

MARKET FRICTIONS AS BUILDING BLOCKS OF AN ORGANIZATIONAL ECONOMICS APPROACH TO STRATEGIC MANAGEMENT

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This paper shows that market frictions are fundamental building blocks for an organizational economics approach to strategic management. Various organizational economic approaches (transaction costs, property rights, real options, and resource-based) have distinctive focal problems and emphasize different combinations of market frictions. A wider recognition of the role of market frictions is useful for three main objectives. First, it helps identify an evolving market-frictions paradigm in strategic management. Second, it shows how two primary questions in strategy of why firms exist and why some firms outperform others and the three primary strategic goals of cost minimization, value creation, and value capture can be better joined and evaluated. Third, different combinations of market frictions can generate new research questions and advance theory development in the strategic management field. Copyright © 2013 John Wiley & Sons, Ltd.

INTRODUCTION

The purpose of this paper is to take stock and to look ahead concerning the role of market frictions as key building blocks of an organizational economics approach to strategic management. In terms of taking stock, this paper shows the logical cohesiveness, for at least the past quarter century, of the strategic management field's use and development of an organizational economics approach (Barney and Ouchi, 1986; Hesterly, Liebeskind, and Zenger, 1990; Rumelt, Schendel, and Teece, 1991) for addressing two primary questions: *why*

firms exist (the organizational boundary question¹) and *why some firms outperform others* (as measured by economic rents²). Towards this objective, we develop a market-frictions logic that considers evolving paradigmatic contributions from transaction costs, property rights, real options, and the resource-based approach³ (Mahoney, 2005).

Keywords: market frictions; organizational economics; cost minimization; value creation; value capture

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¹The organizational boundary decision (Mosakowski, 1991; Parmigiani, 2007) includes (1) the existence of the firm (Coase, 1937), (2) the vertical integration of the firm (Williamson, 1975), and (3) the scope of the firm (Teece, 1980).

²Economic rents refer to financial returns that are in excess of the opportunity cost of capital, and can be derived from a sustainable competitive advantage. In this sense, the resource-based economics approach (Montgomery and Wernerfelt, 1988) that focuses on economic rents is linked to the resource-based management approach that focuses on sustainable competitive advantage (Barney, 1991).

³In the current paper, the term resource-based approach includes the resource-based view (Peteraf, 1993; Wernerfelt, 1984), the knowledge-based view (Grant 1996; Kogut and Zander, 1992), and the dynamic capabilities view (Eisenhardt and Martin, 2000; Teece, Pisano, and Shuen, 1997).

Underpinning these two primary questions are three distinct yet interrelated strategic goals: cost minimization, value creation, and value capture.⁴ The interrelationship among these different strategic goals can be complements or substitutes. On the one hand, cost minimization directly contributes to value creation and can contribute to economic rents. Further, value creation and value capture are complementary when an expectation of value appropriation leads decision makers to carry out value-creating strategies under uncertainty. On the other hand, a single-minded pursuit to capture value can lead to lower value creation. Managerial practice must consider simultaneously the goals of cost minimization, value creation, and value capture of a specific strategic choice.

Theory development in strategic management has yet to fully synthesize this managerial challenge, however, although all of the necessary building blocks seem to be in place. Specifically, transaction costs theory regards the transaction as the unit of analysis to examine better ways to achieve the objective of (production and transaction) cost minimization through organizational boundary choices (e.g., make-or-buy decisions) and governance structure designs (e.g., line of authority and incentive systems) (Kor, 2006; Williamson, 1996). Property rights theory emphasizes value appropriation through ownership via residual claimancy and residual control rights (Alchian and Demsetz, 1972; Grossman and Hart, 1986), as well as the implications of property-rights partitioning for the economic value creation of resources (Jensen and Meckling, 1976; Kim and Mahoney, 2005). Real options theory includes interproject and intertemporal dimensions to organizational boundary decisions and economic value creation (Kogut, 1991; McGrath and Nerkar, 2004). The resource-based approach (Helfat and Peteraf, 2003; Penrose, 1959) emphasizes the continuing search for economic rents and sustainable competitive advantage, as well as individual skills and organizational routines (Nelson and Winter, 1982; Winter, 2003), using the bundle of resources

and capabilities as the unit of analysis (Barney, 1991; Teece *et al.*, 1997).

The discussion above reveals at least three points that motivate the current paper. First, each theory has its own canonical problem and specialized language, which may impose substantial difficulties in developing a more fully developed paradigm in strategic management. We maintain, however, that there is a shared organizational economics logic that enables us to coherently tie various strands of the research literature into one cord. Specifically, we seek to identify an evolving market-frictions logic, which can serve as a common language to facilitate better communication in the field. Second, these distinct theories attend to different goals (Coff, 2010; Zajac and Olsen, 1993) by emphasizing one or more of the three primary strategic goals that we identified. For example, while transaction cost economics emphasizes the minimization of transaction costs, real options theory also considers the economic value-creation potential of a strategy (e.g., the growth options enabled by follow-on investments). As suggested above, cost minimization, value creation, and value capture are often intertwined in firm-level strategy, and a framework that simultaneously considers these three goals is not only likely to be more relevant for management practice but also to be more fruitful for richer theory development in strategic management (Brandenburger and Stuart, 2005; Chatain and Zemsky, 2011; Dyer and Singh, 1998; MacDonald and Ryall, 2004). Third, successful efforts have been made to join organizational economics theories such as (1) transaction cost economics and property rights theory (Foss and Foss, 2005; Kim and Mahoney, 2005), (2) property rights theory and the resource-based approach (Kim and Mahoney, 2002; Miller and Shamsie, 1996), (3) the resource-based approach and transaction cost economics (Argyres, 1996; Madhok, 2002), and (4) transaction cost economics and real options theory (Folta, 1998; Leiblein and Miller, 2003). The pairwise joining of these theories suggests the presence of logical coherence, but does not fully reveal the fundamental commonalities among all these theories. We intend to extend this line of effort by seeking to identify such fundamental commonalities.

We suggest that greater paradigmatic theory development can be achieved by focusing on

⁴Following the formula for maximizing NPV, we consider cost minimization a subset of economic value creation, which is achieved by (1) increasing revenues, (2) reducing costs, and/or (3) reducing risk in ways that cannot be replicated by shareholders. We separate discussion of cost minimization from value creation to distinguish the different focuses of different organizational economics theories on their focal problems.

market frictions⁵ as the key unit of analysis. We first develop a more complete organizational economics framework by identifying the concept of market frictions as the common building blocks of these different theoretical lenses, through systematic use of the premises of the first fundamental welfare theorem of economics (Arrow and Hahn, 1970; Debreu, 1959). We further suggest that the focus of combining theories per se can be limiting, since it can predetermine a cluster of market frictions associated with each organizational economics theory. Moving from the molecular level of theories as clusters of market frictions to the atomistic level of the market frictions themselves as the unit of analysis will remove strategy theorists' constraints for developing new theory. Focusing on market frictions as fundamental building blocks provides an unconstrained choice of various new combinations of market frictions. We further look ahead and show that the market-frictions logic can help structure the organizational economics literature to enable recognition of paradigmatic themes and to generate new research questions.

The next section develops the market-friction logic and discusses its role in the development of various organizational economics theories. The third section proposes a framework for further paradigmatic theory development through joining market frictions underpinning cost minimization, value creation, and value capture, and illustrates how explanations and predictions of strategic phenomena can be achieved by using this framework. The last section provides conclusions.

TAKING STOCK: A MARKET-FRICTIONS LOGIC

The first fundamental welfare theorem of economics demonstrates that a competitive equilibrium leads to an efficient allocation of resources (Arrow and Hahn, 1970). Assumptions contained in this theorem include independence in consumption and in production (e.g., there

⁵ In this paper, the fundamental concept of market frictions is defined similarly to Arrow's (1969) description of the concept of transaction costs. Market frictions, in general, impede market efficiency and in particular cases may completely block the formation of markets (e.g., Akerlof, 1970). Thus, the concept of market frictions (like the concept of transaction costs) is a broad category for capturing "the costs of running the economic system" (Arrow, 1969: 48).

are neither interfirm externalities nor interproject and intertemporal spillovers), perfect information, and complete markets (Debreu, 1959). Under this theorem, firms are expected to earn zero economic rents in long-run competitive equilibrium (Cyert, Kumar, and Williams, 1993). However, as the strategy field emphasizes,⁶ the business world is fraught with market frictions, such as asymmetric and imperfect information (Holmström, 1979; Philips, 1988), uncertainty coupled with opportunism (Akerlof, 1970; Arrow, 1974), nonfungible resources due to sunk costs and asset specificity (Baumol, Panzar, and Willig, 1982; Nickerson and Silverman, 2003), economies of scale and indivisibilities (Chandler, 1990; Scarf, 1994), demand synergies and supply-side economies of scope (Penrose, 1959; Teece, 1980), externalities (Coase, 1960; Greenwald and Stiglitz, 1986) coupled with positive transaction costs (Coase, 1937; Williamson, 1975), and poorly or undefined property rights (Barzel, 1982; Demsetz, 1967). Table 1 shows how the various theoretical lenses of the organizational economics approach in strategic management systematically relax one (or more) of the assumptions of the first fundamental welfare theorem of economics.⁷

The economic consequences of a particular combination of market frictions may vary in degree, from relatively low to severe: market imperfection, market inefficiency, and market failure. In this paper, a market imperfection refers to when the price signal does not lead to Pareto optimality in which resources are allocated efficiently

⁶ The glue that holds the Ricardian, Coasean, and Penrosean approaches together is the construct of market frictions. While beyond the scope of the current paper, it is highly warranted to consider market frictions as not only a unifying concept within the strategic management field and within the *Strategic Management Journal*, but also across the *Strategic Entrepreneurship Journal* and *Global Strategy Journal*. For example, historical and contemporary entrepreneurship literature views entrepreneurship as alertness to price differentials due to market frictions (Delmar, Wennberg, and Hellerstedt, 2011; Kirzner, 1979). In terms of the international business and global strategy literature, the theory of foreign direct investment posits that, in general, market frictions in capital, final goods, or strategic factor markets across countries create opportunities for the firm in one country to benefit by existing in another country (Caves, 1982; Hennart, 2011; Kumar, 2009; Seth, Song, and Pettit, 2002).

⁷ In order for the rabbit to be pulled out of the hat, the rabbit must be placed in the hat. In other words, for any paper to make an economic argument (mathematical or verbal) for why the firm exists or why firm-level rents are realized, the first fundamental welfare theorem of economics demonstrates that the paper must posit at least one market friction.

Table 1. Assumptions about market perfection and market frictions

First fundamental welfare theorem	Organizational economics in strategic management
Perfect information	Imperfect and asymmetric information (Holmström, 1979)
Complete markets	Uncertainty and incomplete markets (Arrow, 1974)
Perfect fungibility of assets (i.e., no asset specificity)	Market power (Caves and Porter, 1977)
Constant returns to scale	Asset specificity (Williamson, 1985)
	Indivisibilities and increasing returns to scale (Scarf, 1994)
Independence in consumption and production	Economies of scope (Teece, 1980)
	Spillovers and externalities with positive transactions costs (Coase, 1960; Katz and Shapiro, 1985)
Zero transactions costs	Positive transaction costs (Coase, 1937)
Perfectly defined property rights	Poorly or undefined property rights (North, 1990)

(Arrow and Hahn, 1970). Market inefficiency occurs when nonprice governance, such as hierarchy and/or government, allocates resources more efficiently than the market. Williamson (1985) emphasizes that a pragmatic evaluation of efficiency (i.e., transaction cost minimization) requires a comparative assessment of imperfect governance alternatives, among which each “discrete structural alternative” (Williamson, 1991a) has its corresponding combination of market frictions. Market failure refers to where a market is incomplete or may even collapse (Akerlof, 1970). Figure 1 represents these logical relationships.⁸

Strategic management seeks remedies for these various economic consequences due to market

⁸ We note here the relationship among these three concepts and the overarching concept of market friction. Consider a buyer who values an item at \$50, and a current owner of that item who values it at \$48. In this case, a Pareto-improving trade ideally would take place to make both this buyer and seller better off (Coase, 1960). Market frictions are the transaction costs of running the economic system (Arrow, 1969). If the costs of exchange for this item in terms of searching, negotiating, and enforcing an agreement (Coase, 1937) exceed \$2, then these transaction costs drive a wedge between the buyer’s valuation and seller’s valuation, and thus the trade will not take place. Therefore, market frictions at the most general level are those costs that impede a Pareto optimal allocation of resources (Arrow and Hahn, 1970). Using the three terms of the current paper, the concept of market frictions relating to: (1) market imperfection is considered by Arrow and Hahn (1970), (2) the more severe market inefficiency is considered by Williamson (1975), and (3) the most severe result of market failure is considered by Akerlof (1970). We further note that the phrase market frictions has been used in the extant research literature to refer not only to the consequences of market imperfection, market inefficiency, and market failure, but also to the characteristics of market exchanges that may lead to these consequences. The remainder of this paper uses the term market frictions to refer to the characteristics of market exchanges, and the terms market imperfection, market inefficiency, and market failure to refer to the consequences of market frictions.

frictions for the purpose of cost minimization, or ways to leverage these market frictions for the purpose of value creation and value capture (Mahoney, 2001; Yao, 1988). To show that market frictions are fundamental building blocks for various organizational economics theories in strategic management, we take stock of the research literature by highlighting how each theoretical lens has utilized a combination of market frictions to address the strategic goals of cost minimization, value creation, or value capture.

Organizational economics approach to cost minimization

Transaction costs theory is the primary organizational economics approach to the strategic goal of cost minimization, focusing on the comparative efficiency of alternative governance structures in reducing transaction costs. Primary market frictions emphasized in transaction costs theory include opportunism, asset specificity, and uncertainty (Williamson, 1985).⁹

Opportunism and asset specificity

The potential for opportunism by one of the exchange partners poses transactional hazards to the other partners, especially those incurring substantial transaction-specific investments (Hoetker and Mellewigt, 2009). Internalization can attenuate

⁹ Analogous transaction-cost-related problems can also arise within firms after internalization—that is, that inclusion within the firm’s boundary does not eliminate those sorts of problems (Miller, 1992). The key idea is to conduct a comparative assessment of imperfect governance alternatives (Williamson, 1985).

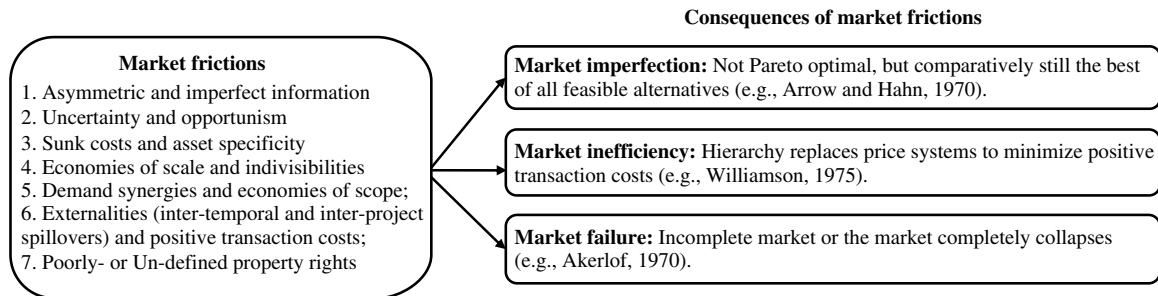


Figure 1. Factors/consequences of market frictions

the likelihood of an exchange partner acting opportunistically by posing economic hold-up problems for other partners (Klein, Crawford, and Alchian, 1978). The research literature largely corroborates the prediction that higher transaction costs due to opportunism and asset specificity result in higher economic safeguards such as internalization to mitigate contractual hazards, and thereby minimize cost (Lajili, Madunic, and Mahoney, 2007; Oxley, 1997; Shelanski and Klein, 1995).

Organizational economics approach to value creation

The resource-based approach considers the strategic goal of value creation and, more specifically, the potential economic rents derived from heterogeneous resources and capabilities. Barney (1991) suggests that a continuing search for sources of sustainable competitive advantage focuses on resources that are in demand (i.e., valuable), rare, inimitable, and nonsubstitutable (i.e., the VRIN criteria), which constitute necessary conditions for value creation and economic rents. Relatedly, Peteraf (1993) develops the four cornerstones of competitive advantage: superior resources; the *ex post* limits to competition; imperfect resource mobility; and the *ex ante* limits to competition. The real options theory provides a theoretical explanation for why firms may make investment decisions that differ from what the net present value (NPV) approach would prescribe, and proposes that, under certain conditions, real options value will comprise a substantial portion of the economic value of projects, lines of business, and firms (Dixit and Pindyck, 1994; Trigeorgis, 1996). Below we show that market frictions are an important basis for value creation, and underpin the

extent and sustainability of economic rents, as well as the values of real options.

Extent of economic rents

(1) Relevant/valuable: A resource is relevant/valuable if there is demand for it, when it enables a firm to conceive of, or implement, strategies that improve the firm's efficiency or effectiveness (Barney, 1991). Peteraf and Barney (2003) define the economic value of a resource as the perceived benefits from a resource above its economic costs. Resource-based logic suggests that obtaining such a valuable resource can occur through luck and/or asymmetric information (Barney, 1986). (2) Scarcity/rare: Resources are rare if supply is limited, and expansion in supply cannot be easily achieved. Further, resources may be scarcer for those firms that have less access to those resources. Peteraf (1993) maintains that the possession of superior resources by some firms in an industry can result from asymmetric information about the economic value of those resources when firms initially developed them. Another form of resource scarcity is uniqueness of resources, for example, resources that are created by a firm and henceforth are specific to that firm. Imperfect information concerning availability of resources or the way to create resources can reinforce their scarcity. (3) Heterogeneity: Where does such heterogeneity come from (Leiblein and Madsen, 2009; Nelson, 1991)? Our response to this question is the existence of market frictions, the key being asymmetric information about resource attributes and availability. Further, when considering stock-and-flow dynamics (Dierickx and Cool, 1989), information asymmetry combined with heterogeneity in a resource stock formed at time t influences firms'

future strategies in resource procurement, deployment, and divestiture, and over time, heterogeneity across firms will increase. Thus, the presence of firm-level heterogeneity implies the presence of various market frictions, like causal ambiguity and asset specificity/uniqueness (Lippman and Rumelt, 1982; Mahoney and Pandian, 1992). (4) Complementarity: Amit and Schoemaker (1993) consider complementarity as a relationship between resources where the relative magnitude of the strategic value of one resource may increase with an increase in the relative magnitude of other resources (see also Milgrom and Roberts, 1990; Teece, 1986). Complementarity can occur through positive interproject spillovers, such as economies of scope (Teece, 1980), and through positive intertemporal spillovers, such as asset accumulation or interconnectedness over time (Dierickx and Cool, 1989). This resource complementarity can reinforce the difficulty in transfer, imitation, or substitution of any single resource (Parmigiani and Mitchell, 2009), and thus can enhance the extent of potential value creation from the resource.

Sustainability of economic rents

Impediments to economic activities (Yao, 1988) or market frictions are especially relevant to sustainability of economic rents. Important concepts here include: low transferability, inimitability, and nonsubstitutability, which are each considered in turn. (1) Low transferability: Imperfect resource mobility can result from nontradable or cospecialized assets. A resource may be nontradable because of (i) difficulties in pricing the resource due to information asymmetry between sellers and buyers (e.g., brand image) (Shamsie, 2003); (ii) impediments in transferring due to tacitness and intangibility (e.g., R&D capabilities) (Itami and Roehl, 1987); (iii) difficulties in partitioning (e.g., team-embodied skills) (Williamson, Wachter, and Harris, 1975); and (iv) isolating mechanisms such as patent and trademark enforcement (Rumelt, 1984). Moreover, even if a resource is tradable, the potential economic rents from this resource will be attenuated if it is separated from its cospecialized asset(s) (Teece, 1986). (2) Inimitability: The key concept of inimitability is intrinsically related to low transferability, to the extent that some causes of low transferability such as nontradable or cospecialized resources can lead to

inimitability. Barney (1991) attributes such inimitability to path dependence (Arthur, 1989), social complexity (Blyler and Coff, 2003), and causal ambiguity (Lippman and Rumelt, 1982), which can be derived from market frictions of interfirm externalities, intrafirm spillovers, and asymmetric information. (3) Nonsubstitutability: Substitutability or nonsubstitutability is a relative term, since for any resource there can be another resource that can at least partially substitute for the focal one, either cross-sectionally or longitudinally (Dierickx and Cool, 1989). Thus, there is often imperfect substitutability between firm resources.

Value creation through real options

The real options theory holds that in a context characterized by high uncertainty and managerial discretion, managerial flexibility to adjust a predetermined course of action upon arrival of new information is economically valuable, and investments that enhance flexibility will add economic value to option holders (Dixit and Pindyck, 1994; Trigeorgis, 1996). Real options theory considers various common real options (e.g., the option to defer, to abandon, and to grow), and has been used to examine various strategic phenomena (e.g., investment decisions, organization and governance decisions, and firm valuations) (Li, James, Madhavan, and Mahoney, 2007). Key market frictions emphasized in real options theory include uncertainty in investment decisions, the (in)flexibility in strategic choice, and the interproject as well as intertemporal spillovers (Bowman and Hurry, 1993; Kogut, 1991; McGrath and Nerkar, 2004). The real options lens attempts to account for these spillover effects within the constructs of real options to defer, abandon, or grow (Dixit and Pindyck, 1994), which can create value by generating future decision rights (McGrath, Ferrier, and Mendelow, 2004). The real options perspective is a fundamental contribution to strategic management because it contributes to designing operational solutions to market frictions (e.g., dealing with spillover effects that would otherwise be improperly priced) for the purpose of value creation and value capture. Specifically, calculating the option value to defer addresses the market friction of uncertainty in investment decisions, calculating the abandonment option addresses the market friction of the level

of (in)flexibility in strategic choice, and calculating growth options addresses interproject and intertemporal spillovers in the presence of market frictions.

Organizational economics approach to value capture

The resource-based approach also considers value capture. Grant (1991) traces the profit-earning potential of a resource to the extent and sustainability of the competitive advantage established, and the firm's ability to appropriate the economic rents generated. Amit and Schoemaker (1993) consider scarcity, complementarity, and appropriability to be important characteristics of these resources and capabilities that are posited to generate firm-level rents.

Appropriation of economic rents emphasized in the resource-based approach

Appropriation of economic rents is a necessary condition for economic value sustainability (Coff, 2010). Low appropriability lowers the incentives to invest in resources, activities, and dynamic capabilities in the value-creation process. The appropriability of economic rents is influenced by complementarity, property rights, and embeddedness, which we discuss in turn. (1) Complementarity: If a firm possesses a cospecialized resource (Teece, 1986), then there is idiosyncratic bilateral synergy (Mahoney and Pandian, 1992: 368) in which each firm possessing a cospecialized resource is expected to appropriate some of the gains from the joined resources. Further, if one of the resources in the combination is held by a firm in a competitive factor market while the other firm possesses a valuable, rare (unique), inimitable, and nonsubstitutable resource, then the firm possessing such a unique resource will appropriate the entire economic value created in this resource combination (Barney, 1986). We emphasize that the market frictions, which result from asset specificity, not only help explain why these cospecialized resources are owned by one firm (Teece, 1986) but also why cospecialized resources can lead to economic value creation (Mahoney, 2001). (2) Embeddedness: The concept of embeddedness involves both cross-sectional and longitudinal interconnectedness of resources (Dierickx and Cool, 1989). Consider the example of a professor of chemistry who is tied to

a university-owned research lab relative to a business school professor who has relatively fewer ties to the physical resources. The embeddedness logic suggests that ownership of the physical asset leads to *de facto* control over human resources (Grant, 1991; Hart, 1995). In particular, the owner of a physical resource (i.e., the university) is typically in the position to appropriate more of the value creation by the chemistry professor than the relatively more mobile professor of business.

Value capture emphasized in property rights theory

Well-defined property rights regimes (e.g., patent and trademark protection, and equity-share arrangements) provide direct mechanisms for economic appropriability (Barzel, 1989; Eggertsson, 1990). In contrast, poorly or undefined property rights are key sources of market frictions that create misleading price signals and thus reduce efficiency in resource allocations (Coase, 1960). Assignment of residual claimancy (Alchian and Demsetz, 1972) and residual rights of control (Grossman and Hart, 1986) are important components of organization design.¹⁰ For example, Grossman and Hart (1986) show that imperfections in residual control assignments (e.g., the contractual party having the greatest potential for increasing aggregate gains is not assigned residual control rights) can lead to poor resource allocation. In particular, if the contractual party contemplating firm-specific investment *ex ante* is not afforded residual control rights *ex post*, then a farsighted decision maker will foresee the contractual hazards of potentially having at least part of their investment appropriated, and thus there will likely be a rational underinvestment in firm-specific capabilities (Wang and Barney, 2006; Wang, He, and Mahoney, 2009).

¹⁰ Williamson notes that “whereas transaction-cost economics locates the main analytical action in the *ex post* implementation stage of contract (where inefficiencies due to maladaptation arise), Grossman-Hart-Moore (Grossman and Hart, 1986; Hart and Moore, 1990) assume away *ex post* maladaptation (by invoking common knowledge of payoffs and costless bargaining), thereby to focus instead on how different configurations of physical asset ownership (to which residual rights of control accrue) are responsible for efficiency differences at the *ex ante* stage of contract” (2002: 442).

What is the common language?—A synthesis of market-frictions logic

By illustrating how the various organizational economics approaches to the three strategic goals—cost minimization, value creation, and value appropriation—have been developed in the strategic management field, the preceding discussion suggests the following ideas. First, underpinning the three strategic goals are various market frictions. These market frictions interact to create the need for cost minimization, or the opportunity for value creation and value capture. A firm can choose its organizational boundary and governance design to minimize costs and to capture value. It can also develop resources and capabilities that enable value creation and value capture (Adner and Zemsky, 2006; Chatain, 2011). Second, each organizational economics theory is derived from a particular subset of the full menu of market frictions. For example, asset specificity, asymmetric information, and uncertainty are the primary market frictions emphasized in transaction costs theory, and externalities in the presence of market frictions (Coase, 1960) are emphasized in property rights theory. Third, although distinct theories emphasize different combinations of market frictions, these combinations are also overlapping as some key market frictions are commonly emphasized, such as asymmetric information. Fourth, these theories may share very similar concepts, albeit with different terminology. For example, the concept of high asset specificity emphasized in transactions costs theory, the concept of high-level commitment emphasized in the resource-based approach, and the concept of low abandonment option (i.e., high sunk costs) emphasized in the real options theory are all derived from one fundamental construct, that is, the nonredeployability of assets. While the first fundamental welfare theorem of economics assumes the perfect fungibility of assets, the various organizational economics theories relax this key assumption.

We use Table 2 as an illustration of the prevailing utilization of market frictions in the strategic management literature. Column 1 provides the primary market frictions and the related behavioral assumptions. Column 2 includes constructs derived from these market frictions. Columns 3–6 provide representative studies that utilize these corresponding constructs. Table 2 indicates a coherent logic

based on market frictions underpinning these various organizational economics theories. Building on the same fundamental logic, each theory branches out by emphasizing different but overlapping combinations of market frictions to address its canonical problem. By decomposing each organizational economics theory to a combination of different market frictions, we can now identify those frictions that are either neglected or seldom examined within a particular theory.¹¹ By considering theory integration as a recombination of a subset of the underpinning market frictions, we can move towards the development of a paradigmatic market-frictions framework.

LOOKING AHEAD: FROM “MOLECULES” TO “ATOMS”

Having shown that many of the extant research studies in strategic management can be logically reconstructed as some combination of market frictions, we show in this section that it can be more effective to view paradigmatic theory development not simply as a process of joining multiple organizational economics theories per se, but as integrating multiple market frictions that underpin each theory and the three strategic goals.¹² Let's first consider recent developments in the organizational economics approach to strategic management, which has started to take an integrative approach, to the extent that multiple strategic goals are examined concurrently, and from multiple theoretical perspectives. We show that these recent theoretical developments can also usefully be characterized as new combinations of market frictions that yield new strategic insights.

¹¹ It should be noted that within Table 2, the construction of the organizational economics approach in strategic management has been viewed in terms of existing organizational economics theories (reading Table 2 vertically). This paper suggests that the generation of new theory by the next generation of strategic management scholars can be facilitated if we reconstruct the extant research literature by viewing Table 2 horizontally, and make the construct of market frictions the essential building block and fundamental unit of analysis. Table 3 illustrates this reconstructed logic.

¹² While filling gaps in theories is one approach to moving the strategic management field forward, the current paper also suggests an alternative approach: No commitment to any one organizational economics theory is required. What is involved, rather, is the selection of market frictions best suited to deal with the management problem at hand.

Table 2. Market frictions emphasized by various theories in organizational economics

Market frictions	Derived constructs	Transaction costs theory	Property rights theory	Real options theory	Resource-based approach
Asymmetric information	Environmental uncertainty	Dyer (1997)	Singh and Kundu (2002)	Folta and Miller (2002)	Brush and Artz (1999)
	Tacit knowledge	Tan and Mahoney (2006)	Arora and Merges (2004)	Kogut and Kulatilaka (2001)	Szulanski (1996)
Uncertainty	Technological uncertainty	Balakrishnan and Wernerfelt (1986)	Pisano (1990)	Folta (1998)	Song and Montoya-Weiss (2001)
	Demand uncertainty	Walker and Weber (1984)	Norton (1988)	O'Brien, Folta, and Johnson (2003)	Kor, Mahoney, and Watson (2008)
Complexity	Task programmability	Mahoney (1992)	Hennart (1993)	Leiblein (2003)	Nickerson and Zenger (2004)
	Social programmability	Ouchi (1980)	Jones (1983)	McGrath (1997)	Barney and Hansen (1994)
Opportunism	Opportunistic behavior	Hill (1990)	Grossman and Hart (1980)	Li (2008)	Mahoney (2001)
	Trust/relational experience	Chiles and McMaekin (1996)	Gulati (1995)	Coff and Lavery (2007)	Verona and Ravasi (2003)
	<i>Ex ante</i> adverse selection	Balakrishnan and Koza (1993)	Foss and Foss (2005)	Folta and Miller (2002)	Kim and Mahoney (2006)
	<i>Ex post</i> moral hazard	Chi (1994)	Anton and Yao (2002)	Chi and McGuire (1996)	Foss and Foss (2005)
	<i>Ex post</i> hold-up	Klein <i>et al.</i> (1978)	Hart and Moore (1990)	Leiblein and Miller (2003)	Wang and Barney (2006)
Asset specificity	Asset specificity	Poppo and Zenger (1998)	Rajan and Zingales (1998)	Sanchez (2003)	Yeoh and Roth (1999)
	Asset cospecialization	Santoro and McGill (2005)	Pitelis and Teece (2010)	Cuervo-Cazurra and Un (2010)	Dyer (1996)
	Asset complementarity	Teece (1986)	Liebeskind (1996)	Kumar (2005)	Helfat (1997)
Production economies	Economies of scale	Arrow and Hahn (1970)	Henderson and Cockburn (1996)	Kogut (1983)	Lieberman and Montgomery (1988)
	Economies of scope	Teece (1980)	Liebeskind (1996)	Vassolo, Anand, and Folta (2004)	Helfat and Eisenhardt (2004)
Interfirm externalities	Public goods	Hennart (1988)	Coase (1960)	McGrath (1999)	Kim and Mahoney (2002)
Intrafirm spillovers	Knowledge spillover	Mayer and Salomon (2006)	Zhao (2006)	Kang, Mahoney, and Tan (2009)	Blyler and Coff (2003)
Poorly/un defined property rights	Property rights regime	Williamson (1991b)	Ostrom (1990)	Reuer and Tong (2005)	Miller and Shamsie (1996)

Recent developments in organizational economics approach

- (a) Cost minimization coupled with value creation.

Later development in the transaction costs theory literature—largely originating from the strategic management field—has started to incorporate the strategic goal of value creation, pointing to the dual role of governance structure for both cost minimization and value creation (e.g., also including revenue drivers), as well as the interaction between the goals of cost minimization and value creation (Zajac and Olsen, 1993). These new developments are, however, still derived from the fundamental market frictions, only now with new combinations of market frictions.

Intrafirm spillovers and governance inseparability: Argyres and Liebeskind (1999) provide a time dimension to transaction cost economics to explain firm boundary choice dynamically. In particular, this line of reasoning maintains that governance choices, such as previous contractual commitments entailing sunk costs (asset specificity), may enable or constrain a firm's subsequent governance choices (Aggarwal and Hsu, 2009). This economic logic resonates with the extant research literature on dynamic transaction costs theory (Langlois, 1992). An example for positive spillovers occurs when there is learning-by-doing derived from contracting experience, and thus the decision to contract today may positively influence subsequent contracting capabilities (Mayer and Argyres, 2004). An example of negative intrafirm spillovers would be if internal procurement, internal expansion, and program persistence biases exist in the vertically integrated firm (Williamson, 1975: 118–124), and therefore these internal organizational distortions that could potentially constrain future governance choices should be included in the decision calculus at the outset. Potential value creation embedded within a certain governance choice is emphasized in this context.

Intrafirm spillovers and economies of scale/scope: Spillovers can occur with production capabilities that entail economies of

scale/scope (Teece, 1982). Williamson (1975: 83–84) and Teece (1980) emphasize that technological interdependency or economies of scope, per se, only explain the collocation of resources. It does not, by itself, explain or predict the organizational boundary decision, which is determined by the extent of market frictions. Therefore, more refined theory building makes clear that when economies of scope or technical complementarity are combined with intrafirm spillovers and market frictions, the decision of internalization may be needed to achieve more fully the benefits of production economies relative to markets. The dual role of value creation and cost minimization of a certain governance choice is emphasized here.

- (b) Cost minimization coupled with value capture

The property rights theory informs not only the determination of economic value creation, but also enables analysis of value distribution or the strategic goal of value capture (Kim and Mahoney, 2010). Property rights theory suggests the importance of well-defined residual claimancy and residual control rights, which can be either incentives or disincentives for firm-specific investment, and act as conduits upon which economic value of resources can be channeled to high yield uses (Mahoney, 2005; Milgrom and Roberts, 1992). In general, externalities when combined with positive transaction costs have been a concern in the property rights literature (Coase, 1960; North, 1990). The current paper also focuses on a context in which market frictions are likely to be critical, namely, when there is high asset specificity (Grossman and Hart, 1986; Williamson, 1985).

Asset specificity and negative interfirm externalities: As an example, Kim and Mahoney (2002) examine oil field unitization to explicate the effects of investments characterized by high levels of asset specificity, ill-defined property rights, and externalities with positive transaction costs. In particular, the negative externalities of oil migration towards those oil firms that drill early typically led to overdrilling at poor location choices. Thus, a substantially suboptimal aggregate amount of oil extraction was experienced for decades in Oklahoma and Texas (Libecap, 1989). The

lack of oil field unitization for migratory oil, or the difficulty in establishing property rights to specific assets, negatively impacts productive utilization of these assets. Further, Kim and Mahoney (2002) show in the context of oil field unitization that asymmetric information about location-specific assets can impede value creation as it stymies mutually beneficial trade (Coase, 1960). Also, in terms of value capture, Libecap (1989) shows that distribution conflicts can lead to decision makers actively blocking changes in property rights that would otherwise lead to efficiencies.

Asset specificity and loss of positive intrafirm spillovers: As Coase (1960) shows, the initial assignments of property rights facilitate subsequent trade. If property rights are undefined, markets may completely break down (North, 1990). Further, if initial property rights are poorly defined, the market-friction consequences can still be quite substantial (Miller and Shamsie, 1996). The same problem that may occur due to market frictions in interfirm exchange involving asset specificity and externalities (Libecap, 1989) can occur with intrafirm exchange involving asset specificity and spillovers effects (Kang *et al.*, 2009). For example, while a “strategic” outsourcing of employees may maximize the economic returns for a particular division of a company, the benefits that these employees provided in consultation with people in other divisions of the same company may be lost, in which case the economic returns to the enterprise can be negative.

(c) Value creation coupled with value capture

Poorly or undefined property rights and capabilities with value creation potential: Consider a multidivisional firm with highly related business units where residual income to managers is based only on divisional return on assets. Such property rights within this firm are poorly defined since the managers of these highly related businesses are unlikely to share information in this compensation system. With a lack of knowledge transfer, the realized capabilities of such a firm will be far from its potential capabilities. A change in the property rights regime of the firm, where divisional managers are rewarded

based on corporate ROE, for example, would likely improve information sharing in the firm due to improved incentive alignment, and thereby facilitate greater capability development. Thus, property rights and dynamic capabilities are tightly linked (Ghemawat, 1991).

Asset specificity and positive intrafirm spillovers: one example of a substantial positive intrafirm spillover is R&D, in which knowledge creation may have positive spillover applications to other divisions in the company (Argyres and Silverman, 2004; Helfat, 1997). However, due to potential multidivisional negotiating problems involving investments with high levels of asset specificity, these potential positive spillovers may not be fully realized. In other words, the marginal benefits of R&D investment for a particular division may be smaller than the marginal costs for that division, in which case the investment might not occur despite the fact that the net impact of the R&D investment at the firm level would be positive when the full costs and benefits are accounted for.

The discussion above reinforces the importance of a paradigmatic market-frictions framework for the strategic management literature. It shows the necessity to develop a framework that can more completely analyze the three intertwined strategic goals. Considering more than one strategic goal has already enabled greater theory development, which offers more explanatory and predictive power for various strategic phenomena. Further, it shows that a paradigmatic framework has been emerging within the strategy field in which the various market frictions are the fundamental building blocks. This paper maintains that more self-conscious intention by scholars within the strategy field to continue in this direction is likely to be fruitful for both strategic management theory and practice.

Extending beyond the two primary questions: a generalized market-frictions approach

As Table 2 suggests, each market friction has been, or can potentially be, incorporated into each organizational economics lens. Focusing on the concept of market friction as the key unit

of analysis may prove useful in explaining the two primary questions in the strategy field—why firms exist and why some firms outperform others—and, more broadly, in our collective efforts to generate novel research questions and to develop a more coherent paradigmatic approach for the strategic management field. Below we provide two examples to show the usefulness of this approach, and then proceed with discussion of a more generalized market-frictions approach.

Alchian and Demsetz (1972) emphasize the issue of team production in which observation of the output is insufficient for providing rewards since the marginal productivity of each worker is unknown. Due to this nonseparability problem, *ex ante* free-riding (shirking) and *ex post* haggling can occur. Hierarchical monitoring is suggested as a solution to this problem. Within a hierarchy, one team member serves the role of “monitor” and receives all the residual returns, while all other team members become interchangeable employees and their inputs are undifferentiated. Rajan and Zingales (1998) build upon the nonseparability of team production and join it with the market friction of asset specificity emphasized in Williamson (1979) to develop a more general theory of power in organization. In their model, each team member makes firm-specific investments, which have little or no economic value outside the joint production. Contrary to the recommendations by property rights theory, which suggests the assignment of ownership to the team member whose firm-specific investment is most critical to the joint production (Grossman and Hart, 1986; Hart and Moore, 1990), Rajan and Zingales (1998) note that assigning ownership to that team member may reduce incentives in firm-specific investment by all team members, including the one that is assigned ownership. Rajan and Zingales’ (1998) proposal is to use the property rights mechanism of restricted access to critical assets, instead of ownership, for the purpose of promoting firm-specific investment and thus economic value creation.

The theory by Rajan and Zingales (1998) helps to explain a variety of real-world institutional arrangements. Blair and Stout (1999) draw upon the idea of third-party ownership from Rajan and Zingales (1998) to develop a team production approach to the public corporation. The idea of third-party ownership suggests that an “outsider” to the actual productive activity can be granted access to the team’s assets and incentivized by the

reward of a nominal share of the team’s output. Blair and Stout (1999) thus explain that the role of a board of directors in public corporations is not simply to reduce agency costs, as most principal-agent model proponents would suggest, but to also encourage firm-specific investment essential to certain forms of team production by all members of a corporation, including managers, employees, and other key stakeholders. Team members of a corporation voluntarily relinquish important control rights over firm-specific inputs and outputs to an independent board of directors and address contracting problems inherent in team production via a mediating hierarchy (Blair and Stout, 1999). With high firm-specific human capital, shareholders might welcome labor representation on the board of directors (Osterloh and Frey, 2006).

This detailed example shows the fruitfulness of theory development obtained by joining new combinations of market frictions—which is a key message of the current paper. In particular, joining two different market frictions, asset specificity and the nonseparability problem in team production, Rajan and Zingales (1998) provide a novel explanation of one source of power in the firm, that is, the restricted access to critical assets, which further offers rich insights for both strategic management theory and for management practice. Blair and Stout (1999) extend the theory by applying Rajan and Zingales’ (1998) novel explanation to the role of the board of directors in the law of the public corporation.

A second example to show the fruitful theory building through consideration of numerous market frictions is Chi (1994) from the *Strategic Management Journal*. Chi (1994) uses multiple market frictions that cut across the boundaries of several organizational economics theories, including asymmetric information that leads to potential adverse selection and moral hazard problems, asset specificity that resides in complementarities of strategic resources from two firms, the economic hold-up problem that may arise in trading such strategic resources, resource inimitability and immobility that characterize those strategic resources, and property rights assignment regarding residual claimancy and residual control rights. By integrating these various market frictions, Chi studies the transactional problems in trading strategic resources between two firms, the antecedents of these problems, and the remedying mechanisms for these problems. By developing a

rich framework, Chi (1994) is able to address a series of questions, such as “Under what conditions, if any, can imperfectly imitable and imperfectly mobile resources be gainfully traded across firms? What are the main difficulties of trading in such resources? What mechanisms can be used to mitigate the various trading difficulties and how the exchange structure between the trading parties may be affected by the adoption of those mechanisms?” (1994: 272) It is also noteworthy that Chi’s (1994) framework considers all three strategic goals considered in the current paper: (1) the trading of strategic resources may be subject to transaction costs or problems of adverse selection, moral hazard, cheating, and economic hold-up, and thus the trading partners must design an exchange structure to minimize these costs; (2) the complementarities between resources of two firms are the value creation potential, and by trading strategic resources through a certain exchange structure, the trading partners can create economic rents; and (3) the apportionment of residual claimancy and residual control rights becomes important remedying mechanisms for the purpose of value capture. In all, a unique combination of market frictions in Chi (1994) enables a more penetrating analysis of the exchange structure in trading of strategic resources among firms than would be possible with any one theory in isolation. In terms of managerial significance, Chi and Roehl (1997) apply this framework to explain the apportionment of residual bearing and the assignment of managerial control in exchanges of business know-how between exchange partners of international collaborative ventures.

Theory development achieved by Rajan and Zingales (1998) and by Chi (1994) provides exemplar support for our thesis that by focusing on new combinations of market frictions, which serve as the unit of analysis, we can usefully gain greater explanatory power for a variety of strategic phenomena including the two primary questions of strategic management: why firms exist and why some firms outperform others.¹³ The preceding

¹³ Mahoney (2001) and Makadok (2003) tightly link the first question of why firms exist to the second question of why some firms outperform others. Makadok states that “the Mahoney (2001) conjecture—that whatever set of economic frictions is a sufficient condition for the existence of sustained economic rents will also be a sufficient condition, although perhaps not a necessary condition, for the existence of a firm. That is, the set of frictions that is required to generate the existence of a firm

discussion suggests that the market-frictions logic informs cost minimization, value creation, and value capture. Cost minimization (utilizing market frictions primarily emphasized in transaction costs theory), value creation (utilizing market frictions primarily emphasized in the resource-based approach and real options theory), and value capture (utilizing market frictions primarily emphasized in property rights theory) can be usefully joined by the “glue” of market frictions. We submit that to understand more fully either the organizational boundary question or the economic rents question, it is necessary to consider all three strategic goals. More specifically, we suggest that the market-frictions logic enables us to explore the intertwined relationships between the economic rents question and the organizational boundary decision, instead of treating these two questions in isolation. Thus, we propose that by focusing on the common building blocks of different organizational economic theories, that is, the various market frictions, theories typically regarded as informing the organizational boundary question can be used to explain economic rents, and theories typically regarded as informing the economic rents question can help explain organizational boundary decisions. Greater paradigmatic development is feasible if we continue with the recent developments in organizational economics approaches that have started to incorporate multiple strategic goals and new combinations of market frictions, for the purpose of understanding both the organizational boundary question and the economic rents question.

We first show that the organizational boundary decision, which has typically been considered through a cost minimization lens (Williamson, 1985), can be further examined through a value creation and value capture lens (Dyer, 1997; Zajac and Olsen, 1993) via learning, dynamic capabilities, and knowledge spill-in from exchange partners (Hoetker, 2005; Leiblein and Miller, 2003). For example, extending the transaction as the unit of analysis to incorporate intratemporal and intertemporal spillover effects offers new insights about the organizational boundary decision. For instance, Kang *et al.* (2009) find that OEM suppliers are willing to make unilateral relationship-specific investments with buyers such as Dell,

is a subset of the set of frictions that is required to generate the existence of sustained economic rents” (2003: 1045).

and suggest that OEM firms make these decisions based not only on economic benefits with their current exchange partners, but also on the potential benefits to be gained through established exchange relationships with these powerful buyers. If there are future (dynamic capabilities and real options) benefits in forming an exchange relationship, a transaction party may choose to tolerate the risks of potential opportunistic behaviors, and make a firm boundary decision contrary to the transaction cost economic (cost-minimization) prediction based on the single transaction as the unit of analysis. Qian, Agarwal, and Hoetker (2012) also emphasize intertemporal spillover effects in the context of industry evolution, where industry entrants design their firm boundary by taking into account the entry timing or the different industry evolution stages. In particular, this study finds that firms entering later to an industry are less likely to internalize transactions than those entering earlier, suggesting that some transaction costs are enduring while some other transaction costs are transient.

Not only will potential value-creation considerations influence the organizational boundary decision, but potential value destruction will also impact this decision. For example, Argyres and Liebeskind (1999) emphasize that past (sunk cost) commitment to a specific transaction partner may become an important path-dependent factor in the current organizational boundary decisions. Focusing on the single transaction as the unit of analysis may neglect potentially important intrafirm spillover effects that can occur across multiple transactions (Argyres and Liebeskind, 2002). Attempting to separate two interdependent boundary decisions may cause a loss in economic value.

Moreover, the strategic management field's predictive power for the economic rents question can be improved when market frictions related to organizational boundary choice are considered. A more complete theory of economic rents needs to incorporate (interdivisional and intertemporal) spillover effects. Utilizing the individual resource as the unit of analysis will have limitations since it may neglect important intrafirm spillover costs and benefits to the bundle of resources that the decision maker either currently possesses or may possess over time (Penrose, 1959). For instance, research on activity systems (Kauffman, 1993; Milgrom and Roberts, 1990) suggests an important unit of analysis for developing a theory of economic rents. An activity system approach emphasizes

complementarities among activities (Porter, 1991), which reinforces resource (re-)bundling processes (Kor and Mahoney, 2000; Teece, 1986; Wernerfelt, 1984). More generally, the current paper suggests that a richer resource-based analysis of economic value creation will be achieved with greater attention to the intrafirm spillover effects of resources in the decision calculus, and governance structure designs that can account for these potential intrafirm spillover effects.

Further, consideration of market frictions underpinning an organizational boundary decision enriches a theory of economic rents by addressing not only potential, but also realized value creation (Gottschlag and Zollo, 2007; Kim and Mahoney, 2002), by taking into account an appropriate governance design. The resource-based logic in Barney (1991) and Peteraf (1993) provides criteria for potential economic rents derived from resources. However, the potential economic rent of a resource is unlikely to be fully realized if property rights are under- or overdefined (Ziedonis, 2004). A more systematic examination of market frictions, in general, and property rights (governance), in particular, is required to ascertain the economic value of resources (Mahoney, 2005; Makadok, 2001).

Using the market-frictions logic

The interrelated work of Rajan and Zingales (1998) and Blair and Stout (1999), as well as the work of Chi (1994) and Chi and Roehl (1997), are exemplars of utilizing the market-frictions logic for development of nuanced insights and the generation of new questions. With a paradigmatic thinking based upon the market-frictions logic, students in doctoral programs in the strategy field are equipped with a roadmap for conducting research with an organizational economics approach. These examples also suggest that there are at least two ways that strategy research can approach their research questions using the market-friction logic. For analytical purposes, the first approach is to start with the research gap identified within the existing literature, and the second approach is to start with the strategic phenomenon of interest. Below we briefly discuss these two approaches.

First, new research questions can be generated by studying the research gap in existing literature in organizational economics theories. We use Table 3 as an example to illustrate this approach.

Table 3. Exemplar studies joining multiple organizational economics theories

Original theory pairings	Exemplar studies	Insights gained from joining the market frictions emphasized by the respective theories	Sample of new questions generated by incorporating other market frictions typically not emphasized by those theory pairings
Transaction costs theory and property rights theory	Hennart (1988)	Scale joint ventures (JVs): when parents seek to internalize a failing market, but indivisibilities due to scale or scope economies make full ownership of the relevant assets inefficient. Link JVs: simultaneous failing of markets for services of two or more assets as firm-specific public goods, and acquisition of the firm holding them incurs significant management costs.	The choice of equity JV influences flexibility of each parent firm involved, as well as interparent firm spillovers. How might consideration of these influences impact the governance choice of JV types from the beginning?
Transaction costs theory and Resource-based approach	Silverman (1999)	Rent-generating resources are considered to have high asset specificity, and thus are less likely to be utilized in contractual alternatives (e.g., licensing) than through diversification.	Consider also the real options implications of decision making under uncertainty from two alternative modes: licensing and diversification.
Transaction costs theory and real options theory	Folta (1998)	Technological uncertainty plays an important role in the preference for equity collaboration (over acquisition) in domains of higher asset specificity.	How would arrangement of the residual claimancy and residual control rights embedded in the two modes (equity collaboration and acquisition) affect the role of technological uncertainty?
Property rights theory and resource-based approach	Luo (2002)	“While capability exploitation is associated with the use of wholly owned entry mode, capability building is linked to the joint venture mode. MNEs seeking local market expansion also deploy greater capability exploitation and building than those seeking export market growth” (p. 48).	Consider the role of the property-rights regime (whether there is well-defined or poorly defined property rights protection) in the MNEs’ entry mode choice and its implications on performance.
Property rights theory and real options	Miller and Folta (2002)	“Optimal timing for exercising real options depends on current dividends, possibilities for preemption, and whether the option is simple or compound, proprietary or shared” (p. 655).	How would a firm’s path-dependent capability development change the attributes (possibilities of preemption; proprietary) of a real option?
Resource-based approach and real options	Kogut and Kulatilaka (2001)	“Managers cannot easily adjust the wrong set of organizational capabilities to the emergence of market opportunities . . . firms that have made investments in capabilities appropriate to these opportunities are able to respond” (p. 744).	What are the roles of governance inseparability (Argyres and Liebeskind, 1999) and intertemporal spillovers in strengthening the irreversibility of organizational capabilities, and further impacting the heuristics of managers in making capability investment decisions?

Column 1 in Table 3 lists six potential pairs of two organizational economics theories; Column 2 presents exemplar research of the pairwise joining of the corresponding theories; Column 3 provides insights gained from joining market frictions emphasized by the respective theories; and Column 4 suggests new questions that can be raised by incorporating other market frictions that are typically not emphasized by those theory pairings.

For a thought exercise, consider Silverman (1999), which examines the diversification choice through industry entry versus other contractual modes (e.g., licensing) for firms that intend to exploit their technological resources. Technological resources with strong applicability to a different industry provide potential economic value creation through exploiting those resources in that industry. However, the extent of realized value creation through exploitation is subject to the difficulty in appropriating returns to innovation, or the appropriability regime of a given industry. Accordingly, Silverman (1999) predicts that if the target industry is characterized by high secrecy, a high learning curve, or low feasibility of using licensing, contractual hazards will be high, and diversification will be a preferred method for exploiting a technological resource. Based upon these predictions, there are many other questions a reader can probe further. For instance, what other market friction aspects of the choice between industry entry and contractual licensing may impact the choice itself? Industry entry through diversification provides stronger economic safeguards for appropriation of returns to innovation, but also requires stronger resource commitment or possible sunk costs than other contractual methods. In addition, exploiting existing technological resources through diversification may prevent the focal firm from exploring new resources and new knowledge that can be potentially spilled in if cooperative modes with other partner firms were chosen. By raising such questions, we can gain a better understanding of the boundary conditions for research findings from Silverman (1999) and, more importantly, generate new research questions. Similar thought exercises can be carried out for all the other papers included in Table 3.

The second approach starts with the strategic phenomena of research interest. Because the market-frictions logic outlined in this paper attends to all three strategic goals of strategy, it can be

applied to a wide range of strategic phenomena, such as competitive advantage, diversification, and divestment, and the scope of the firm (e.g., alliance, joint venture, and M&A) (Capron, Duassauge, and Mitchell, 1998; Ramanujam and Varadarajan, 1989). Identifying and selecting the market frictions most relevant to a particular managerial problem, however, requires careful evaluation of which goal is most relevant for the problem at hand. Some market-frictions problems require managers to primarily attend to cost minimization, while other problems may require greater attention to value creation and capture. Having identified the priorities of different strategic goals concerned in the strategic problems or phenomena, a strategy scholar proceeds by selecting a combination of relevant market frictions underpinning those strategic goals. A more challenging next step is to examine the interrelationships among these identified market frictions, and to tease out potentially different or overlapping driving forces for each market friction. For instance, measurement cost may lead to asymmetric information, and can also cause difficulty in delineating property rights with greater precision. Having chosen the primary market frictions and having analyzed the interrelationships among them, the final step of theory development is to consider additional market frictions that may be relevant to the focal problems or phenomena but are less emphasized in existing research literature, as we have suggested in Table 2. Incorporating these market frictions is likely to produce novel insights.

Two research streams can illustrate the usefulness of this approach. Consider first strategic outsourcing. To examine this phenomenon with our market-frictions logic, we can start by asking questions like: What market frictions are involved in a strategic outsourcing decision? How can these market frictions be recombined to better explain this organizational boundary question? On the one hand, prevailing information technologies reduce (1) information asymmetry and search costs, (2) nonseparability problems in team production, and (3) asset specificity (small-numbers) problems due to increased connectivity, which mitigate market frictions (Lajili and Mahoney, 2006). On the other hand, outsourcing a business function to another firm involves knowledge transfer and potentially involuntary knowledge spillovers, which requires appropriate property rights allocation. Thus, a practice of recombining market frictions can prove

useful in examining strategic outsourcing. A second research stream concerns employee mobility and entrepreneurship. Considered as agents for “creative construction” (Agarwal, Audretsch, and Sakar, 2007), employee entrepreneurs can leverage the underutilized knowledge of the parent firms and channel knowledge spillovers to venture creation. Here the market frictions both within and beyond the parent firms play important roles in employee mobility, in that information asymmetry and knowledge spillovers spur value-creation opportunities for those employees who break away from the existing firm boundary. While strategic outsourcing attends to the cost minimization goal, the employee mobility phenomenon focuses on economic value creation. It is clear that whether a strategic phenomenon points to vertical integration or deintegration (e.g., new venture creation or outsourcing), the organizational economics principle of examining market frictions remains durable across these phenomena.

CONCLUSIONS

This paper both takes stock and looks ahead concerning the role of market frictions as building blocks of an organizational economics approach to strategic management. We take stock of this research literature (i.e., transaction costs, property rights, real options, and resource-based approaches) to identify an evolving paradigmatic approach that has taken place over the past quarter century. We illustrate the rich connections among these theories via market frictions, and we show the usefulness of combining market frictions from various theories in novel ways.

We then apply the market-frictions logic to organizational boundary and economic rents questions to show how joining cost minimization, value creation, and value capture can be achieved through considering various market frictions. More generally, we maintain that it is useful to view market frictions as the fundamental building blocks of strategic management, and the analysis of new combinations of market frictions may provide new strategic insights. Recombinations of market frictions can be achieved by joining various organizational economics theories, but that is not the only path to gaining such insights since these theories typically emphasize a particular cluster of market frictions. Instead of focusing

exclusively on joining different “molecules” (i.e., the different organizational economics theories), we can fruitfully join various “atoms” (i.e., the market frictions themselves). Joining theories *per se* is likely to restrict the choice set of possible combinations of market frictions. Thinking in terms of the “primitives” of these market frictions themselves can open the theory space for new strategic insights to emerge.

Developing the market-frictions logic is also promising for providing key managerial implications. Managers—along with researchers—can proactively consider market frictions that enable cost minimization and the generation of firm-level economic rents. For example, managers have the opportunity to provide economic value in business situations where market frictions exist and price signals are not sufficient. Thus, the managerial calculus should include the intrafirm spillover benefits and costs that are not typically priced in standard discounted cash flow formulations. Such strategic connections show that the market-frictions logic enables us to better join theory with management practice. Indeed, Yao (1988) suggests that both practitioners and researchers will obtain more penetrating insights from considering fundamental market frictions than the relatively less precise (i.e., more aggregated) concepts of entry and mobility barriers that strategic management borrowed from industrial organization economics (Porter, 1991).

Finally, we note that while transaction costs theory was relatively well developed at the time of Yao’s (1988) seminal paper, the strategic management field has since developed the resource-based and real options approaches, and has begun to make progress in utilizing property rights theory. In an important sense, the current paper has attempted to reconstruct the field’s theory development in the past two decades from a market-frictions lens to show the evolving paradigmatic development that has occurred over time. Indeed, designing operational solutions to attenuate market frictions to minimize costs or to leverage market frictions for the purpose of value creation and value capture is at the core of the economic foundations of strategy. It is anticipated that a more systematic examination of market frictions for further exploration of the organizational boundary decision, the sustainability of firm-level economic rents, and other strategic issues will enable the next

generation of research within our evolving strategic management field to do even better.

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