

AGRICULTURAL COMPETITIVENESS: MARKET FORCES AND POLICY CHOICE

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The Bases for a New Strategic Management Approach to Competitiveness*

INTRODUCTION

Expressing his frustration with the term 'competitiveness' the American Secretary of Labour, Robert Reich, has remarked that 'rarely has a term in public discourse gone so directly from obscurity to meaninglessness without an intervening period of coherence' (*Wall Street Journal*, 1992). This lack of coherence regarding definition and measurement makes it difficult to compare research efforts on competitiveness as they accumulate around the world. Indeed, the problem is no less intractable within national boundaries. Coffin *et al.* reviewed empirical analyses of Canadian food-processing industries published between 1987 and 1992 and found the assessments of the competitiveness of 18 three- and four-digit SIC industries to have a high degree of discordance (Coffin *et al.*, 1993). For example, the Canadian wheat-milling and dairy-processing industries were each scored as highly competitive, moderately competitive and non-competitive by various authors during the six-year period. How can policy makers respond to the clarion call for increased competitiveness when the research community cannot present a coherent assessment of the current status of domestic industries *vis-à-vis* global rivals?

Since 1990, the Canadian agrifood research community has made some progress towards codifying a definition of competitiveness that is driving research efforts to measure the relative competitive positions of food industries. In 1989, the Agriculture Minister, Donald Mazankowski, established a task force on competitiveness as part of a wholesale review of Canadian agriculture policy. The task force adopted a simple definition of competitiveness: *the ability profitably to gain and maintain market share in the domestic and/or export market* (Agriculture Canada, 1990). The ready agreement to this definition stems from its simplicity and from the fact that industry managers find meaning in it. Managers accept profitability and market share as performance indicators more easily than many alternative measures. Also market share is an indicator of performance that is easily aggregated from the firm level to the industry and sector levels without loss of meaning for analysts, policy makers and managers.

The use of a definition that is coherent at the firm and industry levels of analysis provides the opportunity for agricultural economists to exploit the

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literatures in organization theory and strategic management to build normative and positive models of competitiveness. While there has been little bridge building from economics to the management literatures, there has been a surprising effort on the part of management scholars to bring economics into their research. Most agricultural economists who work in the agribusiness management field have adopted the models of Michael Porter (1980, 1985) for their work in strategic management. The attraction of these works is their reliance on industrial organization economics as the basis for positive and normative models of strategic management. Porter's contribution to strategic management is that he has developed a framework for interpreting the structure and behaviour of an industry in a context for firm-level management decisions by existing or potential rivals in the industry.

Recently, a new effort to build a theory of strategy has emerged in the management literature. It is based upon the recognition that tangible and intangible assets (called resources) in an organization can earn quasi-rents over a sustained period when combined in a strategic manner. This theory borrows unabashedly from microeconomics, industrial organization economics and Schumpeterian concepts of disequilibrium. Mahoney and Pandian (1992) state that this effort in the development of theory 'is good science, properly speaking, because it stimulates good conversation within the strategic management field. The resource-based approach is attracting the attention of a growing number of researchers precisely because the framework encourages a dialogue between scholars from a variety of perspectives.' The remainder of this paper will be an attempt to engage agricultural economists in this conversation among scholars by showing the value of the resource-based perspective to the development of a coherent approach to competitiveness research derived from firm-level analysis.

THE RESOURCE-BASED THEORY OF COMPETITIVE ADVANTAGE

The development of the resource-based theory of strategic management is quite recent. The articles that present a well-synthesized argument and reviews of relevant literature date from about 1990; examples are Barney (1991), Conner (1991) and Mahoney and Pandian (1992). In many ways, the origin of this theory is the literature on organizational economics that was the subject of 'conversations' among management scholars in the 1980s. One finds a significant effort by organizational theorists to adopt economic models, particularly agency theory and transaction cost economics, to micro-level analysis of behaviour (Barney and Ouchi, 1986; Eisenhardt, 1989; Mahoney, 1992). Much of the theoretical development in this field is concerned with finding points of compatibility between traditional organizational theories and alternative economic models, including the behavioural theory of Simon (1957), property rights theories of Coase (1960) and Commons (1934) and evolutionary theories of the firm (for example, Nelson and Winter, 1982). While no meta-model of the firm has yet arisen from this pluralistic approach to understanding firm-level behaviour, several important points of tangency have been found. Mahoney

(1992) provides a lucid discussion of the integration of these theories and an astonishing reference list (521 works).

Using organization theory, several researchers examined such strategies as diversification and related acquisitions (Barney, 1988; Ranmanujam and Varadarajan, 1989). Empirical and conceptual research led tangentially to the development of the resource-based model to explain the performance effects of strategies chosen by firms, including, but not limited to, acquisitions, diversification and growth.

The central construct in this theory is *firm resources*. Resources include the physical, financial and human capital resources that have been the basis for economic models since time immemorial. Additionally, resources include knowledge, information, intangible assets (such as brand names and market position), decision-making processes and coordinating systems. These resources are not embodied in the human capital of the firm, that is the individuals, but are the components of *organizational capital* (Tomer, 1987). The combination of resources employed in the firm supports the strategy chosen by the management. Strategy may be defined actively as the sum of long- and short-term decisions regarding the activities of the firm, or defined passively as the firm's observed position in the market (Mintzberg, 1978). In each case, one observes a causal relationship between the resources in the firm and the observed strategy.

The strategy of the firm provides, at least in the short term, the opportunity to earn above-normal returns in the market. That is, some of the resources in the firm earn quasi-rents or Pareto rents because of the unique combination of resources engendered by the strategy. The theory posits that not all resources will earn quasi-rents, especially those that are widely used by competitor firms, but that some resources will drive the stream of above-normal returns. Can these quasi-rents be bid away by the market? Often the answer is yes. Quasi-rents are most easily dissipated for physical and financial capital and, to a lesser degree, for human capital. They are difficult to bid away if the resource that generates the rent stream is part of the organizational capital, which is less transparent to rivals seeking to emulate a successful strategy.

Barney (1991) shows that sustained competitive advantage (the ultimate goal of strategic management) requires that resources must be heterogeneous among firms and that there must be immobility of resources between firms. First-mover advantages are not sustainable if the relevant resources are available to all firms or are easily bid away from the first mover. This argument is easily recognizable to agricultural economists as the technological treadmill of agricultural production. New production techniques offer short-term first-mover advantages (Schumpeterian rents) to farmers, but the rapid diffusion of this technology (the resource) results in a dissipation of rents. One observes the same phenomenon in the food-processing industries. Advances in quality management, such as using Total Quality Management programmes (TQM), Hazard Analysis and Critical Control Point systems (HACCP), or achieving certification for quality standards, have provided first-mover advantages in several food industries that are dissipated in three years or less by rivals imitating the strategy.

What sustains competitive advantage? Barney shows that there are four characteristics of resources that lead to sustained quasi-rent streams.

- (1) The resource must be *valuable*; that is, it makes a positive contribution to exploiting a position in the market.
- (2) The resource must be *rare*; it cannot be widely available to competitors.
- (3) The resource must be *inimitable* (or imperfectly imitable) by competitors.
- (4) There *cannot be substitutes* easily available for the resource.

Inimitability is a key characteristic of quasi-rent producing resources. A resource cannot be easily or perfectly replicated by a competitor if it arises from (1) the idiosyncratic history of the firm (path dependence), (2) socially complex phenomena within or between organizations, or (3) causal ambiguity in the strategy process. Path dependence relates to the historical development of a resource that cannot be imitated by rivals whose histories differ. An example is a corporate culture that developed from an entrepreneurial vision adopted widely throughout the firm as it grew from a small, leader-centred organization. The imbeddedness of the culture is not easily imitated by competitors who have not passed through the same growth states and celebrated the same milestones in cultural development. Socially complex phenomena are inimitable because they develop from personal interrelationships and complex and unique decision processes. An example is a situation of mutual trust that exists between a buyer and supplier in a vertical strategic alliance. The trust, built upon a complex social interaction among managers in two companies, allows for effective mutual decision making and a long-term mutual recognition of joint strategies that will be imperfectly imitable by rivals of both firms. Causal ambiguity means that there are certain cause–effect relationships between resources and sustained performance that are poorly understood and, hence, difficult to articulate or to imitate. It is unfortunately true that the bounded rationality of managers prevents them from fully understanding how quasi-rents arise from the resources in the firm. A firm may easily impute its competitive advantage to a newly adopted physical technology, when the true source of the quasi-rent stream is a training programme for workers that leads to continuous quality improvement. Barney (1991) argues that poor understanding of causal relationships within a firm is a necessary condition for the inimitability of resources by rivals. I hold that causal ambiguity within the firm is sufficient for it to protect the resource from imitation, but not necessary. The firm may understand the causality internally, but be able to mask the causal relationships from its rivals.

The foregoing discussion posits that resources are the source of sustainable quasi-rents because their heterogeneity among firms often arises from the complex, idiosyncratic way in which they are combined within a firm. This is especially true because organizational capital arises from social processes in the firm that are by nature peculiar, path-dependent, complex and ambiguous. If one implants physical and human resources within such a complex matrix of organizational capital, the resulting combination (that is, the strategy) will be difficult to imitate even if many of the individual resources are homogeneous among firms. This complex matrix also acts as a mobility barrier for resources, by masking their value (causal ambiguity) and by making the process of extrication messy. That is, it is hard to bid away a resource, such as a research

scientist, from a rival firm and replicate the quasi-rent stream of the rival firm. The scientist's subsequent research programme may be bounded by contractual non-disclosure and by their separation from other human and organizational capital that supported their work in the rival firm.

Rumelt (1984) labelled the mechanisms for sustaining quasi-rent streams 'isolating mechanisms'. Isolating mechanisms prevent the *ex post* equilibration of rents in an industry. Mahoney and Pandian (1992) draw powerful parallels between these firm-level mobility barriers for resources, entry barriers that exist at the industry level and the mobility barriers for firms between strategic groups within an industry (McGee and Thomas, 1986). Thus sustainable quasi-rent streams can exist because of isolating mechanisms that protect resources within firms, because of mobility barriers that keep a firm from joining a particular strategic group and pursuing a common strategy, and because of entry barriers which prevent the appropriation of monopoly rents by new entrants. Mahoney and Pandian (1992) derive a list of isolating mechanisms that exist at the level of the firm from organizational theory, the resource-based strategy literature, and that exist at the industry level from the organizational economics literature. Table 1 gives an abbreviated version of the Mahoney and Pandian list that highlights the rather eclectic sources for isolating mechanisms. Importantly, these isolating mechanisms associated with industrial organization reflect the traditions of the 'Harvard School', the 'Chicago School' and the 'Austrian School' of competitive disequilibrium. That is, above-normal profits or quasi-rents accrue to strategies because resources are immobilized by market power (entry/exit barriers), by economies of scale and scope, and by Schumpeterian innovation which is based on new combinations of resources.

Some of the standard-bearers of the resource-based theory of competitive advantage are uneasy with the inclusion of Bain-type market power arguments in the list of isolating mechanisms (Peteraf, 1990; Conner, 1991). They argue that the innovation-based isolating mechanisms associated with Schumpeterian models and the efficiency-based isolating mechanisms associated with Demsetz (1973) are more directly related to the firm-level phenomena from which the resource-based theory is derived. However, there are several isolating mechanisms that have explanatory power for firm-level models as well as aggregate industry (IO) models. These include asymmetric information, sunk costs, learning curves, imperfect factor markets and property rights to specific assets (including patents, trademarks and other protection for intellectual property). Given the vigour and the short history of this 'conversation' among scholars, it is less useful to worry about excluding various research traditions than to continue to build an empirically useful theory.

At this point, it will be useful to recapitulate why the resource-based theory is worthy of attention from agricultural economists. After all, our profession has been imputing value to land, labour and capital for a very long time and, on the surface, this theory seems to be little more than the explicit, though tardy, recognition that neoclassical production economics is all one really requires to have a viable theory of firm strategy. That is not the case. The development of the resource-based theory takes neoclassical firm theory as a point of departure, though it immediately abandons unbounded rationality and

TABLE 1 *Isolating mechanisms from resource-based theory of strategy, from organizational economics and from industrial organization*

Mechanisms from resource-based theory

Unique or rare resources which are immobile
 Inimitable or rare managerial talent
 Distinctive competencies that cannot be replicated
 Invisible assets that cannot be observed by competitors
 Time compression diseconomies for imitation

Mechanisms from organizational economics

Schumpeterian innovation by combining new resources
 Organizational innovation with slow diffusion processes
 Uncertain imitability due to bounded rationality and causal ambiguity
 Idiosyncratic assets
 Reputation and image
 Ill-defined property rights that limit resource mobility
 Asymmetric information
 Patents, trademarks and copyrights

Mechanisms from industrial organization

High sunk costs
 Investments with high exit costs
 Proprietary learning curves
 Legal entry restrictions
 Economies of scale combined with imperfect capital markets

certainty, and requires the economic actors to follow procedural rather than substantive rationality in making decisions, to be part of political coalitions in choosing strategies and to use complex decision heuristics. It dismisses aggregate measures of resources such as land, labour and capital in favour of celebrating idiosyncratic resources. It replaces static production functions with plastic processes that include decision-making and control systems as explicit arguments. Even when the analysis is focused at the level of the firm, the resource-based theory prises the lid off 'the black box' and searches for the internal factors and processes that are invisible when observing the strategy of the firm.

EXTENDING THE RESOURCE-BASED THEORY TO THE ANALYSIS OF COMPETITIVENESS

What is the value of a firm-level theory of strategy to the determination of the competitiveness of some aggregation, such as the fluid milk sector or the canned vegetable industry of a given country? One can answer this question from two points of view. The first is from that of analytical methodology. It is unsound to treat the firms within an industry as homogeneous components of

the whole. By concentrating our analysis at the industry or sector level and imputing common resources, strategies and performance to the constituent firms, one commits the error of overabstraction (Castrogiovanni, 1991). The second point of view reflects the realities of public policy. Governments are interested in promoting industry and sectoral competitiveness but cannot afford the budgetary implications of the interventions necessary to guarantee industry-wide or sector-wide performance. Instead, governments are seeking to disengage from direct financial support of the agrifood system, especially production agriculture, and are seeking industry–government partnerships in devising strategies for competitiveness. Thus it is necessary to understand how firms maintain competitive advantage so as to design public policy initiatives that are compatible with ‘private policy’ initiatives of industry partners.

The problem of overabstraction

It was suggested earlier that a definition of competitiveness which included market share allows for easy aggregation of firm-level shares into industry- and sector-level shares of global markets. Import and export orientation ratios are examples of aggregate market shares. At the national level these ratios reflect the sum of the performance of the firms in an industry in protecting national market share from incursion by foreign rivals, and in winning market share abroad in competition with foreign rivals. Market share won by an individual firm from global rivals in the domestic or world market translates directly into an increase in aggregate competitiveness.

However, let us consider the case of a food-processing industry which is losing domestic market share to foreign competitors. Suppose that the four leading domestic rivals are sustaining their domestic market shares and that all aggregate share loss results from share losses by fringe manufacturers. In essence, the logical conclusion of this competitive process is that four large domestic rivals will exist in competition with foreign rivals and that the other domestic competitors will disappear .

By way of counterpoint, consider the case of the same food-processing industry with aggregate share loss to foreign rivals. Suppose that the four leading firms in the industry are losing share because they cannot compete with foreign rivals on a scale (low cost) basis. The smaller manufacturers are actually increasing domestic market share because they are following differentiation strategies for well-defined market segments. The logical conclusion of this process may be that a sub-set of the four market leaders will survive as a result of internal restructuring to compete with foreign market leaders on a cost basis, but that smaller firms will continue successfully to exploit domestic market niches for which their resources and strategies are optimized.

At the aggregate level, these two scenarios are equivalent. The import orientation ratio is increasing and the industry’s competitiveness is in visible decline. But the consequences for industry development, employment, regional growth, consumer satisfaction, innovation and other performance indicators are probably radically different between the scenarios. Below the industry level, there is no equivalence from an analytical point of view.

Castrogiovanni (1991) calls this problem overabstraction. If a researcher chooses a single level of aggregation (appropriate or otherwise) and imputes behaviour and performance to a lower level of aggregation, then the analysis is an overabstraction of the underlying level. Castrogiovanni cautions that explicit analysis of adjacent levels of aggregation is necessary to avoid overabstraction. Also it gives more depth to the analysis of the level of aggregation of primary interest. Thus the analysis of industry competitiveness will benefit from examination of a larger aggregate (the sector or the macroeconomic environment) and of the underlying aggregate (the firms).

Public policy and firm-level competitiveness

With regard to public policy interest, the argument for using a firm-level analysis is similar to the reasoning above. There are obvious differences in the public interest between the two scenarios described above. Is domestic competition policy a barrier to achieving 'world scale'? Do domestic factor markets favour a market-segmentation strategy based on value-added, in comparison to scale-oriented production at minimal cost? If an industry has built its competitive future on exploiting specific segments, what is the role of government *vis-à-vis* product standards, food safety, public support of training programmes and technology transfer within and across market segments?

The Canadian task force on agrifood industry competitiveness cautioned its government audience that a vital, competitive industry would be likely to have some rivals following differentiation strategies, some seeking cost advantage and some following focus or niche strategies (Agriculture Canada, 1990). Using the language of the resource-based theory of strategy, the competitors in this industry will be individually and jointly successful at maintaining or gaining market share on a sustained basis because they are exploiting different resources and relying upon different isolating mechanisms to protect the rent streams from these resources.

If government is to be a successful partner with industry in enhancing competitiveness, it is vital to know what successful and unsuccessful strategies are in place in the industry. 'One-size-fits-all' policy will not help an oligopolistic industry with several different strategies. Even the ubiquitous panacea of 'enhanced job training programmes' may be disruptive. Suppose the industry leader is competitive because of its commitment to being a 'learning organization' and because it makes the necessary investment in in-house training programmes. Should the government subsidize the imitation of this successful strategy by rivals by spending public money on identical training programmes? Will this enforced dissipation of quasi-rents throughout the industry make the whole industry more competitive, or just erode the global position of the industry leader?

Aggregation and a framework for analysis

Figure 1 shows the levels of aggregation important to an analysis of industry competitiveness. The industry, or rivalry environment, contains firms producing outputs for a well-defined market, such as a three- or four-digit SIC industry. The figure shows two strategic groups within the industry in which a common strategy is employed (McGee and Thomas, 1986). Two firms, labelled H and I, are not members of strategic groups. Surrounding the industry is the task *environment*, defined as the organizations that directly affect the performance of the firms in the industry (Bourgeois, 1980). This level of aggregation includes the elements of Porter's (1980) five forces model and

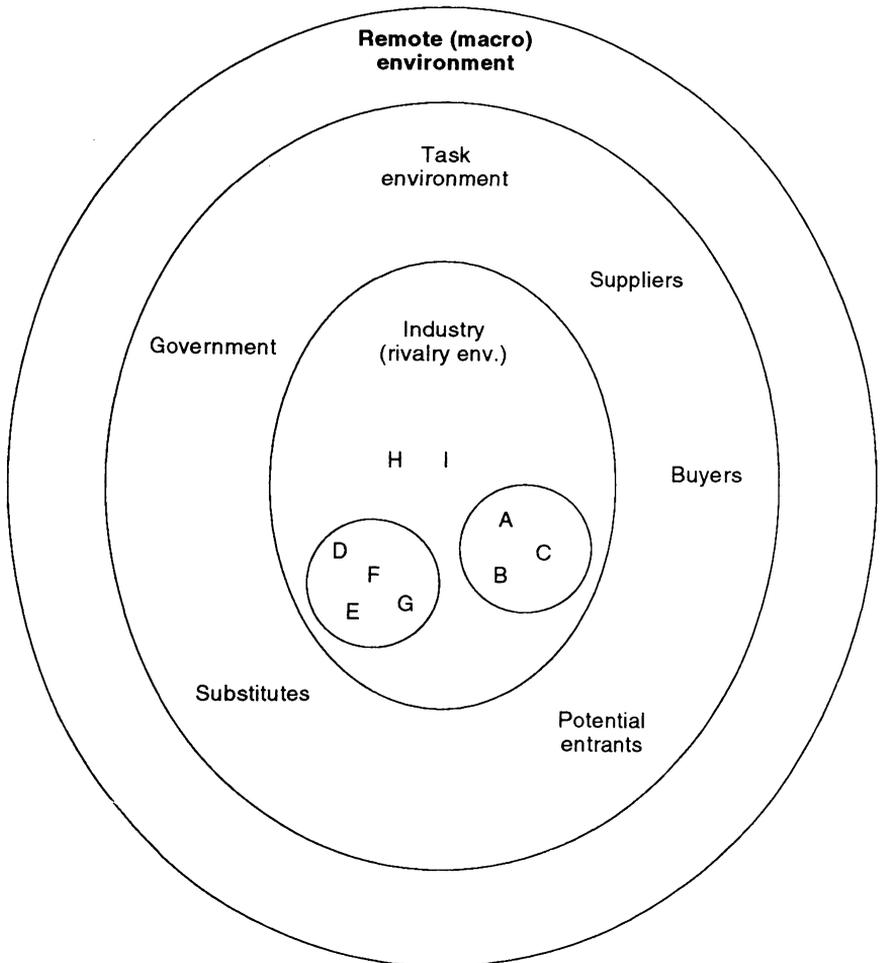


FIGURE 1 *Levels of aggregation for competitiveness research*

industry-specific governmental intervention. In many research contexts, the task environment is equivalent to a *sector*. Surrounding the sector/task environment is the macro environment, which includes sociocultural, economic, political and regulatory forces shared across sectors of the economy.

The research question being posed, and by implication the target audience for the research output, will determine which of these levels of aggregation is, or are, the most appropriate. My experience is that government research contracts to ascertain the level of competitiveness are typically written for a sector (including the vertical coordination system between the farm and the retail sector) or for one or more industries in cross-section. It is common in the request for research proposals to ask for an analysis of policy implications of the results. A useful point of departure is that there are several drivers of competitiveness of an industry which arise from the nature of the aggregation in Figure 1 (Martin *et al.*, 1991). There are several drivers that are controlled by firms. These relate to the resources and strategies of the firms and include products, technology, human resource training, research and development, scale and scope, and linkages to upstream and downstream firms. There are also drivers which are controlled by government, including fiscal and monetary policy, trade policy, regulations and standards, education and training policy and R&D policy. Some factors that drive competitiveness, such as input prices and demand conditions, are only quasi-controllable by either firms or governments. Finally, there are factors that are totally beyond the control of firms; most important is the natural resource base.

An analysis of the competitiveness of the industry begins with measures of aggregate performance (for example, market share, profits or value-added) and, where available, measures of firm-level performance. One must identify the resources that lead firms in the industry to superior performance and the isolating mechanisms that sustain their competitive advantage. Do they arise as a result of government-controlled or firm-controlled drivers? Is there evidence that industry-level isolating mechanisms, such as entry barriers, exist to sustain the competitiveness of the industry and its constituent firms? Is there evidence that government policy actively inhibits certain strategies? As an example, does mandatory supply management in the milk production sector cause raw milk to be so costly to the manufacturing milk industry that, in essence, the farmers appropriate all the quasi-rents that would otherwise accrue to the manufacturing firms?

DATA AVAILABILITY, CROSS-INDUSTRY ANALYSIS AND FINAL THOUGHTS

Doing firm-level research in support of studying competitiveness is difficult compared to mining national census of manufactures data. The data for individual firm performance by industry are often subsumed in consolidated financial statements. The strategic business unit (SBU), the unit of analysis for most strategy work, may be just one asset in a huge corporate portfolio; or it may be a privately held firm that releases no financial statements. In the agrifood industries, these types of ownership structure are common.

Nonetheless, data can often be obtained on a line-of-business basis or through third parties which collect data from firms, such as PIMS. In addition, much of the information one requires on resources can be found in trade journals. Public announcements of increased (or decreased) plant capacity, new processing and distribution technologies, and product developments are readily available. In addition, many industries have organized *benchmarking* projects where top performing companies for many relevant firm resources are identified. This source is particularly useful for the process-oriented resources that are included in organizational capital. Finally, surveys of industry managers can lead directly to inter-firm comparisons of resources. An example of this was a study done that asked Canadian managers to rate their firm's resources relative to their most significant Canadian and most significant American competitor (George Morris Centre, 1992). Such data should not be dismissed out of hand as being less valid than 'hard' economic data.

A significant caveat is necessary when comparing two industries within a country (for example, is the fluid milk industry more competitive than the meat-packing industry?) or the same industry across national borders (is the Canadian fluid milk industry more competitive than its US counterpart?). The task environments of two different industries or the industry in two different countries will be different. The behaviour of buyers and suppliers, availability of substitute products, and industry-specific government intervention directly affect the ability of individual firms to generate and appropriate quasi-rents from their resources. To obtain a useful measure of the aggregate performance of the firms in the industry, it is necessary to quantify the effects of that task environment. That is, one must filter out the surrounding effects on aggregate industry performance before attributing differences in performance to the strategies used by firms in the industry. Dess and Beard (1984) have developed a useful method by using census of manufacturing data and national input-output tables to quantify the effects of the task environment on firm performance.

There is much to do to add the voices of agricultural economists to the discussion surrounding this new theory of strategic management. By adopting the model as the basis for competitiveness, we can contribute to the development of the theory by testing its usefulness in the aggregate analysis of competitiveness. To date, this has not been done in the management literature. However, with the relatively rich data sets that exist for the agriculture sector, in comparison to most manufacturing industries, and the active financial support of governments seeking to enhance competitiveness of agrifood industries, we may have an advantage in research resources relative to management scholars. I invite all of you to participate in a debate about competitiveness research and the value of the resource-based model to its progress.

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