

Organizational Competence and Firm-Specific Tobin's q : The Moderating Role of Corporate Reputation

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Abstract:

Corporate reputation activities have been shown to be a predictor of and a response to strategic organizational activities and outcomes. However, relatively little is known about the moderating role of corporate reputation in the relationship between organizational competencies and firm performance. Using a dynamic panel data model, this study examines how organizational competencies - employee value-added and technological competence - influence firm-specific Tobin's q , and how corporate reputation activities moderate this relationship. The results indicate that organizational competencies enhance firm-specific Tobin's q and that corporate reputation activities play a synergistic role, reinforcing the relationship between organizational competencies and firm performance. These findings contribute to both the resource-based view of the firm and corporate reputation literature by complementing and extending earlier research on the role of corporate reputation activities on firm-specific performance.

Keywords: corporate reputation | employee value-added | firm-specific Tobin's q | resource-based view | technological competence

Article:

Introduction

One of the primary goals of strategic organization research is to understand the ability of a firm to earn and sustain superior profitability over time. The resource-based view (RBV) of the firm offers the theoretical argument that possession and deployment of unique resources and competencies provide sustainable competitive advantage that results in economic rents or abnormal profits over time (Barney, 1991; Peteraf, 1993; Wernerfelt, 1984). According to this perspective, resources and competencies such as firm-specific reputation, technological competencies and employees' skill levels, have the potential to generate sustainable firm-specific or abnormal profits. This is because they exhibit the characteristics of value, rarity, imperfect imitability and imperfect substitutability.

Although the concepts of firm-specific or abnormal profits and sustainability are at the heart of RBV, most empirical studies have focused on total firm profitability and limited time frames.¹ The exceptions are the studies by Roberts (1999) and Roberts and Dowling (2002). In another line of enquiry, a significant body of research has shown that a favorable corporate reputation is a predictor of and a response to a firm's strategic activities and outcomes. However, there is little empirical evidence about the moderating role of corporate reputation in the relationship between firms' resources and competencies and firms' profitability. This study fills the gap by examining the moderating role of previous corporate reputation activities on the link between organizational competencies and firm-specific Tobin's q . Firm-specific Tobin's q is defined as the stock market's valuation of a firm's ability to earn current and future profits relative to its major competitors. The paper focuses on whether a firm's corporate reputation activities undertaken in previous periods moderate the relationship between organizational competence and firm-specific Tobin's q . It also examines the direct effect of organizational competence on firm-specific Tobin's q .

This study extends earlier research in two ways. First, it examines prior corporate reputation activities as a factor influencing the capacity of organizational competencies to generate firm-specific profitability. The corporate management of a firm is responsible for engaging in activities that will maintain or enhance the firm's reputation. I denote this as the management of corporate reputation activities. This is done through the management of a firm's resources and competencies. As Penrose (1959) suggests, a firm may earn abnormal profits not because it has superior resources and competencies, but rather because it manages those resources and competencies well. Barney (1991) and Castanias and Helfat (1991) have argued precisely that the potential for firm resources and capabilities to yield abnormal returns depends on the effectiveness of management. Managing resources and skills (competencies) is therefore one of the keys to sustainable competitive advantage (Aaker, 1989). Second, I use firm-specific profitability (measured as firm-specific Tobin's q) instead of total firm profitability. I also use data for a sample of firms over a period of 13 years, which is a longer time frame than many RBV empirical studies.

I argue that corporate reputation is a reflection of how an organization's corporate management leverages its leadership capabilities in directing, supporting and enhancing the strategic organization of competencies in the value creation process. Just as firms manage their physical and capital investment profiles, they also manage their corporate reputation because it is a valuable asset (Fombrun, 2001). A firm's corporate reputation is a signal of its corporate management skills, expertise and effectiveness in managing the value creation process for shareholders (Petrick et al., 1999). The more effective a firm has been at maintaining and enhancing its corporate reputation through the strategic organization of its competencies in the past, the greater the current value of its competencies for maintaining and sustaining abnormal profitability. How a firm's existing competencies are strategically organized, managed and

¹ The empirical studies examining the RBV propositions have generally shown that: first, firm effects are more important than industry effects in explaining the variance in firms' performance; second, firm resources and competencies that are valuable, rare, difficult to substitute and costly to imitate have a more positive impact on performance than other kinds of resources; and third, those firms' strategies (e.g. diversification, mergers/acquisitions and international, strategic alliances) that exploit resources and capabilities that are valuable, rare, difficult to substitute and costly to imitate outperform other strategies. Barney and Arkan (2001) and Bowman and Helfat (2001) provide excellent and detailed reviews of the empirical studies examining the RBV.

nurtured may be one of the most important factors in explaining the extent to which those competencies generate abnormal profitability.

I examine how a firm's corporate reputation activities moderate the relationship between its organizational competencies, operationalized here as technological competence and employee value-added, and firm-specific Tobin's q . The general framework for my empirical analysis, elaborated in detail below, is summarized in Figure 1, which conveys the idea that corporate reputation activities undertaken by a firm in the past influences how that firm's organizational competencies currently affect firm-specific Tobin's q .

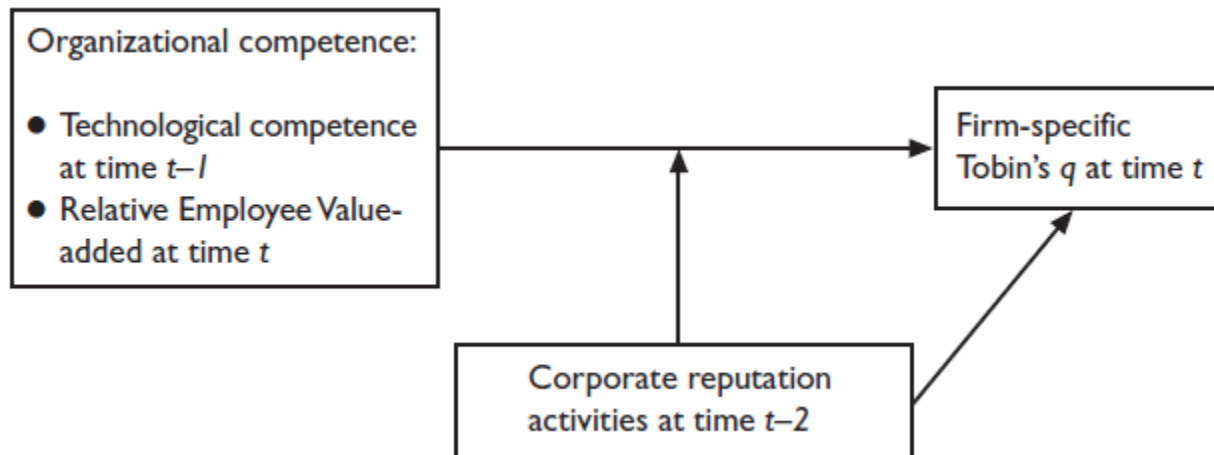


Figure 1. A model of organizational competence, corporate reputation management and firm-specific Tobin's q *

*This is a simplified version of the actual model. It does not show the control variables and the error term.

Theory and hypothesis development

Organizational competence and firm-specific Tobin's q

RBV theorists have endorsed organizational competencies as sources of sustainable competitive advantage because they are heterogeneously distributed among firms. Furthermore, they are often not easily tradable between firms and difficult or costly to replicate. This is because they arise from the integration or interrelationship between individual and group functional expertise over time. An organizational competence is conceived of as the collective learning in a firm through the coordination of diverse expertise and skills and the integration of multiple streams of technology (Prahalad and Hamel, 1990). A firm's competence is also seen as its embedded knowledge and skills that provide it with the ability to perform activities that underlie the offering of products and/or services that exhibit unique qualities and low cost to its customers (Afuah, 1998). The possession and deployment of valuable, rare, inimitable and nonsubstitutable organizational competencies enables a firm to enhance its firm-specific Tobin's q , which is the financial market's valuation of a firm's ability to create current and future value relative to its competitors. I examine how two types of organizational competencies, employee value-added or skill levels and technological competence, enhance firm-specific Tobin's q .

Employee value-added or skill levels

Employee value-added denotes the knowledge, expertise and skills of a firm's employees used to perform productive activities and/or render services that create value for the firm. Strategy researchers have suggested that locally embedded expertise in a firm's employees in the form of knowledge, skills, ideas and experience may be a competence that generates sustainable competitive advantage. Henderson and Cockburn (1994) classified the knowledge, skills and expertise embedded in employees in two categories: 'component competence' and 'architectural competence'. They defined component competence as the local abilities and knowledge possessed by firm employees that are fundamental to activities within the firm, and architectural competence is the ability to integrate the knowledge and skills within the firm and to develop new ones as they are required.

The ability of a firm's employees to create value is dependent on both their component and architectural competencies. Although the knowledge and skills embedded in an individual employee may generate rents for that employee, the economic and productive power of a firm that enables it to generate rents beyond that of the individual employee lies more in the sharing of knowledge and skills embedded in employees in the form of groups or teams. Therefore, the leveraging of these collaborative employee skills and expertise for a firm's productivity growth creates value differently in different firms. Thus, a firm with high-skilled, experienced and knowledgeable employees will be able to leverage the competence embedded in these to create more value both in the current and future periods. Several studies have shown that firms with high-skilled and productive employees experience higher performance than firms with low-skilled employees (Haltiwanger et al., 1999; Nickell, 1996; Oulton, 1998). Thus, the value creation process of a firm's activities is a function of the collaborative and collective expertise, skills and the productivity level of its employees. Therefore:

HYPOTHESIS 1A Organizational competence in the form of employee value-added or skill level will enhance firm-specific Tobin's q over time.

Technological competence

Competitive advantage for firms in many industries cannot be obtained without the ability to accumulate and appropriate knowledge and expertise through innovative activities or the development of technological competence. This, in turn, depends on a firm's persistent commitment to investment in knowledge creation through R&D spending. For instance, the development of tacit or proprietary knowledge about particular disease areas in pharmaceutical research constitutes a pharmaceutical firm's competitive advantage which can be used to create value (Henderson and Cockburn, 1994). In the consumer electronics industry, the accumulation of innovative production skills or miniaturization in consumer electronics technology capabilities would not be possible without R&D investment (Burgelman et al., 1996). A greater commitment to R&D spending thus enables a firm to generate collective technological learning (Burgelman et al., 1996); benefit from spillovers (Henderson and Cockburn, 1996; Yeoh and Roth, 1999); and exploit external knowledge and appropriate returns from innovative activities (Cohen and Levinthal, 1990; Helfat, 1994; Los and Verspagen, 2000). These benefits accruing to firms with

a greater commitment to R&D investment would allow them to maintain and/or create more value in the current and future periods.

Empirically, a variety of studies has shown that greater commitment to R&D investment on a persistent basis leads to the development of knowledge-based learning, which is used to improve both accounting-based and market-based measures of firm performance (Bharadwaj et al., 1999; Blundell et al., 1999; Los and Verspagen, 2000; Roberts, 1999; Yeoh and Roth, 1999). While a greater commitment to R&D investment will not necessarily lead to an increase in the development of cumulative knowledge and skills and guarantee innovation all the time, it is an important antecedent to the innovation process. The persistent commitment to R&D activities indicates the extent to which a firm is systematically engaged in innovative activities and at the frontier of technological knowledge. Thus, from a long-run equilibrium perspective, only firms which profit from R&D investment through innovation generation on a sustainable basis will survive and will be more likely to commit more resources to R&D investment. This is because those firms whose managers waste shareholders' financial resources in such investments will be selected out (Alchian, 1950). Consequently, a commitment to R&D investment on a persistent basis will allow a firm to generate technological competence that may be used to create current and future value. Therefore, I hypothesize:

HYPOTHESIS 1B Organizational competence in the form of the development of cumulative knowledge and expertise through innovative activities (i.e. technological competence) will lead to the enhancement of firm-specific Tobin's q over time.

The moderating role of corporate reputation

Corporate reputation construct and its relationship to organizational outcomes

The reputation of a firm is an intangible economic asset that may be used to earn sustainable competitive advantage because it is rare, socially complex and difficult to imitate and/or trade (Barney, 1991; Fombrun, 1996, 2001; Hall, 1992). Fombrun (2001: 293) defines corporate reputation as 'a collective representation of a company's past actions and future prospects that describe how key resource providers interpret a company's initiatives and assess its ability to deliver valued outcomes'. This notion is predicated on the fact that corporate reputation is developed through socially complex interactions between a firm and its stakeholders over time. Corporate reputation is also developed by the dissemination of information about the actions (past and current) of the firm among stakeholders (Deephouse, 2000; Fombrun, 1996).

From the perspective of economists, corporate reputation is an outcome of a competitive process in which a firm signals its important features to stakeholders (Spence, 1974). Due to the presence of incomplete and/or asymmetric information in markets characterized by uncertainty, stakeholders are unsure of a firm's ability to deliver reliable and quality products or services. Consequently, reputation is a way to interpret and make attributions about a firm's actions (Kreps and Wilson, 1982). Corporate reputation acts as a commitment device that allows stakeholders to solve the moral hazard problem so that a competent firm can be distinguished from an incompetent firm by focusing on its past behavior (Mailath and Samuelson, 2001). The economic perspective focuses on the role of signaling in uncertain markets, and Fombrun's

perspective relies on the interaction between a firm and its stakeholders to create perceptions about the reputation of that firm. Both perspectives indicate that a favorable corporate reputation is developed by stakeholders' impressions of the firm's past and current actions or its disposition to behave in a certain manner in the future.

Since stakeholders do not directly observe the actions of a firm, they may use the outcomes of the firm's previous actions to ascribe reputation to that firm. These outcomes include previous manifestations of quality products or services, community and environmental support, and financial performance. A firm's reputation also depends on its previous ability to develop the skills of its employees, and manage its financial and physical resources to create value for shareholders. A firm can further improve its reputation by investing in public relations in the form of advertisements and meetings with its stakeholders (e.g. analysts) to communicate its strategic initiatives. A firm's corporate management therefore engages in activities and strategic initiatives that are designed to maintain or improve the firm's reputation (i.e. managing the firm's reputation). These activities and initiatives convey the uniqueness and values created by the firm and go beyond 'posturing, spin doctoring, wordsmithing, or puffery' (Fombrun, 2001: 308). Thus corporate reputation activities are based on the management's assessment of its firm's internal and external operating environments.

A favorable corporate reputation provides many benefits. It may attract customers to the company's products and/or services, enable the company to recruit talented and skillful employees (Fombrun, 2001), and enhance access to sources of financing at a lower cost of capital than rivals (Beatty and Ritter, 1986; Fombrun, 2001). In addition, a favorable corporate reputation may be used to increase the perception and treatment of the firm by the media (Deephouse, 2000), allow the firm to charge higher prices for its products or services (Shapiro, 1983) and enable the firm to defend its markets by deterring rivals from entering (Weigelt and Camerer, 1988). In short, a favorable corporate reputation signals to stakeholders the attractiveness and effectiveness of a firm and positions the firm to benefit from these stakeholders in the future.

Corporate reputation has been used as both a predictor variable and a response variable in the empirical literature. Existing empirical studies using reputation as a predictor variable have found that a favorable reputation positively affects a firm's performance (Brown, 1998; Deephouse, 2000; Fombrun, 1996; Kotha et al., 2001; McMillan and Joshi, 1997; Roberts and Dowling, 2002; Vergin and Qoronfleh, 1998). The work of Roberts and Dowling (2002), who also used the *Fortune* database (although over a longer time period), is most closely related to the current research. Roberts and Dowling decomposed overall corporate reputation into a previous financial performance component and a residual component, and found that firms experiencing favorable status in each component were better able to sustain superior performance over time.

Empirical studies treating reputation as a response variable have found important relationships between a firm's financial performance and strategic activities and the development of corporate reputations. Several of these studies have shown that corporate reputation is a function of accounting and financial market-based measures of performance (Fombrun and Shanley, 1990; Hammond and Slocum, 1996; McGuire et al., 1990; Staw and Epstein, 2000). In addition, it has

been shown that corporate reputation is determined by institutional signals such as the pattern of institutional ownership, social responsibility activities, and media exposure (Fombrun and Shanley, 1990; Zyglidopoulos, 2001). Advertising and marketing investments (Fombrun and Shanley, 1990; Kotha et al., 2001), signaling the intent to implement and actively implementing popular management practices such as total quality management, teams and employee empowerment (Staw and Epstein, 2000), have also been found to influence corporate reputations. These studies indicate that corporate reputation is caused by the leveraging of a firm's leadership capabilities in managing strategic factors that signal value or quality to stakeholders.

Corporate reputation as a moderator between organizational competence and firm-specific Tobin's q

Despite the extensive body of research on corporate reputations, relatively little is known empirically about how a firm uses reputation activities to reinforce the value creation capabilities of its other resources and competencies. Thus, my primary research question is what the role is of corporate reputation activities in moderating the relationship between firm resources and competencies and firm-specific profitability. Because corporate reputation is often an outcome of a competitive process that evolves over long periods of time, it requires investment to create and maintain. It is built gradually and the goodwill and trust that lie at the heart of corporate reputation accumulates in response to the persistent use of corporate management capabilities of a firm to signal their leadership's effectiveness in meeting the needs of the stakeholders. I define the managing of corporate reputation as the strategic initiatives and activities undertaken by a firm's corporate management to actively maintain and enhance its reputation. This definition recognizes that reputation is an asset, and just like any other asset, it requires persistent investment to create and maintain, otherwise its value will deteriorate over time.

Since corporate reputation is based on the perceptions of stakeholders and the activities and actions undertaken to reinforce these perceptions, a firm manages its reputation by engaging in actions that maintain or enhance its reputation. The management of competencies embedded in the firm, such as the knowledge, skill and expertise of employees and technological know-how, is a way of signaling to stakeholders the firm's ability to continue to create value. The corporate management of a firm with a favorable reputation will, therefore, manage or build its reputation by utilizing its innovative leadership capabilities to establish and execute a clear strategic vision. The corporate management will also attract, develop and retain high-quality employees (Hitt and Ireland, 1999); and structure compensation and reward systems that will inspire employees to put in their maximum effort (Mehra, 1996) to maintain and enhance the firm's level of quality and prestige. Moreover, they develop an environment that encourages creativity and innovativeness; and manage the firm's financial and physical resources judiciously to create value (Fiol, 1991; Castanias and Helfat, 1991). Using data on corporate security offerings underwritten by investment banking firms, Podolny (1993) showed that status (or reputation) exerts a strong influence on high-status firms (i.e. firms with favorable reputations) to engage in actions that continue to enhance this status or reputational standing.

Although corporate reputation is viewed as a global measure of how stakeholders perceive a firm as highly favorable (Roberts and Dowling, 2002; Weiss et al., 1999), the main activities that lead

to the creation and maintenance of corporate reputation are embedded inside the firm (Dowling, 2001). This is because corporate reputation is a valuable resource just like any other physical or financial resource. Therefore, corporate reputation is based not just on the global perceptions of stakeholders, but also on the actions and activities of the firm which support these stakeholder perceptions. For instance, if a firm is perceived by stakeholders as a manufacturer of quality products then that firm must leverage its corporate management capabilities in managing the manufacturing of high-quality products otherwise its corporate reputation will erode over time. Although corporate reputation is a global construct, a firm must actively manage its corporate reputation by engaging in reputation-building behavior to benefit from the perceptions of stakeholders. Firms are therefore increasingly managing and/or building their reputations by engaging in actions that signal and communicate to stakeholders their ability to use their managerial capabilities to meet the needs of stakeholders (Ettorre, 1996).²

If the competencies of a firm are not effectively managed, it can lead to ‘rigidities’ (Leonard-Barton, 1992), and hinder rather than enhance firm-specific Tobin’s q . It is thus reasonable to expect that a firm which has been more effective in managing its corporate reputation activities in previous periods will be able to leverage its competencies to earn and sustain firm-specific Tobin’s q over time as compared with a firm which has not been effective in managing its corporate reputation activities. Therefore:

HYPOTHESIS 2A Corporate reputation activities will positively moderate the influence of relative employee value-added or skill levels on firm-specific Tobin’s q .

HYPOTHESIS 2B Corporate reputation activities will positively moderate the influence of technological competence on firm-specific Tobin’s q .

Methods

Data and sample

The data for this study were drawn from *Fortune*’s ‘America’s Most Admired Corporations’ (AMAC) and *Standard & Poor*’s Compustat databases. *Fortune*’s database provides information that can be used to operationalize the corporate reputation activities of firms (Vergin and Qoronfleh, 1998). *Fortune* has conducted the surveys on large American firms since 1982 and published the results early each year since 1983. *Fortune* administers the surveys to over 8000 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 eight attributes (Makin, 1983). The qualitative attributes are

² *Fortune*’s recent issue of the corporate reputations survey argues that the key factor which makes a company admirable is its corporate leadership capabilities in managing the value creation process. *Fortune* asserts that corporate management leadership capabilities such as the ability to: first, establish a clear vision; second, align employees interests with the broader ideas of what the company should be; third, create conditions that energize and inspire employees to go beyond the call of duty; and fourth, strategically allocate capital towards high-yielding uses; are the major determinant of a firm’s corporate reputation (Stewart, 1998).

1. quality of management;
2. quality of products or services;
3. innovativeness;
4. ability to attract, develop and keep talented people;
5. wise use of corporate assets;
6. responsibility to the community and environment;
7. soundness of financial position;
8. value as a long-term investment.

The attributes are rated on a scale ranging from 0 (poor) to 10 (excellent). The response rate has averaged about 50% for each year of the survey. Despite the extensive use of the *Fortune* database for other research purposes (Brown, 1998; Fombrun and Shanley, 1990; Roberts and Dowling, 2002; Staw and Epstein, 2000; Vergin and Qoronfleh, 1998), some researchers have argued that the *Fortune* database is highly influenced by the previous financial performance of firms and thus a ‘halo’ effect may exist (Fombrun and Shanley, 1990; Fryxell and Wang, 1994; Roberts and Dowling, 2002). To address the ‘halo’ concern, I adopted Brown and Perry’s (1994) method for removing the ‘halo’ effect from the raw *Fortune* data. Thus, I decomposed each attribute into two components: that which is influenced by a firm’s previous financial performance and the residual (halo-removed). I then use the residual or halo-removed as my measure of corporate reputation activities, which I describe in detail below.

The *Fortune* data was chosen to measure the corporate reputation activities undertaken by a firm’s corporate management for several reasons. First, the first six of the eight attributes likely represent the collective and collaborative capabilities of a firm’s corporate management that are difficult for rivals to imitate and thus may be used to manage and/or build a firm’s reputation and earn firm-specific profits. Second, the survey offers data from a large sample of industry experts who have access to internal firm and industry information about the qualitative dimensions of firms’ resources and capabilities. It has been argued that the assessment of a firm’s intangible resources and capabilities should not be an internal affair, but should be done by external constituents who can objectively examine what the firm does better than its competitors (Collis and Montgomery, 1995). According to Hammond and Slocum, ‘the quality of respondents is comparable to those that could be obtained elsewhere since respondents’ only rate firms with which they are familiar’ (1996: 161). In an exploratory study, Chen et al. (1993) provide support for the reliability and accuracy of information offered by top executives and security analysts. Third, they provide comparable longitudinal data over an extended period of time. The data enable one to capture the intertemporal effects of the complementarities of the leadership capabilities of a firm’s corporate management. These leadership capabilities are used to develop, manage and/or build firm-specific reputational activities.

In order to identify the sample of firms to be included in the study, a search of all the firms which were included in *Fortune*’s AMAC survey from 1985 to 1997 was conducted. The AMAC data was obtained from *America’s Most Admired Corporations DataBook* (*Fortune*, 1997) which contains detailed information on all the firms surveyed. To maximize the sample size and the length of the time period for the study, the following criteria were established for a firm to be included: first, the firm must have a rating for each year in the 13-year period 1985–97; and

second, the firm's financial and industry data must be available from the Compustat database and/or other sources for each year from 1984 to 1997.

The first criterion was established because I was interested in examining how the independent variables lead to the sustainability of firm-specific Tobin's q . Wiggins and Ruefli (2002) argue that in order to effectively assess the effect of resources and capabilities in sustaining performance, a longitudinal data spanning over a period of ten years is the minimum required. I used Wiggins and Ruefli's more stringent criterion to determine the sample of firms to be included in the study. This criterion, however, did not allow me to use the complete data file. Thus, a greater number of the firms in the database such as those used by Roberts and Dowling (2002) did not meet this criterion and were not included in the study. However, this criterion has the advantage of allowing me to utilize a longer time series for all the firms. Using the above criteria, I obtained a sample consisting of 814 firm-year observations that included data on 74 manufacturing firms for the study.³

Measurement of dependent and hypothesized variables

Firm-specific Tobin's q

Firm-specific Tobin's q is a normalized measure of relative firm Tobin's q . Tobin's q is defined as the ratio of the capital market value of a firm to the replacement cost of its assets. Firm-specific Tobin's q therefore measures the financial market's valuation of a firm's ability to create value relative to its competitors from leveraging resources and capabilities for current and future growth. As indicated by Roberts and Dowling (2002) and Wiggins and Ruefli (2002), a firm obtains superior economic rent by having competitive advantage in its major industry. 'It is therefore desirable to equate normal returns with the average returns accruing to all firms within an industry, as this is more likely to capture the firm's relevant cadre of competitors' (Roberts and Dowling, 2002: 1082). Firm-specific Tobin's q is therefore calculated as the percentage change of a firm's Tobin's q from the industry average Tobin's q (an indicator of normal returns). That is:

$$FTQ_{ijt} = \{TQ_{ijt} - ITQ_{jt}/ITQ_{jt}\} \quad (1)$$

Where FTQ_{ijt} is firm-specific Tobin's q of firm i in industry j at time t ; TQ_{ijt} is total (industry unadjusted) Tobin's q of firm i in industry j at time t ; and ITQ_{jt} is the asset-weighted four-digit standard industrial classification (SIC) average industry Tobin's q (Roberts, 1999; Waring, 1996).

³ The actual number of firm-year observations obtained was 962 (i.e. 74 firms by 13 years). The sample size used for the analyses reduced to 814 firm-year observations because I used a two-year lag to create the corporate reputation variable. *Fortune's* complete data file from 1985 to 1997 contained 4194 firm-year observations. However, not all firms are rated every year. Consequently, data are not available for all firms in all years. The number of manufacturing firms which were rated for at least three consecutive years yielded a total of 2893 firm-year observations. I used a longer and balanced panel consisting of 962 firm-year observations. A t-test comparing the means of my sample (962 firm-year observations) with those excluded from the analyses because of incomplete panels (1931 firm-year observations) using assets indicates that the two samples are not significantly different ($p < 0.27$). Similar tests using the sales and capital intensity yielded the same outcome ($p < 0.15$ for sales and $p < 0.47$ for capital intensity).

An important issue in both the strategy and economics literature is the measurement of firms' profitability (Scherer and Ross, 1990; Venkatraman and Ramanujam, 1986). Different rates of return using historical accounting measures such as return on assets (ROA), return on equity (ROE) and return on sales (ROS), and financial-market measures such as Tobin's q , cumulative abnormal stock returns or Jensen's α have been used in strategy research. However, the accounting measures of performance have been criticized for not taking into consideration differences in systematic risk, capital structures and accounting conventions (Amit and Livnat, 1989; Wernerfelt and Montgomery, 1988). Furthermore, accounting measures do not consider the future stream of a firm's profits and the risk involved in obtaining that profits stream. In addition, accounting measures of profitability are not sensitive to the time lags necessary for realizing the potentials from capital (and human) investments (Bharadwaj et al., 1999). One of the financial-market measures that avoids most of the problems inherent in accounting-based measures is Tobin's q . Tobin's q integrates a market measure of firm value that is forward-looking, risk-adjusted and less amenable to changes in accounting practices (Wernerfelt and Montgomery, 1988). My primary variable of interest, corporate reputation activities undertaken by a firm, signals to both customers and financial-market participants the underlying quality of a firm in the current period and its ability to maintain that quality in future periods. This is because the previous reputation of a firm signals to stakeholders the firm's ability to generate value in the future. The relationship between corporate reputation activities and firm-specific profitability is thus best captured by using a forward-looking measure like firm-specific Tobin's q . However, Tobin's q has been used in the literature to represent a variety of phenomena. For instance, it has been used as an indicator of a firm's intangible assets (Hall, 1993), a measure of a firm's performance (Bharadwaj et al., 1999; Wernerfelt and Montgomery, 1988), and an indicator of brand equity (Simon and Sullivan, 1993). Since my interest is in examining the relationship among corporate reputation activities, organizational competence and a firm's current and future growth and profitability potential, I used Tobin's q to measure firm-specific profitability.

Chung and Pruitt (1994) have proposed a method for measuring Tobin's q . Their method explains at least 96% of the variability in Tobin's q obtained by the theoretical model of Lindenburg and Ross (1981) and has been used successfully by other studies such as Bharadwaj et al. (1999). The computation of Tobin's q is not without its disadvantages. The calculation of Tobin's q does not include intangible assets in the denominator, thus overstating the relative performance of firms with large investments in intangibles such as brand equity and R&D.⁴ Following Chung and Pruitt (1994), Tobin's q was measured as:

$$TQ_{ijt} = \{(MVE_{ijt} + PS_{ijt} + DEBT_{ijt})/TA_{ijt}\} \quad (2)$$

Where MVE_{ijt} is the product of firm i 's share price and the number of common stock shares outstanding; PS_{ijt} is the liquidating value of the firm's preferred shares outstanding; $DEBT_{ijt}$ is the value of the firm's short-term liabilities, net of its short-term assets, plus the book value of

⁴ Consistent with Wernerfelt and Montgomery (1988) I include firm advertising intensity and R&D intensity as a partial correction for such a bias. I want to thank an anonymous reviewer for drawing my attention to this bias in the measurement of Tobin's q .

the firm's long-term debt; and TA_{ijt} is the book value of the total assets of the firm, all in industry j at time t .

Corporate reputation

This variable was measured using *Fortune's* six attributes of:

1. quality of management;
2. quality of products and services;
3. innovativeness;
4. ability to attract, develop and keep talented people;
5. responsibility to the community and environment;
6. wise use of corporate assets.

These attributes characterize the leadership activities of the corporate management of every firm (Bowman and Helfat, 2001; Mehra, 1996; Russo and Fouts, 1997; Vergin and Qoronfleh, 1998). I did not include the other two attributes, soundness of financial position and value as long-term investment. This is because Vergin and Qoronfleh (1998) have argued that they are perceptual performance measures of firms as opposed to the leadership and operational activities of corporate management. The two attributes of innovativeness and ability to attract, develop and keep talented people resemble my measures for technological competence and employee value-added respectively. However, they were included in the corporate reputation measure because they deal with how rather than what a firm does in order to be innovative and/or attract skilled labor. For every attribute over the period 1985–97, halo-removed or residual ratings for the six attributes were generated for each firm using the following regression equation:

$$R_{ijt} = B_0 + B_1ROA_{ijt-1} + B_2FGROW_{ijt-1} + B_3DEQ_{ijt-1} + B_4LS_{ijt-1} + B_5MBV_{ijt-1} + E_{ijt} \quad (3)$$

Where R_{ijt} is *Fortune's* ratings of each of the six attributes described above for each year from 1985 to 1997. The regressors were all measured at year $t-1$ (1984–96): ROA_{ijt-1} is the return on assets; $FGROW_{ijt-1}$ is the percentage change in sales; DEQ_{ijt-1} is the ratio of debt to equity; LS_{ijt-1} is the natural logarithm of sales; and MBV_{ijt-1} is the ratio of market value to book value. The regression residual, E_{ijt} , was utilized as the halo-removed rating of each of the six attributes. The average of the halo-removed ratings of the six attributes was then used to operationalize corporate reputation activities for each firm.⁵ This measure of corporate reputation is similar to Roberts and Dowling's (2002) concept of 'residual reputation'. The past performance component may represent stakeholders' evaluation of a firm's operational effectiveness in previous periods.

⁵ It should be noted that because of the effect of signaling in the development of a favorable corporate reputation, it is plausible that firms with favorable corporate reputations will be given more credit for the leveraging of their organizational competencies. This is because those firms may be expected to perform better in future years. The inclusion of the market-to-book value in equation (3) to create the corporate reputation variable minimizes this concern because it captures the expectations of the future value of firms' rents (Mueller, 1990). See also Roberts and Dowling (2002) for a similar argument.

But the residual component may represent stakeholders' evaluation of a firm's ability to continue to engage in activities that will either maintain or enhance its preferred status or reputation.⁶

It is known that current managerial activities affect future earnings (Nickell, 1996); however, the exact lag structure is not known a priori. Following Amable and Vespagen (1995), I limited the lag structure to two years to maximize the length of the time series. Corporate reputation was, therefore, measured as follows:

$$CR_{ijt-2} = (MGMT_{ijt-2})(1 - \delta m) \quad (4)$$

Where, CR_{ijt-2} is corporate reputation activities at time $t-2$, $MGMT_{ijt-2}$ is the average of the six halo-removed ratings at time $t-2$ and δm is the assumed rate at which managerial decisions lose their impact over time. I assume that δm is 15%. This is consistent with what has been used in the literature to depreciate knowledge capital stocks, which is normally 15–30% (Blundell et al., 1999; Henderson and Cockburn, 1994, 1996).

Employee value-added

This is used to capture the relative skill levels or contribution of a firm's employees to the value creation process. I measured a firm's employee value-added (EVA_{ijt}) as the value-added per employee (value-added/total number of employees) in a firm (VAD_{ijt}) relative to the average value-added per employee of the firm's four-digit SIC industry (VAD_{jt}). That is:

$$EVA_{ijt} = (VAD_{ijt} - VAD_{jt})/VAD_{jt} \quad (5)$$

The value-added of a firm was calculated as the sum of depreciation, amortization, fixed charges, interest expense, labor and related expenses, pension and retirement expenses, net income before taxes, and rental expenses (Barney, 2001). This measure has been used to assess the relative productivity and the skill level of a firm's employees (Haltiwanger et al., 1999; Oulton, 1998).

Technological competence

I used relative R&D intensity as a proxy for the cumulative knowledge and skills accumulated as a result of a firm's innovative activities or technological competence (TC_{ijt-1}). This is measured as the R&D intensity of a firm at time $t-1$ (RDI_{ijt-1}) divided by the average R&D intensity of that firm's four-digit SIC industry at time $t-1$ (RDI_{jt-1}). Although this is a flow rather than a stock measure, I assume a yearly depreciation rate, δ_s , of 20%. This is consistent with what has been used in the literature to depreciate knowledge capital stock from R&D investments (Blundell et al., 1999; Henderson and Cockburn, 1994, 1996; Los and Verspagen, 2000). Technological competence was measured as follows:

$$TC_{ijt-1} = (RDI_{ijt-1}/RDI_{jt-1})(1 - \delta_s) \quad (6)$$

⁶ I want to thank an anonymous reviewer for suggesting this argument for distinguishing between the components in *Fortune's* reputation measure.

A high R&D intensity of a firm relative to its industry should indicate that it is committed to technological innovation and the development of capabilities that may be used to enhance profitability. Similar measures have been used to measure firm-specific technological resources (Helfat, 1994, 1997; Yeoh and Roth, 1999); a firm's propensity to innovate (Anderton, 1999); and superior opportunities for technological innovation (Barker and Mueller, 2002; Los and Verspagen, 2000).

Table 1. Data description, sources and citations for control variables

Variable	Definition and description (All data 1985–97)	Source of data	References
Firm growth ($FGROW_{ijt}$)	The annual percentage growth rate of firm sales	Compustat	Silverman (1999)
Firm capital intensity ($FCAP_{ijt}$)	The annual ratio of total assets to sales	Compustat	Lieberman (1987) Russo and Fouts (1997)
Non-normalized form R&D intensity ($FR\&D_{ijt}$)	The annual ratio of R&D expenditures to sales depreciated by 20%	Compustat	Henderson and Cockburn (1994, 1996) Silverman (1999) Yeoh and Roth (1999)
Firm advertising intensity ($FADVI_{ijt}$)	The annual ratio of advertising expenditures to sales	Compustat and Leading National Advertisers Survey	Bharadwaj et al. (1999) Wernerfelt and Montgomery (1988)
Firm size ($FSIZE_{ijt}$)	The natural logarithm of the annual number of employees	Compustat	Bharadwaj et al. (1999) Nickell (1996)
Extent of firm diversification ($FDIV_{ijt}$)	The entropy measure: $FDIV_{ikt} = \sum P_{ikt} \ln(1/P_{ikt})$. Where P_{ikt} is the annual percentage of sales of firm i in segment k at time t	Compustat	Davies and Duhaime (1992)
Industry growth ($IGROW_{ijt}$)	The annual percentage growth rate of four-digit SIC industry sales	Compustat	Russo and Fouts (1997) Waring (1996)
Industry concentration ($ICON_{ijt}$)	The annual percentage of sales accounted for by the four top firms in a four-digit SIC industry	Compustat	Blundell et al. (1999) Nickell (1996)
Change in industry concentration (ΔCON_{ijt})	The annual percentage change in four-digit SIC industry concentration	Compustat	Davies and Geroski (1997) Geroski (1990)

Control variables

A number of firm- and industry-level control variables that both prior theory and empirical research suggest will affect firm-specific Tobin's q were included in the model. The firm-level controls are one-year lagged firm-specific Tobin's q (FTQ_{ijt-1}), firm size ($FSIZE_{ijt}$), firm capital intensity ($FCAP_{ijt}$), firm advertising intensity ($FADVI_{ijt}$), non-normalized (absolute) firm R&D intensity ($FR\&D_{ijt}$), firm growth ($FGROW_{ijt}$) and the extent of firm diversification ($FDIV_{ikt}$). Four of the firm control variables deserve further explanation. The one-year lagged firm-specific Tobin's q was included in the model, otherwise I would have encountered the problem of model specification error (Peseran and Smith, 1995). This would result in biased and inconsistent coefficient estimates. Furthermore, including the one-year lagged firm-specific Tobin's q does help to mitigate concerns about unobserved heterogeneity (Jacobson, 1990). The nonnormalized firm R&D intensity and firm advertising intensity were included to partially correct for the overstatement of the relative performance of firms with large investments in intangibles which are not reflected in the calculation of Tobin's q (Wernerfelt and Montgomery, 1988). The extent

of firm diversification was included to control for firms who operate in more than one industry. The industry-level controls are industry growth ($IGROW_{jt}$), industry concentration ($ICON_{jt}$) and the percentage change in industry concentration (ΔCON_{jt}). Details on the rationale for the use of these control variables appear in Table 1.

Statistical analysis

In order to capture the effect of organizational competence and the moderating role of corporate reputation management on firm-specific Tobin's q over time, a dynamic heterogeneous panel data regression model is used. The method allows the examination of the heterogeneity of firm-specific Tobin's q across firms over time (Greene, 2000). Despite the fact that each firm is unique in terms of its possession of organizational competencies, this method allows a researcher to isolate the effects of those firm-specific competencies that generate sustainable competitive advantage. The method has the advantage of requiring relatively few time-series observations to assess the dynamic impact of firm-specific competencies on firm-specific Tobin's q (Baltagi, 1995). Furthermore, it allows for the control of both individual firm and time-specific effects in the sample. Cross-section and time series studies cannot control for both of these effects and therefore run the risk of obtaining biased estimates (Baltagi, 1995). Moreover, simply pooling the data and estimating by an OLS procedure can result in inefficiency as well as biases in the estimates due to the heterogeneity of coefficients across firms and time (Hsiao, 1986). The following dynamic heterogeneous panel data model is used to examine the hypotheses in the study:

$$\begin{aligned}
 FTQ_{ijt} = & \alpha_i + \beta_1 FTQ_{ijt-1} + \beta_2 FSIZE_{ijt} + \beta_3 FGROW_{ijt} + \beta_4 FR\&D_{ijt} + \beta_5 FCAP_{ijt} \\
 & + \beta_6 FADVI_{ijt} + \beta_7 FDIV_{ikt} + \beta_8 IGROW_{jt} + \beta_9 ICON_{jt} + \beta_{10} \Delta CON_{jt} \\
 & + \beta_{11} CR_{ijt-2} + \beta_{12} EVA_{ijt} + \beta_{13} TC_{ijt-1} + \beta_{14} (CR_{ijt-2} * EVA_{ijt}) \\
 & + \beta_{15} (CR_{ijt-2} * TC_{ijt-1}) + \varepsilon_{ijt}
 \end{aligned} \tag{7}$$

$$i = 1, \dots, N; j = 1, \dots, J; k = 1, \dots, M; \text{ and } t = 1, \dots, T.$$

Where N is the number of firms, J is the number of four-digit SIC industries, M is the number of a firm's business segments and T is the length of the time period for each firm.

The generalized least squares methodology is used to estimate the model using a two-way random effects model. A Hausman (1978) test indicated that a random effects model was more appropriate. The null hypothesis (random effects model) could not be rejected at the 1% level of significance. None of the computed *Hausman statistics*, which has a χ^2 distribution, exceeded 9.22. A likelihood ratio test also indicated that both firm and time effects were important. A null hypothesis of no time effect was rejected at the 1% level of significance. All the computed likelihood ratio statistics, which have a χ^2 distribution, were greater than 64. The models were estimated in two stages because of the potential correlation between the lagged dependent variable (FTQ_{ijt-1}) and the error term in the models. This could lead to inconsistent parameter estimates. In the first stage, FTQ_{ijt-1} was regressed on $FSIZE_{ijt}$, $FGROW_{ijt}$, $FR\&D_{ijt}$, $FCAP_{ijt}$, $FDIV_{ijt}$, $IGROW_{jt}$, $ICON_{jt}$, ΔCON_{jt} , EVA_{ijt} , CR_{ijt-2} and TC_{ijt-1} . The set of *predicted* values obtained from the first regression was used as an instrumental variable for FTQ_{ijt-1} in the second stage (Greene, 2000). Table 2 presents the descriptive statistics and correlations among the

variables in the sample. The table shows that the correlations among the variables are generally low indicating that multicollinearity is not a problem with the model.

Results

The results from the hierarchical two-way random effects model are presented in Table 3. In model 1, which contains only the control variables, the coefficients of the one-year lagged firm-specific Tobin's q , firm growth, firm advertising intensity, industry growth, and the percentage change in industry concentration were positive and significant at $p < 0.01$. Non-normalized (absolute) firm R&D intensity was negative and significant at $p < 0.05$. However, with the introduction of the two-year lagged corporate reputation (CR_{ijt-2}), one-year lagged technological competence (TC_{ijt-1}) and employee value-added (EVA_{ijt}) variables into the rest of the models (Models 2–8), firm size also became significant at $p < 0.01$.⁷ The results for the control variables were in most cases consistent with prior outcomes from extant research. Lagged firm-specific Tobin's q was positively related to firm-specific Tobin's q ($p < 0.001$). This indicates that firm-specific Tobin's q exhibits a persistent behavior where firms who performed better in the previous period relative to their competitors were able to maintain that level of performance in the current period and vice versa (Batalgi, 1995; Baltagi and Levin, 1992). Firm-size, non-normalized firm R&D intensity and industry growth were negatively related to firm-specific Tobin's q . Nevertheless, there are empirical precedents for these results (Bharadwaj et al., 1999; Huselid et al., 1997; Robins and Wiersema, 1995).

Models 2–4 introduce previous corporate reputation (CR_{ijt-2}), employee value-added (EVA_{ijt}) and previous technological competence (TC_{ijt-1}) respectively, and Model 5 incorporates all the three variables simultaneously. CR_{ijt-2} is positive and significant, indicating that previous corporate reputation activities undertaken by corporate management influences a firm's competitive advantage and profitability. EVA_{ijt} and TC_{ijt-1} are also positive and significantly related to FTQ_{ijt} providing support for Hypotheses 1A and 1B respectively. Furthermore, the likelihood ratio test indicates that the inclusion of CR_{ijt-2} , EVA_{ijt} and TC_{ijt-1} significantly improves the fit of models 2–5 ($p < 0.001$). At the same time, the coefficients of the control variables largely retain their magnitudes and levels of significance.

Models 6 and 7 introduce the interaction terms to examine how CR_{ijt-2} moderates the influence of EVA_{ijt} and TC_{ijt-1} on firm-specific Tobin's q (FTQ_{ijt}). The interaction terms $CR_{ijt-2} * EVA_{ijt}$ and $CR_{ijt-2} * TC_{ijt-1}$ are both positive and significant at $p < 0.05$ and $p < 0.001$ respectively, lending support to Hypotheses 2A and 2B. The fit of the model improves significantly with the inclusion of the interaction terms as indicated by the likelihood ratio tests [$\chi^2(1) = 16.28$; $p < 0.001$ for $CR_{ijt-2} * EVA_{ijt}$ and $\chi^2(1) = 24.82$; $p < 0.001$ for $CR_{ijt-2} * TC_{ijt-1}$]. In model 8, which presents the full model specification, it should be noted that the pattern of the results in terms of the magnitudes of the coefficients and levels of significance were largely maintained, adding credence to the robustness of the statistical model.

⁷ Henceforth, I will refer to the two-year lagged corporate reputation variable (CR_{ijt-2}) as previous corporate reputation and the one-year lagged technological competence variable (TC_{ijt-1}) as previous technological competence.

Table 2. Descriptive statistics and correlations*

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Firm-specific Tobin's q_t	0.09	0.69												
2. Corporate reputation $_{t-2}$	0.02	0.68	0.20											
3. Technological competence $_{t-1}$	0.79	0.48	0.15	0.34										
4. Employee value-added $_t$	0.12	0.35	0.16	0.15	0.06									
5. Industry growth $_t$	19.42	24.92	-0.15	-0.01	-0.08	0.19								
6. Industry concentration $_t$	0.73	0.25	0.03	0.13	0.09	-0.20	-0.35							
7. Change in industry concentration $_t$	0.06	5.32	0.09	0.05	0.01	0.09	-0.01	0.06						
8. Firm size $_t$	3.81	0.86	-0.08	0.13	0.26	-0.09	0.04	-0.01	0.01					
9. Firm growth $_t$	6.43	4.50	0.23	0.32	0.08	0.17	0.16	0.10	0.11	0.07				
10. Firm R&D intensity $_t$	0.06	0.06	0.09	0.18	0.07	0.35	-0.50	0.29	0.11	0.05	0.36			
11. Firm capital intensity $_t$	1.01	0.32	-0.15	-0.03	-0.02	0.02	0.17	-0.39	-0.09	0.10	-0.12	0.04		
12. Firm advertising intensity $_t$	0.05	0.06	0.08	0.03	-0.04	0.04	0.24	-0.17	0.07	0.05	0.03	0.21	-0.02	
13. Firm diversification $_t$	0.87	0.57	0.01	0.11	0.08	0.09	0.04	-0.06	0.03	0.13	0.02	0.12	0.01	0.11

*N = 814; For the correlations, $p < 0.05$ for all $r > 0.07$; $p < 0.01$ for all $r > 0.10$ and $p < 0.001$ for all $r > 0.12$.

Table 3. Hierarchical results of panel data two-way random effects model of firm-specific Tobin's q^a

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Constant	0.070 (0.129)	0.321** (0.125)	0.015 (0.129)	0.205† (0.125)	0.323** (0.125)	0.324** (0.125)	0.291* (0.127)	0.292* (0.127)
Firm-specific Tobin's q_{t-1}	0.743*** (0.026)	0.745*** (0.025)	0.731*** (0.026)	0.751*** (0.025)	0.741*** (0.025)	0.740*** (0.025)	0.736*** (0.025)	0.736*** (0.025)
Firm size $_t$	-0.031 (0.020)	-0.048** (0.019)	-0.048* (0.020)	-0.063** (0.020)	-0.063*** (0.020)	-0.062** (0.020)	-0.065*** (0.020)	-0.064** (0.020)
Firm growth $_t$	-0.021*** (0.004)	0.013*** (0.004)	0.021*** (0.004)	0.019*** (0.004)	0.013*** (0.004)	0.014*** (0.004)	0.014*** (0.004)	0.014*** (0.004)
Firm R&D intensity $_t$	-0.825* (0.406)	-0.802* (0.392)	-0.826* (0.412)	-0.805* (0.395)	-0.852* (0.406)	-0.866* (0.408)	-0.829* (0.407)	-0.841* (0.409)
Firm capital intensity $_t$	-0.046 (0.059)	-0.038 (0.056)	-0.021 (0.059)	-0.007 (0.057)	-0.009 (0.056)	-0.012 (0.056)	-0.006 (0.056)	-0.004 (0.057)
Firm advertising intensity $_t$	0.875** (0.306)	0.765** (0.291)	0.993** (0.306)	0.859** (0.295)	0.863** (0.288)	0.661** (0.288)	0.835** (0.290)	0.833** (0.290)
Firm diversification $_t$	0.029 (0.024)	0.021 (0.023)	0.025 (0.024)	0.024 (0.024)	0.016 (0.023)	0.016 (0.023)	0.018 (0.023)	0.018 (0.023)

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Industry growth _{<i>t</i>}	-0.004*** (0.001)	-0.004*** (0.001)	-0.004*** (0.001)	-0.004*** (0.001)	-0.004*** (0.001)	-0.004*** (0.001)	-0.004*** (0.001)	-0.004*** (0.001)
Industry concentration _{<i>t</i>}	0.031 (0.083)	0.077 (0.079)	0.083 (0.083)	0.051 (0.080)	0.040 (0.079)	0.043 (0.079)	0.029 (0.079)	0.031 (0.080)
Change in industry concentration _{<i>t</i>}	0.009** (0.003)	0.010*** (0.003)	0.008** (0.003)	0.009*** (0.003)	0.009** (0.003)	0.009** (0.003)	0.009** (0.003)	0.009** (0.003)
Corporate reputation _{<i>t-2</i>}		0.213*** (0.024)			0.173*** (0.025)	0.173*** (0.025)	0.179*** (0.025)	0.179*** (0.025)
Employee value-added _{<i>t</i>}			0.187*** (0.052)		0.131** (0.050)	0.130* (0.050)	0.144** (0.050)	0.143** (0.050)
Technological competence _{<i>t-1</i>}				0.242*** (0.035)	0.159*** (0.036)	0.159*** (0.036)	0.133*** (0.039)	0.134*** (0.039)
Corporate reputation _{<i>t-2</i>} × employee value-added _{<i>t</i>}						0.169* (0.089)		0.183* (0.088)
Corporate reputation _{<i>t-2</i>} × technological competence _{<i>t-1</i>}							0.184*** (0.050)	0.181** (0.050)
Log likelihood	-432.23	-393.28	-415.06	-412.66	-377.25	-369.11	-364.84	-362.91
Likelihood ratio test ^b		$\chi^2(1) =$ 77.90***	$\chi^2(1) =$ 34.34***	$\chi^2(1) =$ 48.68***	$\chi^2(3) =$ 109.96***	$\chi^2(1) =$ 16.28**	$\chi^2(1) =$ 24.82***	$\chi^2(2) =$ 28.68***

^a Standard errors are reported in parentheses.

^b Models 2, 3, 4 and 5 are compared with Model 1. Models 6, 7 and 8 are compared with Model 5. + $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Discussion

In this study I set out to better understand how corporate reputation activities moderate the relationship between organizational competencies and firm-specific Tobin's q over time. I also examined how technological competencies in the form of employee value-added and technological competence enhance firm-specific Tobin's q over time. The findings present the straightforward result that organizational competence in the form of employee value-added or skill levels and technological competence leads to the maintenance and enhancement of firm-specific Tobin's q . Furthermore, previous corporate reputation activities positively moderate the impact of both employee value-added and technological competence on firm-specific Tobin's q after controlling for other firm-specific characteristics and industry structure variables. My findings provide considerable support for the utility of previous corporate reputation activities in augmenting the impact of organizational competence in creating sustained competitive advantage. The findings contribute to both the RBV of the firm and the corporate reputation literature by complementing and extending extant empirical research.

In particular, organizational competence in the form of employee value-added influences firm-specific Tobin's q in a positive manner. The results indicate that the collective employee skill levels are heterogeneous across firms, to the extent that firms with employees who have higher collective embedded skill levels are more productive and able to sustain their productivity over time. The result is consistent with that obtained by Haltiwanger et al. (1999). The productivity differences between the high-skilled and low-skilled firms in our sample may also reflect efficiency differences, which are more enduring (Oulton, 1998).

The results provide evidence that technological competence, which has been developed through internal R&D activities, enhances firm-specific Tobin's q . This is consistent with the works of Roberts (1999) and Yeoh and Roth (1999) and complements those of Henderson and Cockburn (1994, 1996) and Silverman (1999), who used patents to represent component competence. The findings imply that a firm that is persistently engaged in innovative activities through greater R&D spending relative to its rivals develops technological competence in the form of learning opportunities, know-how and the ability to benefit from spillovers (Anderton, 1999; Cohen and Levinthal, 1990; Los and Verspagen, 2000). These technological competencies are then used to improve and sustain firm-specific Tobin's q . More importantly, the results indicate that my measure of technological competence, relative R&D intensity, has a separate effect on firm-specific Tobin's q from that of the non-normalized (absolute) R&D intensity included as a control variable. Although relative R&D intensity is not a direct measure of a firm's technological competence, it functions as a partial, noisy indicator of its ability to develop and utilize technological knowledge to earn and maintain a competitive advantage.

To the extent that relative R&D intensity does not accurately measure a firm's technological competence, the coefficients of the technological competence variable are biased downward towards insignificance (Los and Verspagen, 2000). It should also be noted that output-based measures such as patent counts have their limitations, too. It is difficult to evaluate the quality of output-based indicators such as patent counts (Los and Verspagen, 2000). Furthermore, all the technological knowledge of a firm is not patented, and patents do not always lead to commercialized innovations (Blundell et al., 1999; Levin et al., 1987). Nevertheless, in a recent

summary of the empirical literature on the economics of science and technology, Audretsch and colleagues (2002) have shown that many studies in economics, public policy and management have demonstrated a strong correlation between persistent R&D investments (intensity) and patent activities (counts) of firms. This indicates that a persistent commitment to R&D activities is a good indicator of a firm's ability to develop internal technical capabilities, enhance the absorptive capacity of technical employees and generate a larger number of patents and innovations.

My results also indicate that the relationship between organizational competence and firm-specific Tobin's q strengthens when a firm's corporate reputation activities have been higher in the past. Prior corporate reputation activities thus play a synergistic role, reinforcing the positive impact of both employee value-added or skill levels and technological competence on firm-specific Tobin's q over time. And so the more effective a firm's management has been at maintaining and enhancing its corporate reputation through the strategic organization of its competencies in the past, the greater the current value of its competencies for maintaining and sustaining abnormal profitability. It should be noted, however, that *Fortune's* measure of corporate reputation does not allow me to disentangle empirically the precise source of a firm's reputation, which is interacting with organizational competencies to affect firm-specific Tobin's q . Corporate reputation may be the result of unobserved heterogeneity in managerial acumen or a signal of the underlying quality of a firm or its products/services.

In order to determine the extent to which CR_{ijt-2} impacts on EVA_{ijt} and TC_{ijt-1} in positively influencing FTQ_{ijt} , I examine the partial derivatives of FTQ_{ijt} with respect to both EVA_{ijt} and TC_{ijt-1} . The partial derivative of FTQ_{ijt} with respect to EVA_{ijt} is the proportional change in firm-specific Tobin's q for a one proportionate change in EVA_{ijt} , holding all other variables constant. Similarly, the partial derivative of FTQ_{ijt} with respect to TC_{ijt-1} is the proportional change in firm-specific Tobin's q for a one proportionate change in TC_{ijt-1} , holding all other variables constant. That is:

$$FTQ_{ijt}/EVA_{ijt} = 0.143 + 0.183CR_{ijt-2} \quad (8)$$

$$FTQ_{ijt}/TC_{ijt-1} = 0.134 + 0.181CR_{ijt-2} \quad (9)$$

Setting the expressions in equations (8) and (9) equal to zero and solving for CR_{ijt-2} , we obtain -0.78 and -0.74 respectively. These indicate that increasing CR_{ijt-2} enhanced the impact of both EVA_{ijt} and TC_{ijt-1} on FTQ_{ijt} when CR_{ijt-2} was greater than -0.78 and -0.74 respectively. Out of the 814 firm-years in our sample, 720 (88.5%) of them have CR_{ijt-2} values greater than -0.78 , while 712 (87.5%) of them have values greater than -0.74 respectively. Thus, my results show that it pays to have a corporate management that is effective in actively engaging in activities that enhance corporate reputation.

The importance of the reinforcing role of previous corporate reputation activities becomes more pronounced when the mean value of CR_{ijt-2} is inserted into equations (8) and (9). When we do this, we obtain $0.143 + 0.183(0.02) = 0.147$, and $0.134 + 0.181(0.02) = 0.138$ respectively (see Table 2). These values imply that on the average CR_{ijt-2} reinforces the impact of a firm's EVA_{ijt} and TC_{ijt-1} on FTQ_{ijt} such that FTQ_{ijt} increases by 14.7% and 13.8% respectively over and above

the mean Tobin's q in an industry. The results indicate that the higher the value of CR_{ijt-2} (that is, the more favorable a firm's previous corporate reputation), the higher the impact of both EVA_{ijt} and TC_{ijt-1} on FTQ_{ijt} . This is consistent with the view that the possession and utilization of managerial skills and expertise enable a firm to manage its resources and competencies to influence its competitive advantage and profitability over time (Aaker, 1989; Castanias and Helfat, 1991, 2001; Mahoney, 1995; Penrose, 1959).

Despite the moderating role of previous corporate reputation activities in positively influencing the relationship between employee value-added and firm-specific Tobin's q on the one hand, and previous technological competence and firm-specific Tobin's q on the other, the results in models 5–8 further indicate that previous corporate reputation activities have an independent impact on firm-specific Tobin's q . This indicates that the accumulation of knowledge bases, skills and abilities of a firm's corporate management that is used to manage and/or build a firm's reputation activities enhances firm-specific profitability (Barney, 1991; Castanias and Helfat, 2001; Mahoney, 1995). This result is also consistent with those of Roberts and Dowling (2002), who found that both the financial and residual components of corporate reputation are positively related to superior profit outcomes.

It should be noted that the composition of the sample, which consisted of mostly large American firms that appeared on *Fortune's* AMAC list, is a potential limitation of this research. Thus, the results cannot be generalized beyond relatively large American firms without further investigation. However, based on the nature of the research and the longitudinal significance of the variables of interest, especially corporate reputation activities, it is impossible to include small or medium-sized firms since these firms are not surveyed by *Fortune*. The results may also be subject to organizational survivorship bias due to the sample selection procedure which limited the sample to only firm with available data for the whole 13-year period. Second, as indicated by Roberts and Dowling (2002), the reputation information came from firms' executives, outside directors and financial analysts. Their focus, which is on a firm's financial performance, is different from other stakeholders of a firm such as customers, suppliers and employees.

The use of corporate reputation ascribed to firms by other stakeholders (e.g. customers, suppliers, employees, etc.) as a moderator between other firm resources, competencies and strategies and firm-specific profitability will be a welcome addition to the literature. Another interesting issue for further investigation is how corporate reputation activities moderate the relationship between organizational competencies and firm-specific performance for firms who earn above the industry norm (superior performance) vis-a-vis those who earn below the industry norm (below-average performance). Future research should also investigate how other organizational competencies play a moderating role on the relationship between resources and organizational outcomes on the one hand, and strategies and organizational outcomes on the other. In summary, the results demonstrate that organizational competence is important in enhancing firm-specific Tobin's q . Furthermore, corporate reputation reinforces the impact of organizational competence on firm-specific Tobin's q .

Conclusion

This is one of the few studies that have examined empirically how corporate reputation activities moderate the relationship between organizational competence and firm-specific Tobin's q . Previous reputation research has treated corporate reputation as both a predictor variable and a response variable. In this study, I have argued that corporate reputation may be managed by actively engaging in activities that enhance the ability of organizational competencies to create value. Prior RBV research has also focused on the use of total firm profitability and shorter time frames, despite the importance of the concepts of firm-specific or abnormal profitability and sustainability. I use a measure of firm-specific profitability (firm-specific Tobin's q) and a longer time frame of 13 years to address these gaps.

My analyses showed that organizational competence in the form of employee value-added and technological competence is important in enhancing firm-specific Tobin's q . But more importantly, corporate reputation activities reinforce the impact of organizational competence in enhancing firm-specific Tobin's q . This study lays the foundation for the use of corporate reputation as a moderating variable in the relationship between strategic choices of organizations and organizational outcomes. I hope the findings will encourage other researchers to investigate how corporate reputation interacts with other resources and capabilities to affect firms' performance, thus further expanding this line of research.

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