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AN EXAMINATION INTO THE CAUSAL LOGIC OF RENT GENERATION: CONTRASTING PORTER'S COMPETITIVE STRATEGY FRAMEWORK AND THE RESOURCE-BASED PERSPECTIVE

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In this study we revisit some fundamental questions that are increasingly at the heart of current strategic management discourse regarding the relative impact of industry and firm-specific factors on sustainable competitive advantage. We explore this issue by referring to respective assertions of two major perspectives that dominate the literature over the last two decades: the Porter framework of competitive strategy and the more recent resource-based view of the firm. A composite model is proposed which elaborates upon both perspectives' divergent causal logic with respect to the conditions relevant for firm success.

Empirical findings suggest that industry and firm specific effects are both important but explain different dimensions of performance. Where industry forces influence market performance and profitability, firm assets act upon accomplishments in the market arena (i.e., market performance), and via the latter, to profitability. The paper concludes with directions for future research that will seek to integrate both content and process aspects of firm behavior. Copyright © 2001 John Wiley & Sons, Ltd.

INTRODUCTION

The field of strategic management has undergone, in the 90s, a major shift in focus regarding the sources of sustainable competitive advantage: from industry to firm specific effects. Williamson (1991) presents these two different perspectives under two general headings: strategizing and economizing. The first underlines a market power imperative. The second is fundamentally concerned with efficiency.

Key words: competitive strategy; resource based view; industry forces; sustainable competitive advantage; path analysis
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Research drawing from traditional Industrial Organization and more specifically from Porter's (1980, 1985, 1990, 1991) framework of competitive strategy adopts an "outside-in" perspective regarding market structure and its effect on performance. Within this framework the firm is viewed as a bundle of strategic activities aiming at adapting to industry environment by seeking an attractive position in the market arena. The sustainability of rents stemming from such a position is critically dependent on the relative influence of competitive forces encountered by the firm (McGahan and Porter, 1997).

On the other hand, the more recent resource-based perspective (Barney, 1986a, b; 1991; Rumelt, 1991; Wernerfelt, 1984) redirects attention

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into idiosyncratic firm capital and postulates that performance is ultimately a return to unique assets owned and controlled by the firm.

The question of the relative impact of industry vs. firm-specific effects on performance is still open, and has a theoretical as well as a managerial value of its own. In the former sense, it relates to calls for complete dismissal of one or the other perspective, or instead of adopting a more balanced stance between the two (Mahoney and Pandian, 1992). In the latter sense, it relates to issues of managerial importance such as with the choice between market maneuvering and capabilities building.

An important body of literature has sought to compare and contrast divergent premises between the RBV and other perspectives emphasizing market power types of rents, including Porter's framework (see for example Teece, Pisano and Shuen, 1997; Mahoney and Pandian, 1992; Conner, 1991; Peteraf, 1993). Another stream of research, directly related to the present study, sought to empirically decompose performance variation amongst firms and thus examine the relative impact of industry vs. firm's resources and capabilities.

The present study attempts to extend the relevant empirical literature by proposing a composite framework whereby both perspectives' causal logic as to the mechanisms of rent generation is explicitly modeled. In particular, three distinct but also complementary "classes" of effects on performance are identified. These include (i) strategy, (ii) industry and (iii) firm-assets effects. The framework is tested using empirical data. Results seem to support recent arguments in the literature that consider *both* industry and firm-level influences as significant determinants of performance (Henderson and Mitchell, 1997). Furthermore, our findings seem to suggest that where industry forces influence market performance *and* profitability, firm assets act upon accomplishments in the market arena (i.e., market performance) and via the latter, to profitability.

The following section presents the theoretical background of the two perspectives with respect to sustainable competitive advantage as well as the rationale for the development of a composite model. Subsequent sections present the model development and hypotheses, and then the empirical analysis and results. The paper concludes with a discussion of the findings and with directions for future research.

THEORETICAL BACKGROUND

The competitive strategy perspective

Within the classical industrial organization literature scholars have typically assumed that firm management can influence neither industry conditions nor its own performance. This view, reflected by such works as Bain (1956) and Mason (1939), maintains that because firm conduct (i.e., strategy) is constrained by industry structural forces, it does not represent independent managerial action. Management's role can therefore be ignored.

This view was also supported by research in organizational theory which emphasized the deterministic role of environment (population ecology and natural selection, e.g., Hannan and Freeman, 1977). Furthermore scholars within the IO tradition were primarily concerned with explaining and evaluating industry, as opposed to firm performance.

The modified framework advanced by Porter (1980; 1985; 1990; 1991) departs markedly from traditional IO theory in a number of important ways. First, Porter focuses on firm rather than industry performance, a characteristic of research in the strategic management tradition. Second, for Porter industry structure is neither wholly exogenous nor stable, as commonly viewed in traditional IO theory (Bain, 1968; Caves, 1972). Instead, in his more recent writings, Porter (1991) views market environment as partly exogenous and partly subject to influences by firm actions, a notion similar to that of "choice situation" advanced by Hrebriniak and Joyce (1985) or strategic choice (Child, 1972).

Finally, in Porter's framework, the role of firm's conduct in influencing performance, together with industry structure, is explicitly recognized. While industry structure still occupies a central role in explaining firm performance, undoubtedly reflecting a heritage from traditional IO, Porter chooses to focus on the role of firm activities and positioning as a fruitful venue for the development of a dynamic theory of strategy (Porter, 1991). Then for Porter, holding industry structure constant, a successful firm is one with an attractive relative position. Either this position can arise from the selection of a cost base lower than the competition or from the firm's ability to differentiate its offerings and command a premium price that exceeds the accumulation of the extra costs. Hence the two primary types of competitive advantage: differentiation or low cost.

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Central to Porter's view of strategy is the notion of activities. For Porter then, strategy is a consistent array or configuration of activities (Porter, 1991: 102), aiming at creating a specific form of competitive advantage for which there exist two fundamental types: differentiation or low cost. These in turn, together with the scope of operations define the notion of generic strategies. Within this framework, strategy choice is the product (and response to) of a sophisticated understanding of industry structure.

The resource-based view perspective

If for Porter's competitive strategy framework, a firm is viewed as a bundle of activities, for the resource-based scholars, firm is viewed as a bundle of unique resources. As Barney (1991) notes, much of the empirical literature informed by Porter's framework, chose to focus analysis on the environment–performance relationship, placing little emphasis on the impact of idiosyncratic firm attributes on performance (Porter, 1990). This was implicitly due to two main assumptions: First it was assumed that firms are identical in terms of strategically relevant resources and second, any attempt to develop resource heterogeneity has no long term viability due to the high mobility of strategic resources amongst firms.

In contrast, the Resource Based View of the firm (RBV) focusing on the relationships between firm internal characteristics and performance, advances two alternative assumptions: a) firms may be heterogeneous in relation to the resources and capabilities on which they base their strategies, and b) these resources and capabilities may not be perfectly mobile across firms, resulting in heterogeneity among industry participants.

Rooted in evolutionary economics and the work of Penrose (1959) the resource–based approach has reestablished the importance of individual firm, as opposed to industry (or particular strategic groups), as the critical unit of analysis.

Resources are defined as those tangible (or intangible) assets that are tied semi-permanently to the firm (Maijoor and Witteloostuijn, 1996). Examples of such resources are: brand names, in-house knowledge of technology, skilled personnel, trade contracts, efficient procedures, etc. (Wernerfelt, 1984). In the early contributions, there was no explicit distinction between resources and capabilities. According to Amit and Schoemaker (1993), however, recourses are assets that either are owned or controlled by a firm, whereas capabilities refer to its ability to exploit and combine resources, through organizational routines in order to accomplish its targets. In addition, Collis (1994) described capabilities as the socially complex procedures that determine the efficiency with which organizations are able to transform inputs into outputs.

More recently, Teece *et al.* (1997) offered a comprehensive framework of dynamic capabilities that reflect a firm's ability to achieve new and innovative forms of competitive advantage. These encompass organizational and managerial processes (i.e., coordination/integration, learning and reconfiguration), specific asset positions (i.e., technological, financial, reputational etc. assets) and path dependencies (i.e., the firm's history).

The two perspectives' causal logic regarding sustainable performance

While both perspectives have made significant and complementary contributions in the field of strategic management (Foss, 1996, 1997a; Amit and Schoemaker, 1993; Peteraf, 1993; Mahoney and Pandian, 1992; Conner, 1991) they have been at odds with each other regarding the origin of sustainable competitive advantage.

Porter's framework

In Porter's framework firm performance is a function of industry *and* firm effects (i.e., market positioning) (Grant, 1991; Porter, 1991). Because industry structure is also, at least partly, susceptible to firm activities, these two determinants of firm performance are ultimately interrelated. According to Porter, industry structure affects the sustainability of firm performance, whereas positioning reflects the firm's ability to establish competitive advantage over its rivals. Having gained such an attractive position, a firm can exercise market power (Teece, 1984; Teece *et al.*, 1997) and thus, gain "monopoly-type" rents. These rents stem from the firm's ability either to defend itself against competitive forces ("defensive" effects), or to influence them in its favor ("offensive" effects) (Porter, 1980, 1985, 1991).

The difference between "defensive" and "offensive" (direct and indirect) industry effects is of some importance for the purpose of developing a composite model and deserves further attention. The former type denotes a rather passive

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stance against industry forces which in effect are taken as given. In this case, strategy according to Porter (1980), can be viewed as creating defenses against the industry forces or as finding a protected position. In contrast, the latter denote a more aggressive strategic posture where the firm seeks to alter the balance and underlying causes of industry forces. "Offensive" industry effects then, might more appropriately be called "pure monopoly–type" effects since they imply that the firm is actively engaged in a conscious attempt to exercise market power.

Porter (1991) views resources occupying an inherently intermediate position in the chain of causality with respect to firm performance. For him, firm assets are built from either performing activities (i.e., strategy) over time, or acquiring them from environment, or both. In either case, the available stock of resources reflects prior managerial choices, the latter related to the choice of strategy. Thus, the argument goes, activities are logically prior, since their successful implementation requires different resources and skills, organizational arrangements, control procedures and inventive systems (Porter, 1980).

In this vein resources are *not* valuable in and of themselves because they (and not vice versa) are attached to strategic activities. Maintaining or enhancing these assets demands reinvestment through continuously performing these activities. Moreover, their significance critically depends on how well they support the strategy pursued, and by extension how well they fit industry structure.

RBV perspective

In contrast, the resource-based perspective views the issue of strategy–resources and the resources–performance relationships from exactly the opposite angle.

Within the traditional mainstream strategy research literature (see for example Andrews, 1971; Ansoff, 1965; Child, 1972), of which RBV incorporates important concepts (Mahoney and Pandian, 1992), strategy selection is based on careful evaluation of available resources (strengths and weaknesses). Over time, firms continue to follow strategies because of both the opportunities imposed by the market environment and the constraints that result from their own accumulated asset base, organizational structure, ownership and other firm specific factors (Barney, 1991; McGee and Thomas, 1986). Current or future strategic decisions are constrained by past resource deployments and result in further reinforcement of strategic profile. This of course should not be taken to imply a deterministic rigidity over firm's strategic behavior. Because of constant environmental changes, managers do have choices to make about strategic alternatives but their options might be limited within the established framework of available resources.

Accordingly, then, and in sharp contrast to Porter's contention, resources are valuable in and of themselves, driving the choice of strategy. Whereas Porter views strategy as being primarily industry driven, the resource-based perspective posits that the essence of strategy is or should be defined by the firm's unique resources and capabilities (Rumelt, 1984). Furthermore, the value creating potential of strategy, that is the firm's ability to establish and most importantly sustain a profitable market position critically depends on the rent generating capacity of its underlying resources (Conner, 1991).

In other words, this perspective's contention is that persistent differences in firm profitability require that either the firm's product be distinctive (i.e., differentiated), or attain a low cost position relative to its rivals (Conner, 1991). This of course is similar to Porter's view. However for the resource-based perspective, returns stemming from such a position in the market place, result, unlike Porter's and Bain-type IO, from acquiring and deploying valuable idiosyncratic assets rather than from industry structure. The underlying logic holds that the sustainability of effects of a competitive position rests primarily on the cost of resources utilized for implementing the strategy pursued. This cost can be analyzed with reference to strategic factor markets (Barney, 1986a), that is markets where necessary resources are acquired. It is argued that strategic factor markets are imperfectly competitive, because of different expectations, information asymmetries and even luck, regarding the future value of a strategic resource. Should factor markets be perfectly competitive, then the cost of acquiring strategic resources would equal their going economic value in use for implementing this strategy, and hence no firm could sustain its competitive advantage (Barney, 1986a).

Dierickx and Cool (1989) took the notion of imperfectly competitive strategic factor markets as their point of departure and further suggested that purchasable assets cannot constitute sources of sustainable rents, simply because they can be

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traded in the market. Instead, critical resources are those that are built and accumulated within firm boundaries, their non-imitability and non-substitutability hinging on specific traits of their accumulation process.

Irrespective however of resources being acquired or internally built, a fundamental premise of the resource-based perspective is the assumption of significant and persistent firm heterogeneity in terms of resource endowments. It is generally suggested that this heterogeneity results because of barriers to imitation (Rumelt, 1991), and firms' inability to alter their accumulated stock of resources over time (Carrol, 1993). In this vein, unique assets are seen as exhibiting inherently differentiated levels of "efficiency", in the sense that they are superior to others, hence producing Ricardian rents (Teece *et al.*, 1997). Sustained profits then, are ultimately a return to the unique assets owned and controlled by the firm.

The important point here is that a given strategy will generate *sustainable* performance differential if and only if the resources used to conceive and implement it are valuable, rare, non-imitable and non-substitutable (Barney, 1991). The implication of this argument is that efficiency rents stemming from such assets could be categorized into two, interrelated dimensions: (a) rents stemming directly from the efficient implementation of the given strategy currently pursued, and (b) indirectly from enabling the firm to conceive and develop its strategy configuration.

The former can be denoted as a "pure" efficiency effect since it directly influences performance by virtue of the efficiency (broadly construed, see Collis, 1994) with which strategy is implemented. The latter, represents the ability (and the rents indirectly stemming from this ability) to create a strategic position, and hence utility, as a result of a strategy that is either entirely new relative to rivals, or one that was not previously feasible because of resource limitations. These latter effects result from firm assets that resemble Teece *et al.*'s (1997) notion of dynamic capabilities defined as those that reflect the firm's ability to achieve new and innovative forms of competitive advantage.

The complementarity between the two perspectives

Besides the apparent conflicting views between the two perspectives outlined above, in reality both can co-exist and shape actual firm behavior. It has been recently recognized that the "competitive strategy" and resource-base perspectives complement each other in explaining a firm's performance (Amit and Schoemaker, 1993; Peteraf, 1993; Mahoney and Pandian, 1992; Conner, 1991). In fact, according to Wernerfelt (1984), Porter's framework and the resource–based approach constitute the two sides of the same coin. Intuitively, value creation stems from the fit of internal capabilities to the strategy pursued, and of strategy to competitive environment (Barney and Griffin, 1992; Barney, 1992). As Barney and Zajac (1994) have argued, the examination of strategy implementation skills (i.e., resources and capabilities) cannot be understood independently of strategy content and the competitive environment within which the firm operates.

It could be argued that the resource-based approach, by emphasizing firm-specific efforts in developing and combining resources to achieve competitive advantage, provides the "Strength-Weaknesses" part of the overall SWOT framework, while industry analysis supplies the "Opportunities-Threats" part (Foss, 1996). In this respect then, the two approaches are complementary simply because they cover different domains of application (Foss, 1997b; Barney, 1991) within the context of SWOT analysis. While the resource-based approach emphasizes that focusing on firm effects is important in developing and combining resources to achieve competitive advantage, industry effects are also critical. Environmental changes "may change the significance of resources to the firm" (Penrose, 1959:79).

One important similarity between the RBV and Porter's perspective is the shared view that persistent above-normal returns are possible, and that to this end, an attractive strategic position is of crucial importance (Conner, 1991). However, as noted above, related to this similarity a fundamental difference arises, involving the nature of rents a firm can achieve: monopoly-type of rents for the Bain-type IO (and Porter's framework), and efficiency-type of rents for the resource-based perspective. It is exactly this dual pattern of similarity—difference regarding firm performance, on which a composite model could be based. Moreover, Porter's perspective (especially as elaborated in his later work—Foss, 1996), despite being clearly rooted in the tradition of the Bain-type IO, constitutes a definite attempt to reinstate the firm

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as the critical unit of analysis. It follows then that both frameworks focus on the individual firm as their subject matter, albeit their dissimilar views on what is more or less important when examining the sources of competitive advantage.

All the above result in a fundamental *compatibility* between these two modes of theorizing. Put differently, an attempt to compare and contrast the two perspectives' causal logic within the context of a composite framework is justified on the basis of three reasons: (a) the two perspectives are complementary as explicants of firms' performance, in the sense that by drawing insights from both, one can gain a more balanced view on the sources of competitive advantage ("internal" and "external" determinants); (b) both perspectives seek to explain the same phenomenon of interest (i.e., sustained competitive advantage), and (c) because the unit of analysis is identical in both cases (i.e., the firm).

This however, should not be taken to deny that the Porter and the resource-based perspectives draw from two different, even antagonistic, theoretical traditions. The principal aim of a composite model is *not* to attempt to resolve all the underlying theoretical tensions between the two perspectives. Instead, the principal aim is to identify the relative impact of industry vs. firm specific factors on firm performance, adding to the relevant empirical literature (see for example Schmalensee, 1985; McGahan and Porter, 1997; Hansen and Wernerfelt, 1989; Rumelt, 1991; Mauri and Michaels, 1998). What distinguishes the present study is the attempt to explicitly model the dissimilar views as to the causal mechanisms deemed relevant for rent generation, whereas in the other studies these mechanisms remain implicit.

MODEL DEVELOPMENT AND HYPOTHESES

Effects and hypotheses

Following the arguments above, we can depict the divergent causal logic of both perspectives in a composite model as in Figure 1. This model incorporates the following effects: (i) strategy (or "utility" ') effects that constitute the necessary condition for above average performance, (ii) industry and (iii) firm specific effects that provide the sufficient conditions for the *sustainability* of performance.

(i) Strategy or "utility" effects

Both the Porter and the resource-based perspectives acknowledge the importance of an attractive strategic position (i.e., competitive advantage) viewed as an outcome of firm strategy activities. For both, the central issue is the creation of value for buyers, either in the form of differentiated product, or one produced with lower costs. Irrespective of the type of advantage however, the fundamental criterion for success is meeting market needs. Since offerings are not sold in and of themselves but for the utility they confer to the users (Lancaster, 1966, 1971), we shall denote this as "utility" type of effect, depicted as path $\xi 3$ in Figure 1.

"Utility" effects then, result from the fit of the particular offering to the particular needs of the market segment addressed. Notwithstanding the firm specific or industry effects (see below) a firm can enjoy, if there exists no sufficient market demand for its offerings, the firm cannot (arguably) achieve success. Then clearly, "utility" effects constitute a necessary condition for above–average performance, but not a sufficient one. Other types of effects, acting independently or in combination, provide the sufficient conditions for the sustainability of rents. In this respect, "utility" effects constitute the *base* on which other types add on to condition the sustainability of performance.

(ii) Industry effects

Within Porter's framework, industry occupies an inherently central role, either direct and/or indirect in determining the *sustainability* of strategic positioning and hence of performance. In other words, industry forces affect the sustainability of above average performance against bargaining and against direct and indirect competition (Porter, 1991). Translating this form of theorizing into causal modeling language, these effects are depicted by paths $\xi 1$ and $\xi 2$. More specifically:

Direct industry effects on firm performance are those that pertain to the firm's given strategic position in the market arena. These are represented in Figure 1 as path $\xi 2$ (industry forces $\rightarrow$ performance). Path $\xi 2$ encapsulates the specific industry effects to performance when a firm has chosen a defensive type of positioning.[1] This

[1] In principle path $\xi 2$ would also represent overall *industry attractiveness* effects that pre-determine the inherent profit

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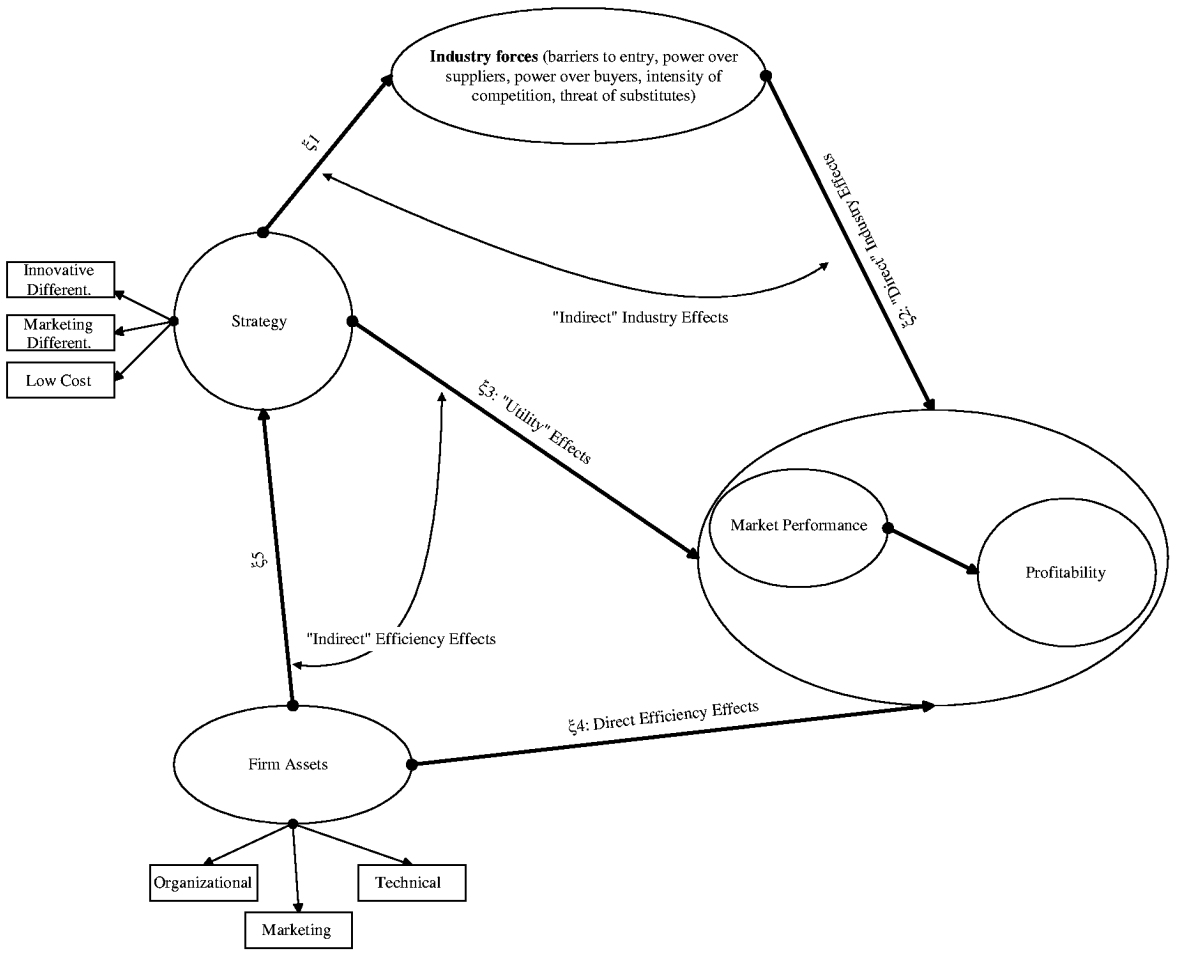

Figure 1. Conceptual framework

position as noted earlier could result from defensive strategic actions that aim to a market positioning that provides the best protection against the existing array of competitive forces.

Indirect industry effects on the other hand are those that could result from "offensive" strategic moves that aim at altering the balance of industry forces in the firm's favor (Porter, 1980: 29). On this account, the *product* of paths $\xi 1 * \xi 2$ represent "offensive" indirect industry effects. To put it in verbal terms, under the offensive type of positioning, strategy influences the relative balance of the competitive forces the firm confronts ($\xi 1$) and these forces in turn influence performance ($\xi 2$).

potential of a given industry, applicable to all industry incumbents (Collis and Montgomery, 1995). These effects are implicitly considered here through $\xi 2$.

(iii) Firm assets effects

Within the resource-based perspective, available idiosyncratic assets resulting from strategic factor market imperfections and/or internal processes constrain strategy choice. Firm performance depends on strategic position (the type of "utility" effects discussed above) the *sustainability* of which is defined by those unique resources and capabilities. Efficiency rents refer to those that stem from firm unique assets. Clearly then, and in contrast to industry driven influences, efficiency effects are obtained at the firm level.

Path $\xi 4$ in Figure 1 represents the direct efficiency type effect. It denotes the direct influence on performance resulting from the possession of a superior stock of available resources, assuming that the more the firm is endowed with resources relative to competition, the higher will it be its

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implementation efficiency and hence performance. Note that this path is independent of strategy, since the latter is taken as given.

On the other hand path $\xi 5$ denotes the firm's ability to enhance and/or develop its activities in pursuit of a more complex and advantageous strategy configuration (Amit and Schoemaker, 1993). The more the firm is equipped with resources the more its ability to develop a utility creating strategy. As a result the product of effects involving paths $\xi 3$ and $\xi 5$, represents the combined influence on performance resulting from the firm's ability to develop and/or modify its strategy posture, which ability is a consequence of available stock of resources.

Following the previous discussion two alternative hypotheses could be advanced with respect to the determinants of sustainable above average firm performance:

Hypothesis 1: Firm performance depends on competitive advantage (as a necessary condition) the sustainability of which depends on direct and indirect industry effects.

This is tested against the alternative hypothesis advanced by the resource-based perspective:

Hypothesis 2: Firm performance depends on competitive advantage (as a necessary condition) the sustainability of which depends on direct and indirect effects stemming from available resources and capabilities.

Performance and controls

The present research relies on the use of perceived measures to operationalize performance in terms of two dimensions, namely profitability and market performance (Venkatraman and Ramanujam, 1986). Firm success is treated, therefore, as a two-dimensional phenomenon, where market performance reflects the *external* firm accomplishments in the market place, and profitability the *internal* to the firm economic rents stemming from its strategic activities. Moreover, because market performance has been shown to positively and often significantly affect profitability in a number of empirical studies[2] we also hypothesize a positive direct effect of market performance on profitability.

We also include firm size, one of the most frequently studied contextual variables as a control variable in order to remove whatever effects this may have on firm performance.

Finally as regards the model depicted in Figure 1, it should be clear it is concerned with relationships among composite constructs (i.e., strategy and firm assets) with respect to performance, rather than between individual generic strategies or specific capabilities and performance. Strategy, in this respect, is conceptualized as a "second order" construct that is being composed of all three "first order" strategic dimensions (i.e., marketing differentiation, innovative differentiation and low cost), on which a firm can score low or high. This treatment is in line with an established tendency in the relevant literature to consider cost and differentiation as compatible (see for example Miller and Friesen, 1986; Phillips *et al.*, 1983). Moreover this "mixed" strategy is perhaps the most appropriate in an era of hyper-competition prevailing in most industries (see for example Miller, 1992).

In this same vein, the significance of firm capabilities (i.e., organizational, marketing and technical) as sources of sustained competitive advantage depends on their internal interconnectedness (Amit and Schoemaker, 1993; Dierickx and Cool, 1989), or put differently, on their mutual dependence (Teece, 1986). Under this view, the combined value of the various firm resources and capabilities maybe higher than the cost of developing or deploying each capability individually (Amit and Schoemaker, 1993).

METHODOLOGY

Sample and data collection

The exploratory nature of this research necessitated particular parameters for sample selection. First, the study focused on independent firms (or single business units) so that the effects of strategy and capabilities could be examined independent of the confounding effects of corporate level considerations. Second, focusing on single firms necessitated an inter-industry sample to ensure

[2] For example, the effect on profitability of market share, a standard indicant of market performance, has been widely established by empirical research (see for example, Schoeffler, Buzzell and Heany, 1974; Buzzell, Gale and Sultan, 1975; Rumelt and Wensley, 1981; Phillips, Chang and Buzzell, 1983; Prescott, Kohli and Venkatraman, 1986)

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sufficient sample size and generalizability of the results. Finally, only firms employing at least twenty employees were considered in the sample in order to ensure a minimum operating structure of each firm. Data were solicited from a population of 1090 Greek firms. These belong to various manufacturing industries such as food and beverages, wood and furniture products, chemicals, metal products, machinery, electric equipment and appliances. Data were collected through a structured questionnaire dispatched to CEOs.

A number of approaches were used to ensure response quality and to enhance response rate. These collectively constitute a modified version of Dillman's (1978) "total design method". More specifically, the process was organized as follows: First, the research instrument was *pretested twice*. In its draft form, it underwent a pretest with CEOs from three companies. A second pretest was conducted after in depth discussions with academics and questionnaire design experts. This second pretest was conducted in four firms, for two of which in-depth case studies were developed. After some minor modifications the final questionnaire was mailed to CEOs together with a letter explaining the purpose of the study and assuring anonymity, together with a pre-stamped envelope addressed to one of the researchers. Four weeks after the initial mailing we sent a follow-up mailing that included the same material as the first.

A total of 187 CEOs responded giving a response rate of 17%. Out of these, 147 questionnaires were found usable. The average firm size is 160 employees (median 67).

To test whether our respondents were different from the non-respondents we examined if there were any differences in the means of all variables used in this study between early and late respondents. The rationale behind such an analysis is that late respondents (i.e., sample firms in the second wave) are more similar to the general population than the early respondents (Armstrong and Overton, 1977). The only statistically significant difference found was for the "threat of substitutes" measure ($F = 5.763$, $\rho < 0.05$). Hence it appears that non-response bias is not a serious issue in this study.

Measurement of constructs

As described above, a research instrument was developed to serve as the basis for collecting data pertaining to industry structure, competitive strategy, resources and capabilities and performance using self-typing measures, a well accepted practice in strategy research. Appendix 1 shows the means, standard deviations and correlation matrix of the research variables. All constructs were measured with multiple-item 5-point Likert scales (see Appendix 2 for details), except for dimensions of industry structure.

Measures of Porter's generic strategies were derived and adapted from Dess and Davis' (1984) and Miller's (1988) studies. The scale asks questions regarding the extent of usage of specific competitive tactics relevant to marketing differentiation, innovative differentiation and low cost.

Empirical research on resources and capabilities has not yet reached maturity (Miller and Shamsie, 1996), and thus original scales had to be engineered based on theoretical contributions from resource based scholars and extensive discussions with academics and CEOs during the pre-testing phase of questionnaire development. In the present research, idiosyncratic firm assets were determined to include measures of organizational, marketing and technical capabilities. CEOs were asked to indicate the extent to which these constitute particular strengths relative to competition. More specifically:

Organizational capabilities denote Teece *et al.*'s (1997) organizational and managerial processes encompassing managerial competencies, knowledge and skills of employees together with efficient organizational structure, organizational culture, efficient coordinative mechanisms, strategic planning procedures and ability to attract creative employees.

Marketing capabilities resemble Lado, Boyd and Wright's (1992) output-based competencies and were measured with such items as building of privileged relationships with customers and suppliers, market knowledge, control over distribution channels, and strong "installed" customer base.

Technical capabilities parallel Leonard-Barton's (1995) technical systems, and Lado *et al.*'s transformation-based competencies, referring to those competencies that are required to converting inputs into outputs. These were measured with three items, that is, efficient production department, technological capabilities and infrastructure, and economies of scale and technical experience.

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Following Confirmatory Factor Analysis (see Appendix 2 for details) that corroborated the intercorrelation between the individual strategy as well as between the firm assets dimensions, two composite measures of Strategy and Firm Assets were developed by averaging the respective individual items.

Measures of industry forces (i.e., barriers to entry, bargaining power of buyers, power of suppliers, and threat of substitutes) were represented by single item questions, except for composite competitive rivalry that was gauged by four items adapted from Achrol and Stern (1988). All these measures were referring to the particular situation confronted by each firm in its major market served.

As noted in the previous section, performance was operationalised as a two-dimensional construct, including composite profitability, and composite market performance (Woo and Willard, 1983; Venkatraman and Ramanujam, 1986). The former was gauged with three perceptual items reflecting return on equity, profit margin and net profits relative to competition, whereas the later was measured with market share, absolute sales volume, increase in market share and sales. For all these items managers were asked to indicate their firm's performance relative to competition,[3] as is extensively common in similar studies. Furthermore, respondents were asked to indicate their firms' relative performance over the last three years period in order to avoid bias from any temporal fluctuations and also to proximate a notion of sustainability of performance. To mitigate potential autocorrelation effects, the items of subjective performance were placed in a different part of the questionnaire relative to strategy and resources and capabilities items.

Besides the fact that subjective performance measures have been widely used in strategy related research (see for example Dess and Robinson, 1984; Robinson and Pearce, 1988; Venkatraman and Ramanujam, 1986, 1987), because the sample includes mostly SMEs it was anticipated that it would be difficult to extract adequate and reliable financial information. Anonymity also precluded the collection of such data from secondary sources. That was indeed the case since 80 out of the original 187 sample firms did not provide company name or balance sheet data. Besides, financial data for SMEs are also criticized for being unreliable and subject to varying accounting conventions or even to managerial manipulation for a variety of reasons (e.g., avoidance of corporate or personal taxes; see Dess and Robinson, 1984; Sapienza, Smith and Gannon, 1988; Powell and Dent-Micallef, 1997).

Finally, organizational size was measured as the natural logarithm of the number of employees.

The exclusive reliance of this study to subjective responses was dictated by both practical and theoretical considerations. From a practical view point, the choice of perceptual data with respect to strategy and firm capabilities was necessitated primarily due to the non-availability of appropriate balance sheet data to capture such complex organizational phenomena. For example, one commonly used "objective" strategy indicator that is central to the measurement of innovative differentiation, namely product R&D/sales, could not be computed since Greek firms are not obliged to report R&D expenses. The inadequacy of balance sheet data is even more obvious in the case of capabilities measures, since it appears impossible to capture the essence of valuable and hard to imitate idiosyncratic firm qualities from crude financial measures.

Beyond the aforementioned practical considerations there exists also strong theoretical rationale supporting the choice of subjective data. Lefebvre, Mason and Lefebvre (1997) refer to what they term the "influence prism" of CEOs' perceptions to note that CEOs' diverging views of the environment may "*override factual characteristics of the environment*" (1997: 861). Within this line of reasoning it is often argued that managers' perceptions shape behavior and are more critical to strategy making and firm performance than some

[3] As one of the anonymous reviewers noted, the relative comparisons of CEOs' responses are perhaps problematic due to the subjectivity of perceptions. Compare this approach, however, with the alternative of collecting "objective" data (to the extent that they are available) and treating them as belonging to a single coherent population. How can we compare, on the same variable, two firms operating into two distinct industries? This would certainly necessitate some kind of normalization of the variable in question, in order to take into account the respective industry reference point (usually the industry average) for this comparison to be meaningful. But as many argue, industry is a rather vague concept, the boundaries of which are usually ill defined. Hence the validity of such comparison may also be problematic. Even in the case of a single industry study what one firm considers as its immediate domain of interaction(s) with its competitors does not necessarily coincide with that of the other. The "relativistic" comparability of our perceptual measures therefore may not be inferior to using "objective" data and "absolute" comparisons.

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"mentally distant" objective indicators (Hambrick and Snow, 1977; Snow, 1976; Chattopadhyay *et al.*, 1999). This premise is also supported by the social constructionist perspective that maintains that reality as such is socially constructed and hence, according to Weick (1979) there is no such thing as an "objective" environment, but rather it is those parts of the information flows that the firm "enacts" through attention and belief. Admittedly, other scholars object to this line of reasoning (e.g., Aldrich, 1979; Dess and Beard, 1984; Keats and Hitt, 1988; Lawless and Finch, 1989), but along with Chattopadhyay *et al.* (1999) we could argue that managerial perceptions shape to a very important extent the strategic behavior of the firm. In this sense, the use of shelf-reported measures might be justified, albeit not without potential problems.

Validation of proposed constructs

It is well known that survey research, if not properly conducted, can provide misleading results with measurement errors representing one of the most significant sources of bias. While however, measurement errors are almost inevitable, the extent to which these errors affect the findings is a function of what particular efforts (a priori) and what checks (a posteriori) have been undertaken, in order to minimize and asses the potential bias.

On this account construct validation is particularly relevant. In effect it involves a multifaceted process comprising three basic steps. The first, *content validity*, requires the identification of a group of measurement items which are deemed to represent the construct of interest. The second step, *construct validity*, seeks to establish the extent to which the empirical indicators actually measure the construct. The final step, *nomological validity*, involves the determination of the degree to which a construct relates to other constructs in a manner predicated by theory. These issues are dealt with in Appendix 2, with the exception of nomological validity which is implicitly addressed in the context of the substantive relations examined in this study. All analyses (see Appendix 2 for detailed description of procedures and results) provide reasonable confidence that the measures used are valid and reliable.

RESULTS

Model estimation and fit

The structural relations among the constructs in our conceptual model were examined with path analysis using the maximum likelihood estimation (MLE) procedure in statistical package EQS (Bentler and Wu, 1995). Results obtained from fitting the model in Figure 1 are presented in Tables 1, 2, and 3. Table 1 summarizes the results of direct effects (i.e., strategy or "utility", industry and firm assets -paths $\xi 3$, $\xi 2$ and $\xi 4$ respectively) as well as overall model fit statistics. Table 2 presents the effects of strategy → industry (path $\xi 1$), and of firm assets → strategy (path $\xi 5$). These are the first components of the product terms that together with paths $\xi 2$ and $\xi 3$ of Table 1 'produce' the indirect effects on performance. Indirect effects are presented in Table 3 (paths $\xi 1^*\xi 2$ and $\xi 5^*\xi 3$ for industry and firm assets effects respectively).

The overall model shows a chi-square value of 19.257 ($df = 12$) having a p-value of 0.082, indicating an excellent fit to the data. However, considerable discussion has taken place in the

Table 1. Path analysis results: direct effects

Parameter (from → to)	Standardised estimate: Market Performance	Standardised estimate: Profit-ability
"Utility" Effects ($\xi 3$)		
Strategy →	0.406***	0.049
Direct Industry Effects ($\xi 2$)		
Threat of Substitutes →	−0.037	0.017
Barriers to entry →	0.107	0.035
Power of Suppliers →	−0.020	−0.318***
Competitive Rivalry →	−0.148*	0.074
Power of Buyers →	0.033	−0.091
Direct Efficiency Effects ($\xi 4$)		
Firm Assets →	0.277***	0.083
Market Performance →		0.306**
Control		
Size →	0.152**	0.095
% Explained Variance R^2	0.521	0.368

Model statistics: $X^2(12) = 19.257$ $p = 0.082$ CFI = 0.964, RMR = 0.069, RMSE = 0.084.
** denotes $p < 0.5$; *** denotes $p < 0.01$

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Table 2. Path analysis results: effects of strategy on industry and of firm assets on strategy

	Standardised estimate	% Explained Variance (R^2)
Strategy → Industry (ξ1)		
Strategy → Threat of Substitutes	−0.064	0.003
Strategy → Barriers to entry	−0.002	0
Strategy → Power of Suppliers	−0.372***	0.139
Strategy → Competitive Rivalry	−0.286***	0.082
Strategy → Power of Buyers	0.036	0.001
Firm Assets → Strategy (ξ5)		
Firm Assets → Strategy	0.704***	0.496

** denotes $p < 0.5$; *** denotes $p < 0.01$.

Table 3. Path analysis results: industry and firm—assets indirect effects to performance

	Standardised estimate[1]	
	Market Performance	Profitability
Industry Indirect Effects[2] *(ξ1*ξ2)*		
Threat of Substitutes	0.00237	−0.00115
Barriers to entry	−0.00021	−0.00007
Power of suppliers	0.00744	0.118296**
Competitive Rivalry	0.04233	−0.02059
Power of Buyers	0.00119	−0.00331
Firm Assets Indirect Effects[3] *(ξ5*ξ3)*	0.285824***	0.032384

[1] Standard Error of estimate of e.g., ξ1*ξ2 is computed as $\xi_1{}^2 s_{\xi 2}{}^2 + \xi_2{}^2 s_{\xi 1}{}^2 - s_{\xi 2}{}^2 s_{\xi 1}{}^2$ where $s_{\xi 1}$ and $s_{\xi 2}$ are standard errors of ξ1 and ξ2 respectively
[2] ξ1*ξ2 from Tables 1 and 2 [e.g., (strategy → suppliers) −0.372*−0.318 (suppliers → profitability)]
[3] ξ5*ξ3 from Tables 1 and 2 [e.g., (firm assets → strategy) 0.704*0.406 (strategy → performance)]
** denotes $p < 0.5$; *** denotes $p < 0.01$

Structural Equation Modeling literature concerning the validity of the X^2 test as an index of model fit, especially when the sample size is small (as is in our case). As a result a number of adjunct fit indexes have been proposed that reflect the improvement in fit of a specified model, which includes fixed and free parameters, over the independence model, in which all parameters are fixed to zero. The usual cut-off point recommended is 0.90. The most commonly used fit index is Bentler's (1990) Comparative Fit Index (CFI), which has a value of 0.964 in our case, with most other fit indices exceeding 0.95. In addition the examination of residuals via indices such as Root Mean Square Residual (0.069) and Root Mean Square Error of Approximation (RMSEA) with 0.084, also indicate acceptable model fit.

Strategy (or "utility") effects

Firm strategy, consistent with hypotheses 1 and 2 appears to influence positively and significantly firm success (see Table 1), but only with respect to market performance (0.406, $p < 0.01$) and not to profitability (0.049, ns). In fact, strategy's effect to market performance appears to be the strongest relative to all other hypothesized relationships where the dependent variable is a performance dimension. This seems to support the notion that strategy ("utility") effects constitute a prerequisite condition for above normal firm performance.

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Industry effects

In accordance with the Porter framework, Hypothesis 1 stated that firm success, except from strategic positioning (i.e., strategy driven competitive advantage), is also dependent on both direct and indirect industry effects. The significance of these effects is partially supported by our findings.

Concerning direct industry effects (see Table 1), only competitive rivalry and power of suppliers were found significant for market performance and profitability respectively. More specifically, the direct effects of competitive rivalry on market performance are negative and marginally significant (-0.148, $p < 0.10$). On the other hand, significant direct industry effects on profitability were only found for the bargaining power of suppliers (-0.318, $p < 0.01$).

Industry indirect effects to performance represent the firm's ability to influence structure in such a way as to sustain its performance over rivals. As noted in the model development section these effects are operationalized as the product of two causal relationships: strategy's effect on industry structure ($\xi 1$), multiplied by the latter's influence on performance ($\xi 2$) (i.e., $\xi 1 * \xi 2$).

From Table 3 it appears that the only significant indirect industry effect is that of power of suppliers on profitability (0.12, $p < 0.05$).

With respect to the effects of strategy $\rightarrow$ industry structure (paths $\xi 1$), our findings (see Table 2) suggest that the only significant influences involved concern the decrease of competitive rivalry (-0.286, $p < 0.01$) and of bargaining power of suppliers (-0.372, $p < 0.01$). Interestingly, these two aspects of industry structure are those that are also found to directly influence the two dimensions of firm performance (i.e., market performance and profitability respectively). Furthermore, the *decrease* of power of suppliers as a consequence of "offensive" strategic activities, results in the positive indirect effect ($\xi 1 * \xi 2$) to profitability presented in Table 3.

At any rate, however, as shown in Table 2, results indicate that the extent of firms' influence on competitive forces is minimal, explaining only 14% and 8% of variance of power of suppliers and rivalry respectively. Given these, it is not surprising that the only significant indirect effects found concern the relationship between strategy $\rightarrow$ power of suppliers $\rightarrow$ profitability.

Firm assets effects

Hypothesis 2, in accordance with the resource-based perspective states that the sustainability of rents arising from an attractive market position critically depends on firm unique assets. This hypothesis is also partially supported since significant positive direct and indirect effects are found but only with respect to market performance.

More specifically, Table 1 shows that firm assets seem to directly influence market performance (0.28, $p < 0.01$). Indirect effects on the other hand are operationalized as the product of resources influence on strategy and the latter's influence on performance (i.e., $\xi 5 * \xi 3$).

From Table 2 it can be seen that available firm assets significantly and positively determine the configuration of strategic activities (0.704, $p < 0.01$). As can be seen from Table 3, the combined effect of both influences, (i.e., firm assets' indirect influence on performance) is also positive and significant. As noted above, firm assets exert a *direct* positive effect on market performance but not on profitability.

In general our results show that profitability is only affected from an element of industry structure, both directly and indirectly, namely power of suppliers, and from market performance. This latter is important since it seems to support the view that market performance is a key to profitability, at least for the firms in our sample.

The role of market performance

Within the traditional structure-conduct-performance paradigm, market performance represents along with other industry characteristics (such as entry and mobility barriers, bargaining power etc.), an element of market structure that necessarily results to market power and hence to profitability (Imel and Helmberger, 1971; Shepherd, 1972; Gale, 1972). Porter instead argues that the effect of market performance to profitability is not straightforward, depending on how well a firm with high market performance is protected against competitive forces. If that holds, even low-share firms can achieve superior profitability (Porter, 1980).

Other researchers, especially those within the resource based perspective interpret the market performance-profitability association as causally spurious. Put more simply they are both viewed as manifestations of firm success jointly determined

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by superior firm capabilities (Rumelt and Wensley, 1981; Jacobson, 1990).

Our findings (see Table 1) however, seem to indicate that its association to profitability is not causally spurious. Technically a variable's X (i.e., market performance) apparent influence on Y (i.e., profitability) is spurious when it is being entirely attributable to X's relationship with another variable Z (i.e., firm assets) (Cohen and Cohen, 1983). Our results instead show that although the effects of Z (firm assets) → Y (profitability) and of Z → X (market performance) are controlled for, the effect of X → Y is still positive and significant. This seems to imply a different interpretation for the Z → X → Y chain of causality. In fact X, that is market performance, appears to be a significant *intervening* variable to the firm's assets (Z) → profitability (Y) relationship. In other words, although firm assets' direct influence on profitability is weak and insignificant (0.083, $p >$ 0.10), its effect *via market share* (i.e., assets → market performance → profitability, = 0.277* 0.306) is significant (0.08, $p = 0.059$).[4]

Hence market performance seems to constitute a significant intervening variable in the firm's resources-profitability relationship. The same pattern holds[5] for the strategy → market performance → profitability relationship (0.12, $p = 0.035$). In other words, while the direct effect of strategy on profitability is weak, its effect *via market performance* is strong and significant. In view of the above then, it seems logical to argue that market performance is an important predecessor to profitability, at least in the context of our sample.

DISCUSSION OF RESULTS

Overall our results above seem to support the need for a composite framework that will seek to synthesize premises from both perspectives. The model depicted in Figure 1, is not only based on the notion that the two perspectives are supplementary in explaining firm performance, but also extends this mode of theorizing by explicitly treating the mechanisms through which industry and firm assets influence performance.

More specifically the results imply the coexistence of three distinct but also complementary classes of effects, which supplement one another in determining performance. These are (i) "utility" type of effects (i.e., strategy configuration), (ii) industry (direct–"defensive" and indirect–"offensive") and (iii) firm specific (direct and indirect) effects on performance. They are distinct first because, they represent different conditions for achieving above–normal performance; second, because industry and firm effects operate in different domains: through structural market forces the former and through idiosyncratic stock of resources the latter. Concurrently however, they are complementary as both "internal" and "external" conditions represent the two sides of the same coin (Wernerfelt, 1984).

All types of effects are, to a greater or lesser extent, subject to firms' strategic choices. The case of internal capabilities notwithstanding, even industry structure characteristics are at least partially endogenously determined by the firms' actions, especially in the case of "offensive" strategic maneuvering (Porter, 1991).

Returning to the issue of the relative impact of classes of effects on performance, our results show that strategy activities are significant direct determinants of market performance, and indirectly (via the latter) of profitability. This seems to confirm the first part of Hypotheses 1 and 2 which posit that strategy driven competitive advantage defines the necessary condition for above average performance, albeit not a sufficient one, as suggested by the significance of both industry and firm specific effects.

Regarding industry effects, it was found that competitive rivalry directly influences market performance, while power of suppliers affects directly and indirectly profitability. This is in line with the Porter framework and Hypothesis 1 that states that the sustainability of rents is dependent on industry effects directly (i.e., defense against direct and indirect competition and against bargaining, Porter, 1991) and indirectly, through firm's actions altering the balance of the same industry forces in its favor.

More specifically, competitive rivalry captures the perceived threats to the very survival of the firm that originate from harsh competition, thus

[4] Standard error computed as in Table 3, note 1.

[5] Note that because the effects of elements of industry structure to market performance are generally weak (see Table 1), the intervening status of market performance with respect to industry forces regarding profitability is not supported by our data.

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constituting a key characteristic of the external environment (Lefebvre *et al.*, 1997). In this vein it generally represents a fearsome characteristic of the external environment, constituting a serious threat to the survival of firms. According to Khandwalla (1977: 335) hostile environments are "risky, stressful and dominating ". Our results are in line with the traditional industrial organisation literature that suggests that in the absence of fierce competition, firms can exert a greater degree of control in managing price and, therefore, profits (Bain, 1951). Furthermore, a number of studies have shown a positive relationship between industry concentration, which is directly related to low environmental hostility and lack of competition, and firm performance (Hill and Hansen, 1991). For example Capon, Farley and Hoenig (1990), in a meta-analysis of empirical studies investigating strategy–performance relationships, found that industry concentration was positively related to firm-level returns.

It is interesting to note however that our results do not seem to indicate that competitive rivalry had any significant (direct or indirect) negative effects to profitability. Rather its significant influence relates only to market performance. As Porter (1980: 17) notes, fierce competition and hence the pattern of competitive moves and counter–moves may or may not adversely affect the firm or the industry as a whole. For example price competition, unless price elasticity of demand is high enough, will normally result to lower revenues and profitability. On the other hand, advertising battles may well expand demand for the benefit of all firms.

It should be noted that price competition did not survive the preliminary scale purification procedure and therefore was not included as a measurement component of the competitive rivalry construct in this study. Hence, apart from the intuitively justified negative influence to market performance it seems that non-price competition does not affect the profitability of the firms in our sample.

The direct negative effect found of power of suppliers on profitability seems to confirm Porter's (1980) argument that suppliers can reduce profitability if they can exert bargaining power by either raising prices or reducing the quality of purchased goods they supply. The decrease of power of suppliers as a result of "offensive" strategy positioning (indirect effect), in line with this argument, will have positive effects on profitability, as indeed was the case with our findings.

With regards to firm assets effects, as argued in the model development and hypotheses section above, the rents stemming from such assets could be categorized into direct ("pure") and indirect efficiency effects.

The significance of the former effects to market performance seems to indicate that implementation efficiency, stemming from a superior asset base relative to rivals, is critically important in enabling the firm to sustain a high share position in the market. Indirect efficiency effects on the other hand denote the firm's ability to succeed not as a result of implementation efficiencies but rather because of developing and strengthening its strategic posture, which in turn is a consequence of its available stock of resources. As before, these indirect effects were found significant with respect to market performance, but not to profitability.

On this account two related issues are worth noting. First, the significant effects of firm's assets on strategy, is in line with the contention of resource-based scholars that a firm should develop and nurture its strategy profile building upon its available stock of resources (e.g., Rumelt, 1991). As Grant (1991) notes, the resources and capabilities of a firm are the central consideration in formulating its strategy. Moreover, they represent the primary constraints upon which a firm can establish its identity as well as the primary sources of its profitability. This latter contention however is not supported by our data. Secondly, although assets do not affect profitability either directly or indirectly (i.e., via strategy), they do influence profitability via market performance. In other words, our results seem to suggest that the firm's available stock of resources is critical for (a) developing its strategy configuration, and (b) for achieving high market performance and through the latter, high profitability.

Hence, our results are in line with Hypothesis 2 and the resource-based perspective that views the sustainability of firm performance stemming from specific assets (either externally acquired in imperfect markets or internally built), that are imperfectly mobile, inimitable and non-substitutable (Peteraf, 1993).

To summarize then, our findings seem to indicate that together with strategic activities *both* industry and firm asset effects significantly contribute to firm success. This is in accordance with

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Hansen and Wernerfelt's (1989) remark that firms that can demonstrate excellence in both arenas will do significantly better than those that strive for more uni-dimensional concepts of excellence. Interestingly these effects concern different dimensions of performance. Where industry forces influence directly and indirectly market performance and profitability, firm assets act upon accomplishments in the market arena (i.e., market performance), and only via the latter, to profitability.

This result is perhaps most critical, since, if confirmed by future studies, it opens a research question that needs to be explicitly addressed theoretically: If firm performance is a multidimensional phenomenon, then why are the different dimensions of performance affected differentially by its various hypothesized determinants? Our results seem to suggest that industry and firm effects are not only both potentially significant, but instead, they *need* to complement each other given that they affect distinct but strongly linked dimensions of performance.

IMPLICATIONS AND FUTURE RESEARCH

The findings of the present study should be considered under the prism of the recent debate concerning the relative importance of industry vs. firm specific effects on performance. As argued in the introduction, the question between industry and firm specific effects has a value of its own, both in theoretical and practical terms.

In the theoretical front, relevant empirical findings in the quest to identify the "ultimate" sources of sustainable above average firm performance are at best equivocal since no conclusive results seem to have emerged. Schmalensee (1985) and McGahan and Porter (1997) conclude that industry effects explain an important portion of profits variability, whereas Hansen and Wernerfelt (1989), Rumelt (1991) and Mauri and Michaels (1998) report that firm effects are more important than industry effects on firm performance. Our own results point to the significance of both classes of effects that in addition appear to influence different dimensions of firm performance.

Admittedly, these findings are not directly comparable because of critical differences in research design and statistical models employed. However, it could be argued, that there exists another, and perhaps more important reason underlying these inconsistencies in research findings: sources of persistent firm success might prove fundamentally context specific (Collis, 1994).

It should also be noted however that irrespective of differences in relative magnitude estimates attributed to different samples, operationalisation of measures and econometric specification employed (McGahan and Porter, 1997), these as well as our results seem to point to a simple fact; both effects seem to be real and to coexist (Mauri and Michaels, 1998). Perhaps more important, strategizing and economizing are not mutually exclusive (Teece *et al.*, 1997; Williamson, 1991). Sustainable competitive advantage may result form both industry and firm specific effects which in fact may also be complementary (Mauri and Michaels, 1998).

If then, industry and firm effects are real, coexist and are not incompatible, exclusive reliance on only one of these might be argued to result in failure. Interestingly, proponents of each of the perspectives attack the other on this same ground. For example Porter (1991) argues that the competitive value of resources can be enhanced or eliminated by changes in technology, rivals' behavior or buyers' needs, which, an exclusive focus on resources might overlook. On the other hand, proponents of the resource-based perspective point out that Porter's framework misdirects managers to focus on industry level characteristics, encouraging them to expend assets on influencing structure, even though their firm cannot uniquely benefit from the changes (potentially) incurred (McWilliams and Smart, 1993).

A critical and in our opinion valid argument here states that strategizing, that is, employing actions that aim at impeding competition, is only relevant to firms that already possess market power, which are only a small fraction of the total population (Williamson, 1991). However, our findings seem to indicate that even in the case of smaller markets consisting mainly of SMEs, as is our case, at least some degree of exercise of power is possible (Chamberlin, 1962) as manifested with the significant indirect effect involving power of suppliers.

Managerial implications follow directly from the foregoing discussion regarding the coexistence and complementarity of "utility", industry and firm-specific effects on sustainable competitive advantage. Given this study's finding that different, but

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strongly linked, performance dimensions are *differentially* affected by these classes of effects, then management's strategic choices need to carefully balance strategy, industry and firm-specific factors. Exclusive reliance on only one or two of these might prove problematic.

The results show that strategy configuration (i.e., "utility" effects) is a direct determinant of market performance and, indirectly, of profitability. It represents, however, a necessary but not sufficient condition for above average performance. The sustainability of firm's success is dependent upon industry and firm-specific effects. With respect to the former, the findings show that defensive maneuvering (i.e., protection against competitive rivalry) is critical for securing market performance, whereas offensive maneuvering (i.e., decrease of power of suppliers) can significantly affect profitability. The firm's available stock of resources and capabilities, on the other hand, is critical for developing its strategy configuration as well as for achieving market performance, and via the latter, profitability.

Moreover, the role of market performance on profitability adds another dimension on the aforementioned managerial implications. If, as our results appear to suggest, market performance is a critical intervening factor in the firm assets → profitability and the strategy → profitability relationships, then management needs to carefully consider the question of how to build and sustain high market share. Again, both industry and firm-specific factors appear relevant.

Taken overall, these findings seem to imply that instead of treating market performance and profitability on the one hand, and maneuvering and developing firm-specific assets on the other, as separate, even antagonistic choices, it would perhaps be better if they were considered as components of a holistic framework. Managers should adopt a more integrative strategic posture by viewing them as inextricably linked, forming the fundamental pillars on which sustainable success could be established.

In light of the above arguments, it might be concluded that "intellectual isolating mechanisms" (Mahoney and Pandian, 1992: 374) between the two perspectives might prove unprofitable for strategy related research. Instead, a conversation between the two might provide insights that will further our understanding of the sources of sustainable competitive advantage.

The findings and implications of the research should also be considered in light of its limitations. As noted in the methodology section, self-reported data were used to test the model. Despite considerable efforts devoted both at the data and construct validation phases to ensure data quality with encouraging results, the potential of survey biases cannot be excluded. Admittedly, the respondents' perceptions regarding the issues central to this study might not necessarily coincide exactly with objective reality. This could result in potential biases. First, subjective biases may stem from an implicit tendency of respondents to rationalize their firms' competitive behavior based on received wisdom about what constitutes effective management praxis. Second, respondents' subjective definition of industry boundaries could affect the accuracy of comparisons with rivals as regards their firms' strategies, unique assets and performance. This may be particularly problematic with respect to international rivals as it is not entirely clear whether respondents were able to accurately compare their firms' situation with that of international competitors represented (as opposed to those actively present) in the local market.

Apart from the disadvantages related with perceptual measures, the time period used for assessing the *sustainability* of performance is admittedly short (i.e., previous three years) to account for any business cycle effects or transient problems. It is important to note, however, that a longer time-frame (e.g., five instead of three years) could endanger the reliability of responses. Another limitation of the research is related to the relatively small sample size which may have led to non-response bias, despite evidence pointing to the contrary. In addition, our sampling frame excluded those international competitors that are not operating locally. This might have introduced some degree of sample selection bias. It should be noted, however, that including these firms in the sample through their local representatives, would have introduced problems with respect to data quality and comparability. Finally, the research design was cross-sectional, not longitudinal. As such, cause-effect relationships may not be definitively inferred from the results.

At the theoretical level, it should be emphasized that while the study seeks to identify the relative impact of industry vs. firm-specific factors on performance, further theoretical work is needed

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to extend the inherently static character of this research program, by bringing together an explicit examination of the dynamics of the processes by which firms build their competencies and engage in strategic maneuvering within a given industry. To be sure, this mode of theorizing pertains to a conceptually rich, fine grained theory of the firm that will seek to integrate both "content" (i.e., conditions for achieving sustainable competitive advantage) and "process" (i.e., an account of the dynamics of firm growth and change) aspects of strategy research.

Such an attempt to develop a model that transcends the theoretical underpinnings of both perspectives in a dynamic sense, is beyond the scope of this study. Instead, our main emphasis here was to statistically examine *effects* (industry and firm-specific) within a static equilibrium context, not the dynamics of the processes by which they have been evolved, or better, by which they continuously develop.

On this account, it could be argued that the Porter, and to a lesser extent, the RBV perspectives lack a clearly delineated theory of the firm within their conceptual apparatus. For one, Porter's framework has relatively little to say about processual and behavioral issues (Foss, 1996) that by necessity should be accounted for in any attempt to understand firms as dynamic and ever changing entities. This is because Porter, despite the fact that his later work connects in important ways to RBV, argues that firm performance can be ultimately traced back to successive managerial choices and *external* (to the firm) initial conditions (Porter, 1991), saying nothing about the internal organizational processes that produced such creative choices.

On the other hand, RBV is admittedly better suited to deal with organizational and behavioral processes in comparison to the IO inspired Porter framework, since it views resources as encompassing a broad range of organizational, social and individual phenomena which have traditionally been the subject of organization theory and organizational behavior (Barney, 1991). But resource-based scholars have only recently began to systematically explore these dynamic issues. The "process branch", focusing on the process side (Mahoney, 1995), represents the dynamic capabilities turn in the RBV school of thought.

Within this latter line of research there appears a gradual progression in focus from an account of which resources (and why) may be valuable, to *how* these may be created (Galunic and Rodan, 1998). In this respect, a number of resource based scholars have recently begun to explore the general processes by which organizational capabilities are developed (see for example Dierickx and Cool, 1989; Henderson, 1994; Leonard-Barton, 1995; Pisano, 1994; Teece *et al.*, 1997) to form higher order complex collectives (i.e., core competencies). It could be argued however that although promising, the "process branch" of the resource-based theorizing is still underdeveloped. It is perhaps this underdevelopment that underlies what Foss (1997b) notes as a lack of integration between an analysis of firm growth and change that would provide an account of the sources of sustained competitive advantage.

Within this discourse, one perhaps most promising line of research is the emerging Knowledge-based theory of the firm which posits that the fundamental input and primary source of value in building organizational capabilities is knowledge (Grant, 1996a). As Kogut and Zander (1992) put it, the theoretical challenge is to understand the knowledge base of a firm as resulting to a set of capabilities that constitute its sources of competitive advantage. Interestingly enough, this appreciation of knowledge as a fundamental factor, is already anticipated (as with a large part of current resource-based thinking) in the work of Penrose. In particular, Penrose (1959) argues that the potential uses of services rendered by firm resources vary along with changes in firm knowledge. Furthermore, Penrose, by introducing the distinction between "objective" knowledge and experience, and by emphasizing the critical role of the latter in firm growth, preempts the now common distinction between explicit and tacit knowledge (see for example Grant, 1996a,b; Nonaka, 1994) introduced by Polanyi (1966).

But why organizational knowledge? Because knowledge may be argued to constitute the key conceptual lens for understanding the firm as a dynamic and ever evolving social micro-system. For it is through shared and socially embedded knowledge that organizational members interpret environmental stimuli (e.g., competitors' moves, customers' changing needs, emerging technologies etc). These interpretations may in turn ignite internal adaptive responses to build appropriate skills and to synthesize these into core competencies, that are themselves (these responses) the

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product of knowledge exploitation and integration. Within this line of reasoning then, it is the quality of knowledge created (Nonaka, 1994) and of integration mechanisms (Grant, 1996a,b) that constitute the ultimate sources of sustained competitive advantage. While the links between knowledge and firm capabilities on the one hand, and between knowledge and competitive advantage on the other, have been further elaborated in the work of Fiol (1991), Hamel (1991), Grant (1996a,b), Nonaka (1994) and Reed and deFillipi (1990) among others, no detailed explanations are offered as to the origin of organizational capabilities (Verona, 1999). Further theoretical work is needed to address the systemic subtleties involved in organizational knowledge creation and exploitation.

It also seems that this theoretical perspective is not yet mature enough to allow for empirical testing, at least not in the manner of large scale surveys that are common in strategy research. Instead, more qualitative (e.g., ethnographic) methodological approaches are warranted here, given the inherently abstract nature of concepts such as knowledge creation and exploitation that would necessarily be involved in such a research program. How, for example, managerial experience and the related "team capital" (Penrose, 1959), or idiosyncratic firm history (Teece *et al.*, 1997) can be evaluated and "measured" against complex processes of transformational change (e.g., repositioning)?

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APPENDIX 1: DESCRIPTIVE STATISTICS AND PEARSON CORRELATIONS AMONG VARIABLES

			Variable									
	Mean	SD	1	2	3	4	5	6	7	8	9	10
(1) Number of employees (log)	4.36	1.22	1									
(2) Threat of substitutes	2.89	1.58	0.03	1								
(3) Entry barriers	3.63	1.33	−0.01	0.1	1							
(4) Power of suppliers	3.59	1.00	−0.22**	0.17	−0.37***	1						
(5) Competitive rivalry	3.02	1.08	0.12	0.27***	0.03	0.16	1					
(6) Power of buyers (log)	2.88	1.07	0.00	−0.07	0.11	−0.03	0.09	1.00				
(7) Strategy	3.43	0.74	0.28***	−0.05	0.01	−0.40***	−0.24**	0.04	1.00			
(8) Firm Assets	3.50	0.66	0.21**	−0.01	0.09	−0.32***	−0.34***	−0.04	0.70***	1.00		
(9) Profitability	2.90	1.02	0.29***	−0.04	0.19*	−0.49***	−0.11	−0.06	0.44***	0.41***	1.00	
(10) Market Performance	3.49	0.74	0.30***	−0.09	0.14	−0.36***	−0.32***	0.04	0.67***	0.64***	0.51***	1.00

$* \; p \leq 0.10$; $** \; p \leq 0.05$; $*** \; p \leq 0.01$.

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APPENDIX 2: MEASURES AND CONSTRUCT VALIDATION RESULTS

Content validity

Most of the scales employed have been adopted from existing and validated scales used in the extant literature. With respect to capabilities measures, for which no established relevant scales exist, specific items were developed based on theoretical contributions from resource-based scholars as well as from in-depth discussions with academics and CEOs during the pre-testing phase of questionnaire development. Moreover, as described in the sample and data collection section, considerable efforts were made during the field-based validation of the research instrument to ensure content validity via establishing relevance with practice and the elimination of wording problems (such as biased, ambiguous, inappropriate or double meaning items).

Construct validity

To establish construct validity, a series of empirical tests were used to examine the measurement properties of the indicators, namely *unidimensionality, reliability and validity*. After an initial examination procedure that sought to identify items exhibiting low item-to-construct correlation or items loading significantly to more than one construct dimension, we tested the construct validity of our measures by employing confirmatory factor analysis (CFA) using EQS (Bentler and Wu, 1995). Unlike the traditional and more commonly used exploratory factor analysis (EFA), CFA contains inferential statistics that allow for hypothesis testing regarding the construct validity of a set of measures, leading to a stricter and more objective interpretation of validity than does EFA (Gerbing and Anderson, 1988).

Unidimensionality

Unidimensionality in our case means that, for example, the set of indicators gauging innovative differentiation strategy, relate exclusively to this construct and not to another, say, marketing differentiation. Two sets of statistics were used for the verification of the unidimensionality hypothesis: (a) the significance of the factor loadings, that is the estimated correlation between a particular item and the latent construct it represents, and (b) the overall acceptability of the measurement model in terms of the model's fit to the data, using a X^2 test and adjunct fit indexes (see Table I). In our case the two first-order measurement models (i.e., Performance and Competitive Rivalry) exhibit acceptable model fit, and all item-to-construct loadings are statistically significant, thus demonstrating the unidimensionality of the scales used.

The same holds for the two second-order measurement models of Strategy and Firm Assets. A second-order model of say, competitive strategy, is based on a hierarchical structure in which Strategy is assumed to affect more specific strategy dimensions (i.e., innovative differentiation, marketing differentiation and low cost) which in turn are measured by the specific items. In this conceptual view, Strategy is a higher (second) order, more abstract construct that is not directly measured. In contrast, more specific strategy dimensions are viewed as lower (first) order factors that are presumed to be caused by Strategy. The dimensionality of this hypothesized structure, of both Strategy and Firm Assets, was supported by our data as manifested by the overall acceptability of the two respective measurement models, in terms of the CFI (and Robust CFI) fit index that exceeds the cut-off point of 0.90, and also by the significance of the first and second order factor loadings.

Reliability

With respect to *reliability*, we computed the composite reliability estimates (Fornell and Larker, 1981) which are directly analogous to the commonly used coefficient alpha statistics. As shown in Table II all are quite satisfactory (well above the customary cut-off level of 0.70) thus providing confidence that the individual items used are all consistent in their measurements and reliable. In addition all coefficients exceeded Nunnally's (1978) recommended 0.70 level of internal consistency.

Convergent validity

Convergent validity was examined by computing the indexes of average variance extracted, that is the amount of construct variance relative to measurement error. An average variance extracted of at least 0.50 (i.e., 50 percent) provides support for convergent validity (Gerbing and Anderson, 1988; Fornell and Larcker,

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Table I. Measures and tests of unidimensionality

STRATEGY

Please indicate *the extent* to which you *use* each of the following competitive methods (1: much less than competitors . . .5: much more than competitors)

	Measures	First order loadings	Second order loadings
Innovative Differentiation			0.991
	R&D expenditures for product development	0.740[a]	
	R&D expenditures for process innovations	0.802	
	Emphasis on being ahead of competition	0.671	
	Rate of product innovations	0.818	
Marketing Differentiation			0.811
	Innovations in marketing techniques	0.895[a]	
	Emphasis on marketing department organization	0.893	
	Advertising expenditures	0.698	
	Emphasis on strong sales force	0.716	
Low Cost			0.846
	Modernization and automation of production processes	0.800[a]	
	Efforts to achieve economies of scale	0.717	
	Capacity utilisation	0.647	

Model Summary Statistics: $X^2(44) = 99.526$; $p < 0.001$; CFI = 0.935; Robust CFI = 0.941
All first and second order loadings significant at $p < 0.01$
[a]Loading fixed to 1 for identification purposes

FIRM ASSETS

Please indicate for each of the following, you firm's *strength* relative to competition (1: much weaker than competitors. . .5: much stronger than competitors)

	Measures	First order loadings	Second order loadings
Organizational/ Managerial			0.685
	Managerial competencies	0.765[a]	
	Knowledge and skills of employees	0.763	
	Firm climate	0.661	
	Efficient organisational structure	0.773	
	Coordination	0.608	
	Strategic planning	0.646	
	Ability to attract creative employees	0.617	
Marketing			0.764
	Market knowledge	0.699[a]	
	Control and access to distribution channels	0.636	
	Advantageous relationships with customers	0.789	
	Customers "installed base"	0.748	
Technical			0.893
	Efficient and effective production department	0.814[a]	
	Economies of scales and technical experience	0.759	
	Technological capabilities and equipment	0.706	

Model Summary Statistics: $X^2(75) = 141.138$; $p < 0.001$; CFI = 0.922; Robust CFI = 0.920
All first and second order loadings significant at $p < 0.01$
[a] Loading fixed to 1 for identification purposes

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Table I. (*Continued*)

PERFORMANCE

Please indicate for each of the following, your firm's performance relative to competition for the last three years (1: much below the average...5: much above the average)

	Measures	First order loadings
Market Position	Sales volume	0.803
	Growth in sales volume	0.755
	Market share	0.749
	Growth in market share	0.789
Profitability	Profit margin	0.840
	Return on own capital	0.810
	Net profits	0.839

Model Summary Statistics: $X^2(13) = 64.897$; $p < 0.001$; CFI = 0.924; Robust CFI = 0.930
All first order loadings significant at $p < 0.01$

INDUSTRY FORCES

How would you evaluate the intensity of competition your firm is facing with respect to: (1: very weak competition...5: very fierce competition)

	Measures	First order loadings
Competitive Rivalry	Product characteristics	0.612
	Promotional strategies among rivals	0.774
	Access to distribution channels	0.707
	Service strategies to customers	0.679

Model Summary Statistics: $X^2(2) = 7.278$; $p = 0.026$; CFI = 0.968; Robust CFI = 0.995
All first order loadings significant at $p < 0.01$

INDUSTRY FORCES: Single item measures

Barriers to Entry (1: very easy to enter...5: very difficult)
Threat of Substitutes (1: not at all...5: extreme)
Bargaining Power over Suppliers (1: very weak...5: very strong) (reverse scored to indicate power *of* suppliers)
Bargaining Power of Buyers (% of sales to three biggest buyers)

1981). In our case (see Table II) all constructs exceeded the cut-off point with the exception of organizational/managerial assets and competitive rivalry constructs, which are nevertheless very close to being acceptable (0.48 in both cases).

As a further test of convergent validity of the performance measures, the accounting measures of the 107 firms (out of the original 187) for which financial data could be obtained were correlated with their subjective responses. In this subsample, return on sales, return on own capital and net profits averaged over the three year period covered by the survey correlated significantly with the respective subjective measure (0.48, 0.44 and 0.53, $\rho < 0.01$ respectively). These correlations between objective and subjective performance measures grew in magnitude when industry effects were controlled for, by examining more homogenous subsets of firms. For example, when performance measures convergence was analyzed for firms in the food

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Table II. Reliability and convergent validity tests

	Construct Reliability[a]	Cronbach's[a]	Variance Extracted[b]
Conceptual Domain: Strategy			
Innovative Differentiation	0.84	0.82	0.58
Marketing Differentiation	0.88	0.86	0.65
Low Cost	0.77	0.73	0.52
Firm Assets			
Organizational/Managerial	0.87	0.88	0.48
Marketing	0.81	0.77	0.52
Technical	0.80	0.80	0.58
Performance			
Market position	0.86	0.85	0.60
Profitability	0.87	0.87	0.60
Industry Forces			
Competitive Rivalry	0.79	0.83	0.48

[a] Construct reliability (see Fornell and Larcker, 1981 for computation formula)
[b] Average variance extracted (i.e., the proportion of variance in the construct that is not due to measurement error) (see Fornell and Larcker, 1981 for computation formula)

industry, the correlations increased to 0.71, 0.60 and 0.65 respectively. These results are consistent with recent research which indicates that subjective assessments of business performance obtained by senior managers correlate strongly, albeit not perfectly with objective measures (see for example, Dess and Robinson, 1984; Hart and Banbury, 1994; Naman and Slevin, 1993; Venkatraman and Ramanujam, 1986, 1987).

Moreover, in order to examine for the potential of cyclical effects going on in the industries studied, we collected data on indexes of production over a six years period (i.e., for the 1991-93 period on which subjective performance evaluations were referring, and for the consecutive three years period 1994-96). The inspection of variability of industrial production showed that only for 3 out of the 13 industries studied, cyclical effects of relatively medium magnitude were present. Therefore it appears that cyclical effects were not an inhibiting factor for the validity of results obtained.

Discriminant validity

Discriminant validity is established when it can be shown that two or more constructs pertaining to

Table III. Discriminant validity tests

Pair of Constructs ($\Phi = 1$)	
Conceptual Domain: Strategy	X^2(d.f. = 45)
Innovative Differentiation vs. Marketing Differentiation	136.938 (p[1] < 0.01)
Innovative Differentiation vs. Low Cost	106.430 ($p < 0.01$)
Marketing Differentiation vs. Low Cost	156.204 ($p < 0.01$)
Base Model (unconstrained)	$X^2 = 99.526$ (d.f. 44)
Firm Assets	X^2(d.f. = 76)
Organizational/Managerial vs. Marketing	224.850 ($p < 0.01$)
Organizational/Managerial vs. Technical	188.389 ($p < 0.01$)
Marketing vs. Technical	181.082 ($p < 0.01$)
Base Model (unconstrained)	$X^2 = 141.138$ (d.f. 75)
Performance	X^2(d.f. = 20)
Market position vs. Profitability	177.194 ($p < 0.01$)
Base Model (unconstrained)	$X^2 = 64.897$ (d.f. 19)

[1] Denotes the significance of X^2 difference between the constrained and unconstrained model

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the same conceptual domain (e.g., the three generic strategies) are not perfectly correlated (Widaman, 1985). A commonly used approach for testing the discriminant hypothesis compares two CFA models: one in which the correlation of a pair of latent variables is constrained to equal 1.0, and another in which the correlation is free to vary (Venkatraman, 1989). A significantly lower X^2 value for the unconstrained model, provides support for discriminant validity. As shown in Table III, all model comparisons support the discriminant validity of our measures.

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