research on the RBV by using autoregressive time series methodology to model the *sustainability of firm abnormal profitability*. We then use *Fortune*'s America's Most Admired Corporation's (AMAC) corporate reputation dataset as a measure of corporate leadership qualities and effectiveness in managing the value creation process to examine the impact of the effectiveness of corporate management and leadership on *the sustainability of firm abnormal profits*. In fact, Petrick et al. (1999) have argued that the corporate reputation of a firm is a signal of that firm's corporate management skills, expertise, and effectiveness. It has also been shown that a firm's corporate reputation often

represents stakeholders' perception of the top management's ability to effectively manage the firm (Hammond and Slocum, Jr., 1996; Miles, 1987; Ullman, 1985). A decline in a firm's corporate reputation is, therefore, a signal that the firm's top management is not effective in creatively utilizing and directing the internal resources and capabilities of the firm to deal with their environments.

Secondly, we investigate whether industry competition moderates the relationship between the effectiveness of corporate management and the sustainability of firm abnormal profitability. We argue that a firm's unique capability in the form of corporate management is vital in deploying and transforming its resources and competencies to generate a sustainable competitive advantage (Castanias and Helfat, 1991; Penrose, 1959). Furthermore, a firm's corporate management's ability to transform, deploy and manage its resources and capabilities to its advantage depends on the nature of competition in its industry. In sum, how a firm's existing resources and competencies are managed strategically and new ones developed may be more important than the mere possession of those resources and competencies in creating sustainable competitive advantages. Specifically, we will be seeking answers to the following questions: (1) What is the impact of the effectiveness of corporate management capabilities in explaining the *sustainability of firm abnormal profits*? (2) How does industry competition affect the relationship between the effectiveness of corporate management capabilities and the *sustainability of firm abnormal profits*?

Analyzing the role of corporate management capabilities and how it interacts with industry competition to affect the sustainability of firm abnormal profitability is relevant for management and governance issues facing firms. This is because the effectiveness of corporate management is itself a rent generating capability and it can also be used to deal with the impact of the competitive environment of a firm's activities through the transformation, deployment, and direction of other resources and capabilities in the firm.

2. The Sustainability of Firm Abnormal Profitability

One of the fundamental concerns of the RBV of the firm is the need to investigate and explain the role of firm resources and capabilities in creating *persistent or sustainable abnormal profits*. Firm abnormal profitability can be defined as the difference between the total profitability of a firm and its competitive or industry-wide profitability (Jacobsen, 1988; Peteraf, 1993). A firm's abnormal profitability can either be that level of profits earned by a firm, which is above or below the average or break-even for a particular industry. The sustainability of firm abnormal profits is defined as abnormal profitability that persists over a long period of time such as ten years or more (Wiggins and Ruefli, 2002). Barney (1991) and Barney and Arikan (2001), however, argue against the use of calendar time to determine persistence or sustainability, and assert that abnormal profits are persistent when a firm is able to consistently generate higher than expected value from the resources

Table I. Measurement of the concepts of abnormal profit and sustainability in RBV empirical studies using data from different industries

Study	Operationalization of abnormal profit[1]	Operationalization of sustainability
Hansen and Wernerfelt (1989)[2]	ROA	Five-year average
Hall (1992)[2]	Productivity growth (sales/employees) Total revenue	All four-year averages
Markides and Williamson (1994)	ROS	One year
Markides and Williamson (1996)	ROS	One year
Robins and Wiersema (1995)	ROA	Three-year average and six-year average
Anand and Singh (1997)	Risk-adjusted stock market return Industry-adjusted pretax Operating cash flow/assets Tobin's q	Three days Five years time period One year
Russo and Fouts (1997)	ROA	Two-year panel
Farjoun (1998)	ROA ROS Market-to-book ratio Jenson's Alpha	All three-year averages
Judge and Douglas (1998)[2]	ROI Earnings growth Sales growth Changes in market share (all industry-adjusted)	All one year
Bharadwaj et al. (1999)	Tobin's q	One year
Brush and Artz (1999)	Revenue/expenditure Revenue/transactions Expenditure/transactions	All quarterly data over one year
Brush and Chaganti (1999)	Net cash flow	Three-year average
Capron and Hulland (1999)	Changes in profitability relative to industry average Changes in market share	Averages between two to six years
DeCarolis and Deeds (1999)	Market value at end of first day of trading an IPO	One day

Table I. Continued

Study	Operationalization of abnormal profit[1]	Operationalization of sustainability
Li and Ye (1999)	ROA ROS	Both three-year panel
Luo and Peng (1999)[2]	ROA ROE	One-year
Daily et al. (2000)	ROA ROI Market-to-book ratio	All three-year averages
Fey et al. (2000)[2]	Overall performance	One year
Geringer et al. (2000)	ROA ROS Sales growth	All five-year and ten-year panels
Khatri (2000)[2]	Sales growth Profit margin	Both three-year averages
Oktemgil et al. (2000)[2]	ROI Sales growth (both adjusted for competitors)	One year
King and Zeithaml (2001)	Industry-adjusted ROA (above and below industry average)	One year
Spanos and Lioukas (2001)[2]	Profitability Market performance	Both one year
Schroeder et al. (2002)[2]	Manufacturing performance	One year

[1]The measures in this column are total measures of the construct, unless indicated as "Industry-adjusted" or "Competitor-adjusted". [2]These studies use perceptual measures to operationalize abnormal profit.

it controls and competing firms have ceased efforts to duplicate that advantage. Although, Barney's definition is more precise, as has been argued by Wiggins and Ruefli (2002, p. 84), "it is virtually impossible to meaningfully operationalize quantitatively" without the specification of a time period.

While there have been numerous studies which test the propositions of the RBV of the firm, most of them have not used the concepts of abnormal profits and/or sustainability, regardless of whether they were conducted using data on samples of firms from a single-industry or multiple industries. Table I presents a summary of some of the RBV empirical studies using firms from multiple industries that

have attempted to measure the concepts of abnormal profit and sustainability. For the purpose of this study, we limit ourselves to studies that have used one of the "standard" measures of profitability (for example, ROA, ROS, ROI, Productivity, Net Cash Flow, etc.) as dependent variables. Although we recognize that other measures of firm performance have been used in the literature, it is more practical for measurement and parsimonious reasons to measure the concepts of abnormal profits and sustainability using these standard measures. In addition, we restrict ourselves to studies that have been conducted using samples of firms from a number of industries because our work focuses on firms in different industries (for a comprehensive summary and evaluation of single-industry empirical studies, see Barney and Arikan, 2001). It should, however, be noted that most of the issues relating to the measurement of abnormal profits and sustainability discussed here also apply to single-industry studies. Table I show that only a few of the studies used the concepts of abnormal profits, by controlling for the impact of industry-effect on firm profitability (Anand and Singh, 1997; Capron and Hulland, 1999; Judge and Douglas, 1998; King and Zeithaml, 2001; Oktemgil et al., 2000).

Furthermore, using the previous definition of sustainability, not many empirical studies have addressed the concept of *sustainability*. Table I also indicates that most of the studies have used a single year's data on profitability (e.g., Markides and Williamson, 1994, 1996; Russo and Fouts, 1997), while others have used three-year to six-year averages (e.g., Daily et al., 2000; Farjoun, 1998; Robins and Wiesema, 1995). The use of a single year's value does not address the concept of sustainability, while the use of three- to six-year averages just measure the returns of the firms for the periods considered. They do not take into consideration the intertemporal persistence or sustainability of profits over that time period.

In order to address the issue of sustainability, other studies have used longitudinal datasets to shed more light on the dynamics of the behavior of abnormal profits over time (Geringer et al., 2000; Li and Ye, 1999; Russo and Fouts, 1997). However, most of the studies that utilized firms from different industries used short time periods of five years or less, except Geringer et al. (2000) (see Table I). It should be noted that some studies using single industry data have done a better job of addressing the concept of persistence or sustainability by using panel data methodologies over longer periods (e.g., Henderson and Cockburn, 1994, 1996; Cockburn et al., 2000; Roberts, 1999; Yeoh and Roth, 1999). Wiggins and Ruefli (2002) recently used longitudinal data on large number of firms from 40 US standard industrial classification (SIC) industries from 1974–1997, to examine whether superior economic performance persists over time. Wiggins and Ruefli (2002), used the Iterative Kolmogorov-Smirnov two-sample test to stratify high performing from low performing firms to tease out the persistence of superior economic profits of firms for ten-year periods and more. Their result indicates that some firms do exhibit superior economic performance, but not many firms do so

and the phenomenon does not persist for a long time period. However, they stated that their research focuses on the existence of superior economic profits and did not measure and incorporate firm resources in the research that would allow a direct positive test of the causes of sustained economic profits over time.

In this study we assume that a firm, i, in industry j at time period (year) t's, total profitability (Π_{ijt}) is composed of two components: (1) a competitive or industry-wide profitability component (I_{jt}), which is common to all firms in an industry, and (2) a firm-specific or abnormal profitability component (F_{ijt}) which accrues to a firm independent of industry structural characteristics (e.g., Mueller, 1977, 1986, 1990b; Waring, 1996).

To separate the firm-specific profitability (F_{ijt}) from total profitability, we subtract the asset-weighted average four-digit standard industry classification (SIC) industry profitability (an estimate of I_{jt}) from each firm's total profitability (an estimate of Π_{ijt}). The firm-specific abnormal profitability estimated is used to reflect the competitive advantages, which accrue to a firm in the deployment of its resources and capabilities to create value. The estimation of firm abnormal profitability in this way removes the effect of changes in profitability due to cyclical variations (Waring, 1996). Firm-specific abnormal profitability is therefore computed as follows:

$$F_{ijt} = \Pi_{ijt} - I_{jt} \tag{1}$$

The firm abnormal profitability (F_{ijt}), is then measured in relative terms as the percentage change of firm-specific abnormal profitability above or below the industry average to normalize it since the level of profits is different from industry to industry. That is, firm abnormal profitability is normalized as follows:

$$f_{ijt} = [F_{ijt}/I_{jt}] \tag{2}$$

When we generated the sustainability of firm abnormal profitability by dividing F_{ijt} by the standard deviation of F_{ijt} we obtained essentially the same results. The *sustainability or persistence of firm abnormal profitability* is defined as that proportion of a firm's abnormal profitability (that is, f_{ijt}) in any time period before time period t that systematically persists in time period t (Mueller, 1977, 1986, 1990b). The *sustainability of firm abnormal profitability* implies that the abnormal profits earned by a firm should persist over a calendar time period (at least ten years) despite efforts by competitors or new entrants to duplicate, imitate, neutralize or even erode it because of the possession and deployment of heterogeneous resources and capabilities (see Wiggins and Ruefli, 2002).

The statistical representation of the modeling of the dynamic behavior of firm-specific abnormal profitability (f_{ijt}) over time to obtain the measure of sustainability is by estimating a first-order autoregressive process [AR (1)] of f_{ijt} (Geroski, 1990a; Mueller, 1986, 1990b). It has been found that the AR (1) process is an adequate and parsimonious representation of the time series behavior and it is the form of the empirical model that has been used in the literature (e.g., Geroski

and Jacquemin, 1988; Mueller, 1990a, b; Roberts, 1999; Waring, 1996). Consistent with Waring (1996), we estimate the *sustainability of firm abnormal profitability* for each firm as follow:

$$f_{ijt} = \lambda_i + \Phi_i f_{ijt-1} + e_{it} \tag{3}$$

The measure of sustainability of firm abnormal profitability is the slope coefficient (Φ_i). It reflects the intertemporal persistence of firm abnormal profitability for each firm. A higher Φ_i coefficient (i.e., closer to 1) implies a more persistent or sustainable firm abnormal profitability.

The sustainability of firm abnormal profitability (Φ_i) is estimated using the return on assets (ROA). The ROA is measured as the ratio of income (before extraordinary items available to common shareholders) to identifiable total assets. We use ROA because it is the measure most widely used in studies examining the persistent profits of firms (Mueller, 1977, 1986, 1990a; Roberts, 1999; Waring, 1996).

3. Hypotheses Development

3.1. CORPORATE MANAGEMENT AND THE SUSTAINABILITY OF FIRM ABNORMAL PROFITABILITY

Corporate management initiates, shapes and directs the strategies of firms (Castanias and Helfat, 1991; Tushman and Romanelli, 1985). Corporate management mediates between internal institutional forces for inertia and competitive or environmental forces for change. The effectiveness of any firm's corporate management is, therefore, a critical capability in establishing a sustainable competitive advantage. The effectiveness of corporate management capabilities is the degree to which a firm's corporate management team utilizes its team-embodied complementary yet heterogeneous skills, abilities, expertise and knowledge base that have been developed over time to generate rents. This implies that different corporate management teams have different skills, abilities, expertise, and knowledge bases that lead them to undertake different strategic actions leading to different performance outcomes (Castanias and Helfat, 2001). The effectiveness of corporate management is determined by demonstrated innovative leadership capabilities; clear strategic vision; management development initiatives; ability to attract, develop and retain high-quality employees; structuring of compensation and reward systems; ability to effectively manage the financial assets of the firm; and the ability to manage physical resources judiciously (Foil, 1991; Ireland and Hitt, 1999; Mehra, 1996).

Corporate management constitutes the "dominant coalition" of individuals (Cyert and March, 1963) who identify environmental opportunities and threats and formulate, initiate and implement strategic change for achieving competitive advantage (Ireland and Hitt, 1999). Moreover, according to Barney (1991), managers of firms are the ones who have the ability to understand, describe and

evaluate the economic performance potential of their firm's resource endowments. Without such managerial expertise, sustainable competitive advantage is unlikely to be achieved. It is the responsibility of the management of a firm to make better use of its human resources by assigning employees to areas where they have higher productivity (Mahoney, 1995) and allocating financial resources towards high-yield uses (Williamson, 1985).

Recent studies based on the 'upper echelons' perspective have also found a link between heterogeneous corporate management teams and the development of creativity and innovativeness which have led to firm growth and increase in performance (e.g., Bantel and Jackson, 1989; Boeker, 1997; Pegels et al., 2000). Heterogeneity in corporate management teams takes the form of capability differentials in managerial skills and expertise and the degree of abilities. Corporate management of an organization, therefore, constitutes a unique coalition of individuals with different skills, knowledge, and abilities. The interaction of these skills, knowledge, and abilities creates collaborative resources in the form of managerial expertise and unique capabilities or competencies, which are exclusive to that particular firm. These capabilities are difficult to imitate by competitors because they rely on specific infrastructure, history, and collective experience in a firm, which are largely tacit and involves learning by doing and practice and are therefore difficult to codify (Castanias and Helfat, 1991, 2001; Mahoney, 1995).

Although, some firms may try to hire high quality individual managers from other firms, Castanias and Helfat (2001) have argued that individual managers possess a nested hierarchy of managerial skills (in different types and abilities), in the form of generic, related-industry, industry-specific, and firm-specific skills. The most easily transferable of these managerial skills from one firm to another is generic and the least is firm-specific. But, those managerial skills that have the potential to generate sustainable competitive advantages are the firm-specific team-embodied skills, which are scarce relative to those of competitors, and cannot be easily transferred and imitated, and may have imperfect substitutes. This leads to the following hypothesis:

Hypothesis 1: *The higher the effectiveness of corporate management capabilities, the higher its influence on the sustainability of firm abnormal profitability, ceteris paribus.*

3.2. THE MODERATING ROLE OF INDUSTRY COMPETITION

Both the IO economics and RBV literature have demonstrated that firm resources and capabilities and industry structure complement each other in explaining the sustainability of profits (Henderson and Mitchell, 1997; Schendel, 1997; Spanos and Lioukas, 2001). One aspect of industry structure is the level or degree of competition in an industry. Although there are many measures of industry competition, we use the concentration of firms in an industry (e.g., Geroski, 1990; Nickell,

1996; Scherer and Ross, 1990) and the rate at which concentration is changing in an industry (Davies and Geroski, 1997; Geroski, 1990) as measures of industry competition. Industry concentration is considered one of the basic indicators of entry barriers because in highly concentrated (low competition) industries, large-scale economies or other sources of market power may protect current industry participants from new rivals (Bain, 1956; Porter, 1980). The change in industry concentration, on the other hand, is an indicator of the activities of established fringe firms in challenging the leaders in the industry or the ability of new rivals to enter the industry (Geroski, 1990).

The role of an organizational capability such as the effectiveness of corporate management depends on the nature of competition in the organization's environment (Barney and Zajac, 1994). Porter (1991) further asserts that the value of an organizational capability is either enhanced or mitigated by changes in the level of competition within an industry. It has been suggested that a high level of competition in an industry reduces the ability of corporate management of firms to create an efficient production environment that would enable them to maintain their existing market shares or gain more shares (Martin, 1993). In other words, a high level of competition increases the costs of producing goods while lowering prices on outputs, thus making it harder for a firm's corporate management to generate rents and create value. Moreover, intense competition interferes with the ability of an industry's current competitors to deter the entry of new firms despite the high profits of the existing firms (Thomas, 1998). Thus, a firm's ability to maintain and sustain high levels of profit is minimized by greater competitive intensity. The nature of competition also determines the strategic position of a firm. In an industry with a high level of competition, firms may be vulnerable strategically due to the increase in environmental instability. In such an environment (i.e., highly competitive industry), firms would have to battle fiercely for critical resources (e.g., inputs, technology, or specialized know-how) and market position by winning customer loyalty. The works of Graziano and Parigi (1998), Martin (1993), and Horn et al. (1994) have shown that an increase in industry competition reduces both the optimal level and gain from increased managerial effort. However, a firm with an effective corporate management would be able to mitigate the effect of heightened environmental uncertainty resulting from high levels of competition and therefore perform better than a firm with an ineffective corporate management.

An alternative framework subscribes to the view that intense competition is essential to corporate success. An increase in competition, it is argued, can exert downward pressure on costs, reduce slack, and provide incentives for the efficient organization of production and drive innovation forward (Nickell, 1996). Lack of competitive intensity in an industry generates monopoly rents, which gives inefficient corporate management of firms the potential to capture these rents in the form of slack or lack of effort. Intense competition puts pressure on firms to improve their profitability through innovative activities (Schumpeter, 1934, 1950),

such that firms with effective corporate management will be able to improve their profitability at a differently higher rate than firms with ineffective corporate management. Intense competition will tend to increase the effort of the more effective corporate management of firms to undertake creative and innovative activities, which generate internal organizational assets that can be used to enhance and sustain their profitability (Nelson and Winter, 1982). Several empirical studies have shown that a high level of industry competition motivates firms with effective management to develop core competencies (Barnet et al., 1994), and stimulate creativity and innovativeness through the exploitation of firm capabilities (Blundell et al., 1999; Geroski, 1990b) which are used to improve performance. Miller and Shamsie (1996, pp. 524–528) have also shown that firms that have "systemic, knowledge-based resources" such as effective managerial skills are more able to exploit uncertain environments resulting from intense competition to achieve sustainable competitive advantage. The arguments above imply that the degree of industry competition affects the effectiveness of corporate management in influencing the sustainability of firm abnormal profitability. This result in the hypotheses that:

Hypothesis 2a: Ceteris paribus, industry concentration will moderate the positive influence of the effectiveness of corporate management capabilities on the sustainability of firm abnormal profitability.

Hypothesis 2b: Ceteris paribus, the percentage change in industry concentration will moderate the positive influence of the effectiveness of corporate management capabilities on the sustainability of firm abnormal profitability.

4. Research Methodology

4.1. DATA AND SAMPLE

The sample for this study is drawn from *Fortune's AMAC* and the COMPUSTAT databases. *Fortune* has been conducting surveys on large American firms since 1982 and the survey data provides information that can be used to operationalize the complementarities in the skill, expertise and knowledge bases of a firm's corporate management, which have been developed over time. *Fortune* administers the surveys to over 8,000 top executives and outside directors who are knowledgeable about the industries in which their firms operate, and securities analysts who evaluate firms in these industries on eight qualitative attributes. The executives, outside directors and securities analysts are asked to rank the companies based on their effectiveness in performing the activities described in each of the attributes (Makin, 1983).

The qualitative attributes are (1) quality of management (*QM*); (2) quality of products or services offered (*QPS*); (3) innovativeness (*INV*); (4) ability to attract, develop and keep talented people (*ADK*); (5) wise use of corporate assets (*CAS*); (6) responsibility to the community and environment (*RCE*); (7) soundness of finan-

cial position (*SFP*); and (8) value as a long-term investment (*VLI*). For example, *Fortune's* attribute of innovativeness is a measure of how well a firm's corporate management responds to its customers' demands for innovative products and/or services by creating an atmosphere in the firm that allows for creativity (Hammond and Slocum, Jr., 1996). The companies' chosen for the survey are limited to members of the *Fortune* 500, which are in industries in which there are at least five companies represented in the *Fortune* 500. The ratings are on a scale from 0 (poor) to 10 (excellent). The response rate has averaged about 50 percent for each year of the survey. The AMAC data for the study was obtained from *America's Most Admired Corporations DataBook* (*Fortune*, 1997), which contained information on all the companies surveyed as opposed to the first ten in each industry that appear in the *Fortune Magazine* yearly.

The *Fortune* data was chosen to measure the effectiveness of corporate management capabilities because it offers data from a large sample of firms. Furthermore, it provides comparable longitudinal data over an extended period of time that enables one to capture the intertemporal effects of the complementarities of the team-embodied leadership capabilities of a firm's corporate management. These complementary team-embodied corporate management capabilities are valuable and less subject to imitation because they were developed through the history, culture, and traditions of a particular firm that make it socially complex (Barney, 2001; Dierickx and Cool, 1989). According to McGuire, Schneeweis, and Branch (1990, p. 170), the *Fortune* survey "is one of the most comprehensive and widely circulated surveys of managerial attitudes available" and "both the quality and number of the respondents is comparable or superior to the "expert panels" (emphasis in original) usually gathered for such purposes". This view is further echoed by Hammond and Slocum Jr. (1996, p. 161), who argue that, "the quality of respondents is comparable to those that could be obtained elsewhere since respondents' only rate firms with which they are familiar". In addition, Chen et al. (1993) in an exploratory study provided support for the reliability and accuracy of information offered by top executives and security analysts.

The *Fortune* database has been used extensively for research purposes (e.g., Brown, 1998; Fombrun and Shanley, 1990; Staw and Epstein, 2000; Vergin and Qoronfleh, 1998) and continues to attract a lot of interest providing an indication for its validity. A sample of the studies that have used the *Fortune* AMAC data for academic research and their publication outlets is presented in Table II. It has, however, been argued that the raw scores of the attributes in the *Fortune* data is highly influenced by previous firm financial performance and thus a "halo" effect might exist (Fombrun and Shanley, 1990; Fryxell and Wang, 1994). To address the "halo" concern, we adopt Brown and Perry's (1994) methodology (described below) for removing the "halo" from the data so as to control for the impact of previous firm financial performance on the raw *Fortune* data.

Table II. Some academic studies that have used the *Fortune* AMAC database and their publication outlets

Study	Publication outlet
Chakravarty (1986)	Strategic Management Journal
McGuire et al. (1988)	Academy of Management Journal
Fombrun and Shanley (1990)	Academy of Management Journal
McGuire et al. (1990)	Journal of Management
Preston and Sapienza (1990)	Journal of Behavioral Economics
Gatewood et al. (1993)	Academy of Management Journal
Brown and Perry (1994)	Academy of Management Journal
Fryxell and Wang (1994)	Journal of Management
Brown and Perry (1995)	Business and Society
Shefrin and Statman (1995)	Journal of Portfolio Management
Hammond and Slocum, Jr. (1996)	Journal of Business Ethics
Filbeck et al. (1997)	Studies in Economics and Finance
McMillan and Joshi (1997)	Corporate Reputation Review
Roberts and Dowling (1997)	Corporate Reputation Review
Srivastava et al. (1997)	Corporate Reputation Review
Brown (1998)	Corporate Reputation Review
Vergin and Qorofleh (1998)	Business Horizons
Staw and Epstein (2000)	Administrative Science Quarterly
Zyglidopoulos (2001)	Business and Society
Filbeck and Krueger (2002)	Journal of Investing

To maximize the sample size and the length of the time period for the study, we established the following criteria for a firm to be included in the sample: (1) The firm must have a rating for each year of the thirteen-year period 1985–1997; and (2) The firm's financial and industry data must be available from the COMPUSTAT database and/or other sources for each of the years. We obtained a sample of 119 firms for the study.

4.2. MEASUREMENT OF INDEPENDENT VARIABLES

The effectiveness of corporate management capabilities (CM_{ij}). This variable was measured using *Fortune's* six attributes of: *QM, QPS, INV, ADK, CAS,* and *RCE* because of their similarities with the key attributes that have been used to measure the activities of corporate management in the literature (see for example, Bowman, 2001; Mehra, 1996; Russo and Fouts, 1997; Vergin and Qoronfleh, 1998). Moreover, the last two attributes are direct outcome or performance measures of firms as opposed to the leadership qualities of corporate management

(Vergin and Qoronfleh, 1998). Using Brown and Perry's (1994) methodology, halo-removed ratings for each of the six attributes were generated for each firm from 1985–1997 using the following regression equation:

$$RATINGS_{ijt} = B_0 + B_1 ROA_{ijt-1} + B_2 FGROW_{ijt-1} + B_3 DEQ_{ijt-1} +$$
$$B_4 LSALE_{ijt-1} + B_5 MBV_{ijt-1} + E_{it} \qquad (4)$$

Where, $RATINGS_{ijt}$ is *Fortune's* ratings of each of the six attributes described above for each year from 1985 to 1997; ROA_{ijt-1} is the return on assets for each firm at time $t - 1$ for each year (1984 to 1996); $FGROW_{ijt-1}$ is the percentage change in sales for each firm at time *t-1* for each year; DEQ_{ijt-1} is the ratio of debt to equity for each firm at time $t - 1$ for each year; $LSALE_{ijt-1}$ is the natural logarithm of sales for each firm at time $t - 1$ for each year; MBV_{ijt-1} is the ratio of the market value to the book value of each firm at time $t - 1$ for each year; and E_{ijt} is the halo-removed ratings of each of the attributes of the effectiveness of corporate management of each firm for each year. A measure based on the average of the halo-removed ratings of the six attributes was then used to operationalize the effectiveness of corporate management capabilities (CM_{ij}) for each firm.

4.2.1. *Industry competition variables*

The literature in management and economics has argued that the nature and intensity of competition in an industry will impact on the performance of firms in that industry (Porter, 1980, 1985; Scherer and Ross, 1990; Schmalensee, 1985). Two measures are used to determine the degree of industry competition: industry four-firm concentration ratio and the annual percentage changes in industry four-firm concentration ratio.

Industry concentration ($ICON_j$). Studies examining the determinants of firm profitability have found concentration to be very important in determining the degree of competition in an industry (Blundell et al., 1999; Geroski, 1990b; Waring, 1996). We measured the four-firm concentration ratio as the mean annual proportion of sales accounted for by the four largest firms in four-digit SIC industry using COMPUSTAT data (Blundell, et al., 1999; Bharadwaj et al., 1999; Waring, 1996).

Percentage change in industry concentration (ΔCON_j). Geroski (1990b) has shown that the activities of established fringe firms in challenging the four leading firms in an industry can determine the dynamic nature of the intensity of competition. Moreover, the ability of firms that are not participants in a particular industry to enter that industry and compete with incumbent firms would alter the nature and intensity of competition. For example, if an industry experiences a decline in its concentration ratio over time then it implies that the industry is becoming more competitive and vice versa. The percentage change in concentration ratio therefore

represents a dynamic measure of competitive activity in an industry. It is measured by the mean annual percentage change in the four-firm concentration ratio (Davies and Geroski, 1997; Geroski, 1990b).

4.2.2. *Control variables*

A number of control variables that prior theory and empirical studies suggest could potentially affect firm profitability were included in the model. The firm-level controls are advertising intensity ($FADVI_{ij}$), capital intensity ($FCAPI_{ij}$), firm growth ($FGROW_{ij}$), research and development intensity ($FR\&DI_{ij}$), firm size ($LSIZE_{ij}$) and the extent of firm diversification ($FDIV_{ij}$). Industry growth ($IGROW_j$) was included as an industry control. For example, firm diversification is included to capture advantages that may accrue to a firm through economies of scope and scale effects because of its level and extent of diversity. Table III presents the descriptions, sources of data, and citations of the control variables.

4.3. STATISTICAL ANALYSIS

We use generalized least square regression to estimate the relationship between the effectiveness of corporate management capabilities and the sustainability of firm abnormal profitability and the moderating role of industry competition in impacting the relationship between corporate management quality and the sustainability of firm abnormal profitability. The following cross-sectional model was estimated in a hierarchical manner with the order of the variables entered as follows: (1) control variables; (2) industry competition; (3) effectiveness of corporate management capabilities; and (4) interaction between effectiveness of corporate management capabilities and industry competition.

$$
\begin{aligned}
\Phi_{ij} = {} & \alpha_i + \beta_1 FGROW_{ij} + \beta_2 FCAPI_{ij} + \beta_3 FADVI_{ij} + \beta_4 FR\&DI_{ij} + \\
& \beta_5 LSIZE_{ij} + \beta_6 FDIV_{ij} + \beta_7 IGROW_j + \beta_{68} ICON_j + \beta_9 \Delta CON_j + \\
& \beta_{10} CM_{ij} + \beta_{11}(CM_{ij} * ICON_j) + \beta_{12}(CM_{ij} * \Delta CON_j) + \varepsilon_{ij}, \quad (5)
\end{aligned}
$$

$i = 1, \ldots, N$; and $j = 1, \ldots, J$; where, N is the number of firms and J is the number of four-digit SIC industries. Furthermore, Φ_{ij} is the sustainability of firm abnormal profitability of firm i in industry j, and ε_{ij} is an independently and identically distributed error term with zero mean.

Table IV presents the descriptive statistics and the correlation among the variables in the sample. The correlation among the variables are generally low (less than 0.5) except the correlation between firm R&D intensity ($FR\&DI_{ij}$) and industry growth rate ($IGROW_j$). An assessment of the validity of the econometric model and related assumptions underlying the model indicates that the results are robust and consistent with these assumptions. First, we checked whether multicollinearity could be influencing our results. An examination of the variance

Table III. Data description, sources, and citation for industry competition and control variables

Variable	Definition and description (all data from 1985 to 1997)	Source of data	References
Firm growth	The mean of the annual percentage growth rate of firm sales	Compustat	Silverman (1999)
Firm capital intensity	The mean of the annual total assets divided by sales	Compustat	Lieberman (1987) Porter (1980) Russo and Fouts (1997)
Firm advertising inensity	The mean of the annual advertising expenditure divided by sales	Compustat	Capon, Farley and Hoening (1990) Montgomery and Wernerfelt (1988)
Firm R&D intensity	The mean of the annual research and development expenditures divided by sales	Compustat	Silverman (1999) Yeoh and Roth (1999)
Firm size	The mean of the annual natural log of employees	Compustat	Bharadwaj et al. (1999) Nickell (1996)
Firm diversification	The mean of the entropy measure: $FDIV_{ikt} = \sum P_{ikt} In(1/P_{ikt})$. Where P_{ikt} is the annual percentage of sales of firm i in segment k at time t	Compustat	Davis and Duhaime (1992)
Industry growth	The mean of the annual percentage growth rate of four-digit SIC industry sales	Compustat	Russo and Fouts (1997) Waring (1996)
Industry concen-tration	The mean of the annual percentage of sales accounted for by the top four firms in a four-digit SIC industry	Compustat	Blundell et al. (1999) Nickell (1996)
Percentage change in industry concentration	The mean of the annual percentage change in four-digit SIC industry concentration	Compustat	Davies and Geroski (1997) Geroski (1990)

inflation factors (VIFs) and the correlation matrix of variables indicate that multi-collinearity was not a problem in any of the models. The VIF's of all the variables were very low with the largest being that for industry growth rate of 4.0. Because each VIF is less than 10, there is little reason to suspect the problem of collinearity among the variables (Crown, 1998; Neter et al., 1996). Moreover, a regression of the predicted values of the dependent variable on the square of the residuals indicated that heteroscedasticity was not a problem (Newbold, 1991) adding more confidence to the robustness of the econometric model. Finally, a plot of the stand-ardized residuals against the predicted values of the dependent variable (Newbold, 1991; Neter et al., 1996) indicated that the normality of the residual assumption is not violated.

Table IV. Descriptive statistics and correlation[1]

Variables	Mean	S.D.	1	2	3	4	5	6	7	8	9	10
1. Sustainability of firm abnormal profitability (Φ_{ij})[a]	0.33	0.27										
2. Firm growth$_{ij}$	6.72	4.46	0.30									
3. Firm capital intensity$_{ij}$	1.22	1.03	0.06	−0.10								
4. Firm advertising intensity$_{ij}$	0.05	0.07	0.07	0.17	−0.06							
5. Firm R&D intensity$_{ij}$	0.05	0.06	0.15	0.21	−0.01	0.13						
6. Firm size (log number of employees)$_{ij}$	3.92	0.92	0.16	0.03	−0.03	0.25	−0.01					
7. Firm diversification$_{ij}$	0.81	0.43	0.19	0.04	0.03	0.29	0.30	0.31				
8. Industry concentration$_j$	0.66	0.25	−0.04	0.17	−0.36	−0.13	−0.24	−0.15	−0.09			
9. Percentage change in industry concentration$_j$	−0.11	1.26	0.07	0.21	−0.04	0.00	0.33	−0.07	0.20	0.18		
10. Industry growth$_j$	27.00	19.78	0.20	0.21	0.17	0.46	0.66	−0.04	0.19	−0.45	0.02	
11. Corporate management$_{ij}$[b]	0.00	0.56	0.39	0.10	0.01	0.08	0.24	0.32	0.47	−0.08	0.11	0.09

[1]For correlation: $\rho \geq 0.15$ is significant at $p \leq 0.10$: $\rho \geq 0.18$ is significant at $p \leq 0.05$: $\rho \geq 0.23$ is significant at $p \leq 0.01$.
[a]Data for the dependent variable came from Equation (3), where we estimate the sustainability of firm abnormal profitability for each of the firms using time-series data on return on assets (ROA) from 1984 to 1997.
[b]The is the average of the halo-removed ratings of *Fortune's* attributes of: quality of management; quality of products and services; innovativeness; ability to attract, develop, and keep talented people; wise use of corporate assets; and responsibility to the community and environment.

5. Results

The hierarchical regression results of estimating equation (5) are summarized in Table V. The baseline model, model 1, tests the relationship between the control variables and the sustainability of firm abnormal profitability. In model 2, we include the industry competition variables, also as control variables, and examine their incremental impact on the sustainability of firm abnormal profitability. Models 3 to 6 provide results for the hypothesized constructs. In these models, we examine the incremental variance explained by the effectiveness of corporate management capabilities (Model 3); the interaction between corporate management capabilities and industry concentration (Model 4); and interaction between corporate management capabilities and the percentage change in concentration (Model 5). Model 6 presents the full model, which shows both the un-standardized coefficients and the standardized coefficients to evaluate the relative effects of the independent variables on the sustainability of firm abnormal profitability.

Model 1, the baseline model, shows that firm growth, firm diversification and industry growth were all positive and significant ($p \leq 0.05$), while firm size is also positive and related to ($p \leq 0.10$) the sustainability of firm abnormal profitability. Firm advertising intensity, capital intensity and R&D intensity were all not significantly related to the sustainability of firm abnormal profitability. Although the advertising intensity variable had a negative sign and R&D intensity was not significant multicollinearity could be eliminated as the source since our diagnostic test did not indicate such a problem.

The lack of significance of the firm advertising intensity, capital intensity and R&D intensity variables is surprising because they are considered to be important determinants of firm profitability. Nevertheless, there is an empirical precedence for some of the results. For instance, Huselid et al. (1997) find no relationship between R&D intensity and different measures of firm performance (productivity, gross rate of return and Tobin's q), while Waring (1996) also finds that advertising intensity was not significantly related to the persistence of firm-specific return on assets. However, the role of capital intensity on the firm profitability is an empirical question in the literature (Bharadwaj et al., 1999). For instance, because capital intensity is used to capture barriers to entry, Capon et al. (1990) argue that firms which are highly capital intensive are likely to operate in industries with fewer competitors, therefore, allowing them to earn higher profits. On the other hand, firms which are highly capital intensive could experience rigidities in their resource utilization since the performance of firms in capital-intensive industries are dependent on the utilization of capital, which shifts across firms depending on the business cycle (Waring, 1996). This analysis implies that capital intensity may have a significant positive or negative relationship with the sustainability of firm abnormal profitability, or it may not be significantly related to the sustainability of firm abnormal profitability. Model 2, further indicates the significance of both firm growth and firm diversification ($p \leq 0.05$), with industry growth and firm size still

Table V. Hierarchical regression results (dependent variable: sustainability of firm abnormal profit)[1]

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Standardized coeff. of Model 6
Constant	0.009 (0.114)	0.003 (0.118)	0.157 (0.120)	0.158 (0.120)	0.104 (0.118)	0.105 (0.118)	
Firm growth	0.017** (0.005)	0.016** (0.006)	0.015** (0.005)	0.015** (0.005)	0.014** (0.005)	0.015** (0.005)	0.252**
Firm capital intensity	0.009 (0.024)	0.012 (0.025)	0.012 (0.024)	0.015 (0.024)	0.016 (0.023)	0.018 (0.023)	0.070
Firm advertising intensity	−0.638 (0.433)	−0.667 (0.441)	−0.530 (0.421)	−0.443 (0.431)	−0.510 (0.408)	−0.433 (0.417)	−0.114
Firm R&D intensity	0.425 (0.545)	0.487 (0.597)	0.696 (0.570)	0.669 (0.571)	0.888 (0.557)	0.862 (0.559)	0.208
Firm size	0.045+ (0.026)	0.048+ (0.028)	0.026 (0.028)	0.021 (0.028)	0.037 (0.027)	0.031 (0.028)	0.107
Firm diversification	0.145* (0.061)	0.142* (0.062)	0.135* (0.064)	0.141* (0.064)	0.132* (0.062)	0.131* (0.062)	0.215*
Industry growth	0.0030* (0.0015)	0.0030+ (0.0017)	0.0032* (0.0016)	0.0028+ (0.0017)	0.0032* (0.0016)	0.0028+ (0.0016)	0.209+
Industry concentration$_j$ (ICON$_j$)		0.049 (0.121)	0.056 (0.115)	0.055 (0.115)	0.068 (0.112)	0.067 (0.112)	0.062
% Δ in concentration$_j$ (ΔCON_j)		0.005 (0.021)	0.006 (0.020)	0.008 (0.020)	0.022 (0.020)	0.023 (0.021)	0.110
Corporate management (CM_{ij})			0.166*** (0.046)	0.146** (0.046)	0.139** (0.046)	0.121** (0.047)	0.257**
$CM_{ij} \times ICON_j$				0.160* (0.072)		0.141* (0.067)	0.235*
$CM_{ij} \times \Delta CON_j$					0.112** (0.040)	0.111** (0.041)	0.258**
R^2	0.17	0.17	0.26	0.29	0.31	0.37	
ΔR^2		0.00	0.09	0.03	0.05	0.11	
F-test for ΔR^2		0.00	13.14**	4.55*	7.81**	18.64***	
F	3.13**	2.43*	3.71***	3.44***	4.29***	3.98***	

[1] Standard Errors are reported in parentheses.

For the significance levels of all T- and F-tests: $^+ p \leq 0.10$; $* p \leq 0.05$; $** p \leq 0.01$; $*** p \leq 0.001$.

Note that for the F-test for ΔR^2: Models 4, 5, and 6 are all compared to Model 3.

showing some effect ($p \leq 0.10$). However, the industry competition variables are not statistically significant and they explain almost no additional variance in the sustainability of firm abnormal profitability.

Model 3 provide results for hypothesis 1, which states that, *the higher the effectiveness of corporate management capabilities, the higher its influence on the sustainability of firm abnormal profitability, ceteris paribus*. As indicate in Model 3, the effectiveness of corporate management capabilities is positive and significantly related to the sustainability of firm abnormal profitability ($p \leq 0.001$) as predicted by hypothesis 1. Furthermore, the F-test for the change in R^2 indicates that the inclusion of the effectiveness of corporate management capabilities (CM_{ij}) significantly improves the fit of the model by increasing the variance explained by 9 percent ($p \leq 0.01$). At the same time, the coefficients of the other variables largely retained their magnitudes and significance levels. Consistent with hypothesis 1, the effectiveness of corporate management capabilities provides unique and valuable information in explaining the sustainability of firm abnormal profitability. This provides support for the proposition that a higher level of corporate management effectiveness is a valuable, unique and inimitable capability.

Model 4 introduces the interaction between the effectiveness of corporate management capabilities and industry concentration ($CM_{ij}*ICON_j$) to examine the moderating role of industry competition on the relationship between the effectiveness of corporate management capabilities and the sustainability of firm abnormal profitability. The results indicate that $CM_{ij}*ICON_j$ is positive and significantly related to the sustainability of firm abnormal profitability ($p < 0.05$). This lends support to hypothesis 2a, which states that *ceteris paribus, industry concentration will moderate the positive influence of the effectiveness of corporate management capabilities on the sustainability of firm abnormal profitability*. The fit of the model also improves as shown by the significant increase in the variance explained by $CM_{ij}*ICON_j(\Delta R^2 = 3\%; p < 0.05)$. The results imply that industry concentration reinforces the influence of the effectiveness of corporate management capabilities on the sustainability of firm abnormal profitability for firms in industries with low levels of competition (higher levels of concentration), than it does for firms in industries with high levels of competition (low levels of concentration).

In model 5, we introduce the interaction between the effectiveness of corporate management capabilities and the percentage change in industry concentration ($CM_{ij}*\Delta CON_j$). As shown, $CM_{ij}*\Delta CON_j$ is positive and statistically significant ($p < 0.01$). Furthermore, the results also indicate that $CM_{ij}*\Delta CON_j$ explain 5% of the variation in the sustainability of firm abnormal profitability ($p < 0.01$). The results provide strong support for hypothesis 2b, which states that *ceteris paribus, the percentage change in industry concentration will moderate the positive influence of the effectiveness of corporate management capabilities on the sustainability of firm abnormal profitability*. This result also indicates that the percentage change in industry concentration augments the influence of the effectiveness of corporate management capabilities on the sustainability of firm abnormal profits for firms in

industries with low levels of competition (increasing levels of concentration), than it does for firms in industries experiencing high levels of competition (decreasing levels of concentration). The predictions of both hypotheses 2a and 2b indicate that the effectiveness of corporate management capabilities has a higher influence on the sustainability of firm abnormal profitability in lowly competitive (monopolistic) industries than in high competitive industries. The results of the full models (Model 6) further indicate that the coefficients of the variables that were significant in the partial models (Models 3 to 5) largely retain their magnitudes and levels of significance, adding more credence to the robustness of the statistical model.

The standardized coefficients of Model 6 show that the interaction between the effectiveness of corporate management capabilities and the percentage change in industry concentration ($CM_{ij} * \Delta CON_j$) has the largest effect on the sustainability of firm abnormal profitability with a standardized coefficient of 0.258. The next four important significant variables are as follows: effectiveness of corporate management capabilities (CM_{ij}) (with a standardized coefficient of 0.257); firm growth (a control variable, 0.252); the interaction between the effectiveness of corporate management capabilities and industry concentration ($CM_{ij} * ICON_j$, 0.235); and firm diversification ($FDIV_{ij}$, 0.215). The pattern of the impact of the variables shows that the effectiveness of corporate management capabilities has a strong and positive influence on the sustainability of firm abnormal profitability. However, the rate at which concentration is changing in an industry plays an important role in augmenting the impact of the effectiveness corporate management capabilities has on the sustainability of firm abnormal profitability.

6. Discussions and Conclusion

This study contributes to the knowledge on the empirical studies investigating the propositions of the resource-based view by examining the relevance of corporate management capabilities as an important source of rent-generation for firms. We model the sustainability of firm abnormal profitability and use the effectiveness of corporate management capabilities as a test to examine its impact on the sustainability or persistence of firm abnormal profitability. We also examine the moderating role of industry competition on the influence of the effectiveness of corporate management capabilities on the sustainability or persistence of firm abnormal profitability. The results of this study are significant for several reasons. First, they support the arguments of strategy scholars regarding the importance of capabilities, and in this instance the effectiveness of corporate management capabilities, in affecting the sustainability of firm outcomes (e.g., Aaker, 1989; Barney, 1991; Bowman and Helfat, 2000; Castanias and Helfat, 1991, 2001; Mahoney, 1995; Penrose, 1959). The results show that corporate management capabilities are in deed an important source of rent generation for firms. Furthermore, this study complements the empirical studies on the RBV of firm that have investigated the separate impact of firm-specific effects and industry effects of firm

performance (e.g., Hansen and Wernerfelt, 1989; Spanos and Lioukas, 2001) by examining the moderating role of industry competition on the relationship between firm resources and capabilities and the sustainability of firm abnormal profitability (Henderson and Mitchell, 1997; Maijoor and van Witteloostuijn, 1996; Wernerfelt, 1984).

The results provide substantial support for the importance of the effectiveness of corporate management capabilities as a source of sustained competitive advantage in maintaining and enhancing firm abnormal profitability. In particular, after controlling for other firm-specific characteristics and industry characteristics, we found that the effectiveness of corporate management capabilities significantly influences the sustainability of firm abnormal profitability. Therefore, high corporate management effectiveness leads to the sustainability of firm abnormal profits. Strategy scholars have argued that effective corporate management has competitive advantage and profitability implications (e.g., Penrose, 1959) and these have received recent impulsion from the works of Castanias and Helfat (1991, 2001) and Mahoney (1995). Empirical studies conducted by researchers such as Boeker (1997), Mehra (1996), and Russo and Fouts (1996) have shown that the effectiveness of management capabilities have a positive impact on firm performance. However, these studies do not provide the impact of the effectiveness of management capabilities on the sustainability of firm abnormal profits. Our result complements and extends the findings of these studies by examining the impact of effectiveness of corporate management capabilities on firm abnormal profitability. Our result is consistent with the view that the possession and use of team-embodied managerial skills and expertise to manage a firm's resources and capabilities influence its competitive advantages and profitability over time (Aaker, 1989; Bowman and Helfat, 2000).

Furthermore, the results imply that the complementarities in the skills, knowledge bases and abilities of corporate management of some firms are unique and may be difficult to imitate as proposed by resource-based adherents (e.g., Barney, 1991; Miller and Shamsie, 1996; Peteraf, 1993). Corporate management capabilities are important contributors to the entire bundle of firm-specific resources and capabilities that enable some firms to generate sustainable competitive advantages. The importance of the role of corporate management capabilities in the value creation and maintenance process is indicated in the results, which shows that corporate management explains more variance than any other variable in the model (see Table V).

Secondly, despite the fact that the resource-based view of the firm is presented as an alternative to the industrial organization economics-based view to explain the sources of persistent or sustainable profitability differences among firms, the results of this study indicate that they strongly complement each other in explaining the persistency or sustainability of firm abnormal profitability. The results indicate that industry competition play a synergistic role in explaining the influence of the effectiveness of corporate management on the sustainability of firm abnormal

profitability and is consistent with the calls of some strategy scholars (Mitchell and Henderson, 1997; Maijoor and van Witteloostuijn, 1996; Schendel, 1997). The sustainability of firm abnormal profitability comes from the complementary effects of both firm-specific effects (resources and capabilities) and industry structure (Mauri and Michaels, 1998). Specifically, the analysis indicates that in lowly competitive industries, corporate management influences sustainability of firm abnormal profitability more than in highly competitive industries.

There are reasons to expect that in highly competitive industries corporate managerial effectiveness should have more impact on the sustainability of firm abnormal profits. It is argued that the heightened level of competition will present opportunities for firms with more effective corporate management to utilize their capabilities in improving efficiency and increasing innovative activities (Nickell, 1996; Schumpeter, 1950), which would enhance and sustain profitability in their firms more than those with less effective corporate managements. However, there are also explanations for the contrary view. In industries with low levels of competition, corporate management of firms with superior resources and/or capabilities may have the incentive to increase their effort and abilities to organize, develop and maintain their core competencies. This would in turn lead to an increase in creativity, innovativeness, a decrease in inefficiency and an increase in firm abnormal profitability.

This result is consistent with some findings in economics and business (e.g., Fee and Hadlock, 2000; Graziano and Parigi, 1998; Martin, 1993). Martin (1993), show that as competition increases in an industry, the quantity produced by each firm decreases reducing the gain from managerial effort, therefore discouraging a firm's corporate management from putting in their maximum abilities. Graziano and Parigi (1998) also find that an increase in industry competition stemming from a lower degree of product differentiation reduces the optimal level of managerial effort and how they impact firm profitability. Fee and Hadlock (2000) also find that management turnover rates in competitive markets are greater than those in monopolistic industries in the US newspaper industry, even after controlling for factors that may affect job turnover. Some of the reasons they cite for their result are that intense competition is antagonistic to managerial abilities and efforts in the determination of profits; and managers of firms in competitive markets find their jobs less attractive because of an elevated probability of liquidation. The results complement that of Spanos and Lioukas (2001) who finds that whereas industry forces influence both perceptual measures of market and financial performance, firm-specific assets impact on only market performance. Our results, however, indicate that not only does firm capability in the form of corporate management effectiveness impact on firm abnormal profitability, but it is also moderated by industry competition.

This study has some potential limitations. First, the sample consisted of data from large US companies. Thus the findings of this study cannot be generalized beyond these large firms without further investigation. However, based on

the nature of the study and the significance of obtaining data over a longer time period for the variables of interest, especially the sustainability of firm abnormal profitability and the effectiveness of corporate management capabilities it would have been impossible to include small or medium-sized firms. Second, there is a possibility of sample selection bias because of the fact that our sample was constructed from firms who appeared and were rated in the *Fortune* surveys for each year from 1985 to 1997. However, including firms that did not receive ratings for each of the 13- year period in our study would have introduced problems of data quality. Third, we used a cross-sectional research design instead of a panel design. As a result, cause-and-effect relationships may not be definitively deduced from the results. But as stated earlier, the construction of the dependent variable, sustainability of firm abnormal profitability, required the use of time series data. Finally, we used only one firm-specific resource/capability, corporate management, to test the impact of firm resources and capabilities on our measure of the sustainability of firm abnormal profitability. This is probably why a greater proportion of the variance in the sustainability of firm abnormal profitability (about 63%) was not explained. The inclusion of other resource and capabilities such as technological competence, or the knowledge base of employees could have improved the explanatory power of the model. However, our interest in this study was to (1) show an alternative way to model the sustainability of firm abnormal profitability; and (2) use corporate management as test to examine the impact of firm-specific effects on the sustainability of firm abnormal profitability.

Despite these limitations the results demonstrate that the effectiveness of corporate management capabilities enhances the sustainability of firm abnormal profitability. Furthermore, industry moderates the effectiveness of corporate management in a complementary way in positively impacting on the sustainability of firm abnormal profitability. The estimated effects of the effectiveness of management and the interaction variables are quite robust to changes to the set of explanatory variables included in the model, indicating that they are capturing important aspects of firm heterogeneity. Future research could extend the static nature of this study by introducing dynamism into the research design. This could be done by using longitudinal data or panel design methodologies to examine the impact of other firm resources and capabilities on firm abnormal profitability and the role of industry structure in moderating that relationship (e.g., Henderson and Cockburn, 1994, 1996; Henderson et al., 2000; Roberts, 1999). Furthermore, although our results indicated that corporate managerial effectiveness positively impacted on the sustainability of firm-abnormal profitability, the converse may also be plausible. That is, firms enjoying high abnormal profitability could hire effective corporate management. Further research could be conducted to explore the link between high firm abnormal profitability and effective corporate management.

Acknowledgements

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