A Strategic Theory of the Firm as a Nexus of Incomplete Contracts: A Property Rights Approach

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Abstract

This paper maintains that joining property rights theory and Austrian economics informs the dynamic capabilities approach by giving context to key constructs within this approach, particularly the nature of organizational processes and asset positions. By defining resources and capabilities as bundles of property rights, we can develop theory on how firms create, deploy, and renew those resources and capabilities. Developing, deploying and renewing capabilities involve a process of bundling and re–bundling resource combinations. Central to bundling resource combinations is the contracting process, which generates information that can lead to more efficient solutions achieved through bargaining and organizational innovation, which in turn leads to the discovery of new economic opportunities. In a world of positive transaction costs, the notion of the firm as a nexus of (complete) contracts is rightly discarded; rather, the firm is defined as a nexus of incomplete contracts, which allows for entrepreneurial alertness, creativity, and judgment under uncertainty. Thus, we maintain that the contracting process is a discovery process and entrepreneurial in nature, allowing firms to sense and seize new economic opportunities. Property rights theory enables a contractual process–oriented approach for how dynamic capabilities are developed, sustained and rejuvenated and in so doing intertwines firm boundary issues with the capabilities dimension of a strategic theory of the firm.

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ABSTRACT

This paper maintains that joining property rights theory and Austrian economics informs the dynamic capabilities approach by giving context to key constructs within this approach, particularly the nature of organizational processes and asset positions. By defining resources and capabilities as bundles of property rights, we can develop theory on how firms create, deploy, and renew those resources and capabilities. Developing, deploying and renewing capabilities involve a process of bundling and re-bundling resource combinations. Central to bundling resource combinations is the contracting process, which generates information that can lead to more efficient solutions achieved through bargaining and organizational innovation, which in turn leads to the discovery of new economic opportunities. In a world of positive transaction costs, the notion of the firm as a nexus of (complete) contracts is rightly discarded; rather, the firm is defined as a nexus of incomplete contracts, which allows for entrepreneurial alertness, creativity, and judgment under uncertainty. Thus, we maintain that the contracting process is a discovery process and entrepreneurial in nature, allowing firms to sense and seize new economic opportunities. Property rights theory enables a contractual process-oriented approach for how dynamic capabilities are developed, sustained and rejuvenated and in so doing intertwines firm boundary issues with the capabilities dimension of a strategic theory of the firm.

Key words: Dynamic capabilities, property rights, incomplete contracts, entrepreneurship
INTRODUCTION

The dynamic capabilities approach seeks to overcome the static limitations of the resource-based view (Eisenhardt & Martin, 2000) by showing how organizational processes, asset positions, and path dependencies (Argyres & Liebeskind, 1999) can lead to a stock of valuable, rare, inimitable, and non-substitutable resources --- the so-called VRIN criteria (Barney, 1991). Compared to the resource-based view (Barney, 1991; Peteraf, 1993), whose theoretical contribution defines formal conditions for sustainable economic profitability in equilibrium, the dynamic capabilities approach (Helfat et al., 2007; Teece, Pisano & Shuen, 1997) provides a more process-oriented focus.

To possess dynamic capabilities requires abilities to identify potentially value-creating opportunities via absorptive capacity (Cohen & Levinthal, 1990), entrepreneurial alertness (Kirzner, 1997), managerial capabilities (Adner & Helfat, 2003), organizational learning (Zollo & Winter, 2002) and relational capital (Dyer & Singh, 1998). This process can be decomposed into how the firm senses and seizes opportunities and manages possible threats, transforming itself if necessary (Teece, 2007). Indeed, Winter (2003) emphasizes that purposeful activities develop and deploy such capabilities.

However, similar to criticisms of the resource-based view (Priem & Butler, 2001), dynamic capabilities can also be criticized for being conceptually unclear and tautological (Williamson, 1999). What are dynamic capabilities (Winter, 2003)? Further, if dynamic capabilities confer economic rents on the firm in possession of these capabilities, how does one define firm boundaries?

This paper maintains that property rights theory (Alchian & Demsetz, 1973; Cheung, 1983; Libecap, 1989) can contribute to the dynamic capabilities research literature since defining resources and capabilities as bundles of property rights (Coase, 1960) is useful for analyzing how firms can develop and deploy those resources and capabilities. Such a definition is useful for not only what these resources and capabilities are, but more critically, how they can confer economic rents to the firm as a result of developing and utilizing those resources and capabilities. In so doing, we can provide a
theoretical basis for processes in developing and renewing capabilities. Further, extending dynamic capabilities to better account for firm boundaries enables consideration of how firms create value as well as how, once created, firms can capture economic value.

Since resources are bundles of property rights, developing and renewing dynamic capabilities is a process of *bundling (and re-bundling) resource combinations*. At the heart of organizational processes that bring resource combinations together is the *contracting process as a vehicle for discovery of new opportunities*. Considering contracting processes as means to discover new opportunities (Kirzner, 1973) is the first stage of developing dynamic capabilities.

The extant research literature on dynamic capabilities emphasizes using intellectual property that requires complementary and co-specialized assets (Teece, 1986) and the mobilization of these key resources within the firm to create economic value, resulting in organizational routines and best practices (Nelson & Winter, 1982; Szulanski, 1996). But, such resource combinations can only offer the *potential* for firm-level economic rents (Kim & Mahoney, 2007). To link specific organizational processes that are the foundations of dynamic capabilities to how the firm might *realize* or capture economic rents, we must track contractual processes of bringing resource combinations together. Once economic value is created, that value must be captured (Coff, 1999), either through inherent attributes of resources (Lippman & Rumelt, 1982) or by a combination of third-party enforcement and self-enforcing agreements (Kim & Mahoney, 2002), which thus suggests a need to focus attention on appropriability concerns (Teece, 2007) as well as a need for a feedback loop that allows for incentives to be set properly in order for economic value creation to occur in the first place.

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1 Property rights are sanctioned behavioral relations among decision makers in the use of potentially valuable resources. Property rights are social institutions that define or delimit the range of privileges granted to individuals to specific resources. Private ownership of these resources may involve a variety of human rights including the right to exclude non-owners from access, the right to appropriate the stream of economic rents from use of and investments in the resource, and the right to sell or otherwise transfer the resource to others (Alchian & Demsetz, 1972). From a property rights perspective, resources that a firm “owns” are not the physical resources, but rather are the property rights. Their use involves domain partitioning (Alchian, 1965).
Once value is created and captured through contracting processes, institutional norms may set in, formalizing certain practices even as informal practices adapt to changes (Jones, 1983). The dynamic capability literature emphasizes relatively turbulent environments and how routines are formed and sustained in path-dependent processes (Arthur, 1994; Nelson & Winter, 1982). A key characteristic of incomplete contracts that result from the evolving contracting process is that flexibility is already built in (Bernheim & Whinston, 1998), particularly where those incomplete contracts are of a relational nature (Baker, Gibbons, & Murphy, 2002; Macneil, 1980; Williamson, 1985).

Property rights theory provides a contractual process-oriented approach for how dynamic capabilities are developed, sustained, and (where necessary) rejuvenated, and in so doing intertwines firm boundary issues with the capabilities dimension of a strategic theory of the firm (Mahoney, 2001; Rumelt, 1984). The current paper suggests that a strategic theory of the firm that incorporates insights from dynamic capabilities and property rights theories conceptualize the firm as a “nexus of incomplete contracts.” In the following sections, we first provide a brief review of the dynamic capabilities and property rights research literatures. Then follows a discussion of how property rights insights can contribute to a theory of dynamic capabilities. Next, we propose a strategic theory of the firm based upon property rights in combination with Austrian economics (Kirzner, 1973; Schumpeter, 1950) in developing a dynamic capabilities theory of the firm that accounts for both the creation and distribution of economic value. The final section provides conclusions and discussion.

ESTABLISHING PROPERTY RIGHTS

Contributions of property rights theory

Property rights theory - particularly the classical theory (Alchian, 1965; Cheung, 1970; Coase, 1960; Demsetz, 1969; Furubotn & Pejovich, 1972) - provides a foundation for received theories in strategic management including transaction costs economics, the resource-based view, and dynamic
capabilities (Mahoney, 2005). Further, Coase’s (1937, 1960) contributions provide a critique of neoclassical theory in a similar vein as Austrian economics – specifically, that entrepreneurship is being neglected (Makowski & Ostroy, 2001). Thus, extending Coase’s (1960) insights on externalities, it is the entrepreneur’s role to “internalize externalities” (Demsetz, 1967) in creative ways so that there are well-defined property rights and thus economic value creation is facilitated.

While the focus of transaction costs theory has been matching transactional characteristics with appropriate governance mechanisms (Hennart, 1993; Williamson, 1996), the main concern of property rights theory, beginning with Coase (1960), has been attenuating inefficiency (dead-weight social loss) at the economy level and the implications of property rights theory for public policy and the legal framework. A key insight of property rights theory is that the presence of externalities potentially interferes with competitive market processes, and that a comparative analysis of markets, hierarchies, and government is required for attenuating negative externalities and for supporting positive externalities (Coase, 1937, 1960).

2 Although property rights research by economic historians such as Libecap (1989) and North (1990) applied property rights theory to macro-level analysis, there is a large body of research literature on property rights that focuses on more micro-level phenomena (at the individual- or firm-level). See Williamson (2000) for a review.

3 Makowski and Ostroy (2001) also note that while Austrians typically see the entrepreneurial or innovative side of economic decision makers in a positive light (e.g., entrepreneurial discovery), transaction costs economics and property rights theory (Coase, 1937, 1960; Williamson, 1975) consider such creativeness as potential opportunism by economic decision makers. Indeed, the flip side of opportunism may well be opportunity (for flexibility), and vice versa.

4 Taking a quite optimistic view, Demsetz asserts that, “property rights develop to internalize externalities when the gains of internalization become larger than the cost of internalization. Increased internalization, in the main, results from changes in economic values, changes which stem from the development of new technology and the opening of new markets, changes to which old property rights are poorly attuned … The emergence of new private or state-owned property rights will be in response to changes in technology and relative prices” (1967: 350). However, more recent property rights analysis critiques this optimistic view for its lack of accounting for political processes in contracting for property rights and free-riding problems involved in group decision making (Eggertsson, 1990; Kim & Mahoney, 2002; Libecap, 1989). Indeed, North (1981) suggests that the coercive power of the State has been employed throughout most of history in ways that have been inimical for obtaining improved property rights regimes and consequently better economic growth.
While transaction costs economics posits adaptive remedies to restore efficiency via markets, hierarchies or some hybrid governance structure (Williamson, 1996), property rights theory (Libecap, 1989; North, 1990) is less optimistic. Indeed, political decision-making processes are not typically efficient (Eggertsson, 1990; Kim & Mahoney, 2005). For example, in the case of oil field unitization in Texas, efficiency-enhancing agreements where aggregate economic gains were clearly large and positive were not achieved (Kim & Mahoney, 2002; Libecap, 1989).

Classical property rights literature, both empirically and theoretically (Alston, Eggertsson & North, 1996; North, 1990), acknowledges inefficiencies and the possibility of disequilibrium economic outcomes. Property rights theory, in fact, emphasizes both the struggles and achievements of economic decision makers for internalizing externalities, and therefore considers the entrepreneurial processes whereby economic value is established through defining property rights in novel ways (Alchian, 1965; Barzel, 1997; Coase, 1960; Foss & Foss, 2005).

The current paper emphasizes that the processes whereby entrepreneurs internalize certain aspects of externalities through innovations in property rights (Alchian, 1965) are applicable to the organizational processes that are crucial for the development of dynamic capabilities (Teece et al., 1997). Further, these processes of internalizing externalities go to the heart of how to define resources, and are consistent with Penrose’s (1959) notion of the subjective opportunity set. We discuss these issues in more detail below, starting with the potential contributions of property rights theory informing the resource-based and dynamic capabilities approach (Miller & Shamsie, 1996).

**Resources as bundles of property rights**

Economic transactions are exchanges of bundles of property rights (Coase, 1960). It is not the physical property itself but the rights to certain aspects of that property that are exchanged. Property rights are “[t]he rights of individuals to the use of resources… supported by the force of
etiquette, social custom, ostracism, and formal legally enacted laws supported by the states’ power of violence or punishment” (Alchian, 1965: 129) and as such, property rights define the nature of sanctioned norms of human behavior (Furubotn & Pejovich, 1972). Therefore, the property rights to use a resource may be held separately from the property rights to buy or sell that same resource. For instance, Alchian and Demsetz (1972) define ownership of the “classical capitalist firm” in property rights terms to include the following set of rights: (1) the right to appropriate economic returns from a resource (in team labor production the right to receive the residual income); (2) the right to use and change the form of the resource (in the case of labor the right to terminate or revise membership); and, (3) the right to transfer the above mentioned rights (i.e., alienability).

The theoretical insight that property rights are multi-faceted and can be partitioned (Alchian, 1965; Ostrom, 1990) allows us to define resources as bundles of property rights. The way in which property rights are delineated can in effect set the rules for economic activities. Which partitions of property rights to a strategic asset are being utilized in a particular instance, and how these various partitions are combined, are at the heart of how firms generate and sustain firm-level capabilities (Argyres & Liebeskind, 1998). Economic decision-makers are expected to seek ways of partitioning property rights and transactions of bundles of these partitions to achieve more efficient solutions (Coase, 1960). Thus, it is anticipated that property rights will be allocated to those who can generate greater economic value from the utilization of that particular set of property rights, foreshadowing the key outcome of the modern incomplete contracting models of Grossman and Hart (1986) and Hart and Moore (1990) --- often referred to as GHM models. Consistent with the Austrian view, greater economic value is achieved through a competitive discovery and bargaining process (Hayek, 1945).

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5 Although Coase’s (1960) property rights approach can be reconstructed to be consistent with neoclassical (static) equilibrium, Coase (1960) never claimed that bargaining processes to attain equilibrium outcomes are instantaneous. In fact, Coase’s (1960) view of the bargaining process is more consistent with (Austrian) dynamic processes and with the economic history of property rights (Eggertsson, 1990; Libecap, 1989; North, 1990).
1968). Furthermore, property rights are not static, but rather can be reformulated, usually by an entrepreneur who is able to see potentially new valuable bundles of property rights (Barzel, 1997; Foss & Foss, 2005).

Therefore, dynamic capabilities can be conceptualized as organizational processes (integration/coordination, learning, and reconfiguration/transformation) (Teece et al., 1997) and can be viewed as the ways that entrepreneurial firms unbundle and recombine partitions of property rights to respond adaptively to changes in the contracting environment. The insight that economic decision makers adapt to changes by reconfiguring property rights is at the heart of property rights theory (Coase, 1960; Demsetz, 1967; Pejovich, 1982). Moreover, Coasean (1960) bargaining, whereby economic decision makers seek more efficient bargaining outcomes, is seen as a discovery process in which information about the identity and bargaining positions of contracting parties is revealed through such a process, whereby the firm can sense new opportunities (Hayek, 1945; Teece, 2007).

Resources as a bundle of (partitions of) property rights are relevant for dynamic capabilities, particularly with regard to strategic complementary and co-specialized assets, which may be difficult to imitate or replicate via market mechanisms (Richardson, 1972; Teece, 1986). Following Austrian economics (Kirzner, 1985), the dynamic capabilities approach posits that entrepreneurial and managerial capabilities are involved in assembling a particular mix of resources, which are subject to transactional difficulties (Teece, 1982). Taking the unbundling and re-configuring of property rights to be outcomes of an endogenous bargaining process (Coase, 1960; Lippman & Rumelt, 2003) gives context to asset positions in dynamic capabilities (Teece et al., 1997).

Insert Table 1 about here
**Internalizing externalities: Establishing economic value**

In dynamic capabilities terms, the development of dynamic capabilities in turbulent environments is facilitated by organizational processes in reconfiguring and transforming services of resources (Penrose, 1959; Teece, 2007). In property rights terms, the process essentially internalizes externalities (Demsetz, 1967), and, in general, property rights theory considers the costs of establishing rights over certain partitions of resources in the public domain (*i.e.*, externalities and social costs) and the potential economic benefits of doing so (Barzel, 1997; Umbeck, 1981). Capturing economic value by establishing property rights over radio bandwidth (Coase, 1959) --- the internet and e-commerce being a modern analogue --- is a good illustration of entrepreneurial anticipation of potential economic value under Knightian uncertainty (Knight, 1921).

Coase (1960) maintains that by treating externalities like any other factor of production the bargaining process involved in arriving at more efficient solutions is made clearer. From a property rights perspective, resources and capabilities held by a firm are not necessarily the physical assets but rather are bundles of property rights. And as such, resources and capabilities can be unbundled and reconfigured, and therefore decision makers can adaptively arrive at more efficient solutions to contractual problems (Chi, 1994). Through repeated exchange and learning, exchange partners can find new solutions resulting from new ways to cooperate and even integrate operations. Trust and loyalty are not traded on the market (*i.e.*, are in the public domain; Barzel, 1997), but nevertheless can be valuable assets (Arrow, 1974), and efforts to recognize and internalize these “externalities” are critical for supplier relationships.

Certain aspects of property rights that are in the public domain, possibly in conjunction with new technological and/or market developments, can be sources of economic value creation. For instance, advances in information technology and the Internet make it necessary to evaluate information assets in new ways, with search engines being a case in point. Search engines are able to
create economic value by establishing property rights in advertising space in their search result pages. Advertisers realized they could better target potential customers, while some search engine providers are able to create economic value from a “commodity” and impute economic rents (Lippman & Rumelt, 2003) to these blank spaces on their search result pages.

Likewise, placing certain aspects of property rights in the public domain (Barzel, 1997) – whether it is intended or emergent – can also be a discovery process where the firm can potentially learn about new ways in which resources might be utilized (Kim & Mahoney, 2006). For instance, firms may experiment with the extent to which contractual provisions are well-defined, and sometimes may strategically leave some provisions intentionally ambiguous in order to retain flexibility for future contingencies (Barzel, 1997; Bernheim & Whinston, 1998).

Salient for discussion on dynamic capabilities is how the economic value of property rights is established through a competitive market process where important knowledge and information, and thus new opportunities, are revealed to key decision makers. Further, such a process is path-dependent, with a series of adaptive responses being implemented over time, usually requiring creativity and learning (Alchian, 1950). Dynamic processes of institutional adaptive responses whereby property rights are established over valuable resources provides context to how resources and capabilities are renewed through Penrosonian/Schumpeterian new combinations (Penrose, 1959; Schumpeter, 1950).

**PROPERTY RIGHTS AND DYNAMIC CAPABILITIES**

*Firm boundaries*

The view of firm boundaries is an important difference between contractual theories of the firm (Coase, 1937; Williamson, 1985) and the resources and capabilities approach (Amit & Schoe-
maker, 1993; Mahoney & Pandian, 1992; Penrose, 1959; Teece et al., 1997). Whereas contractual
theories – prominently transaction cost economics – frame the question of firm boundaries in terms
of the firm playing a transaction-costs economizing function in a competitive market, the resources
and capabilities approach considers the possibility that differences in capabilities can partially explain
firm boundaries (Argyres, 1996).7

One of the key contributions of the transaction costs theory of the firm in strategic
management is that technical efficiencies notwithstanding, it is the transactional aspects that
determine the choice of organizational forms or governance such as make or buy decisions
(Williamson, 1975). Teece (1982) extends the transaction costs logic to multi-product firms by
clarifying the distinction between economies of scope and the scope of the diversified firm; where
proprietary know-how or specialized indivisible resource that are held in common are leveraged
across multiple businesses, integration is likely to be the efficient outcome. Williamson (1983) goes
on to advance these ideas by emphasizing asset specificity, and by extension, ideas of exchanging
economic hostages in the form of asset specificity to facilitate efficient exchange. In this way,
transaction cost economics advances our understanding of the fundamental distinction between
markets and hierarchies, and between sales contracts and employment contracts (Simon, 1951;
Williamson, 1985). The transaction costs economics framework considers the antecedents and
consequences of different institutional settings.

Unlike transaction cost economics which emphasizes firm boundaries, the resource-based
view of the firm (Barney, 1986; Peteraf, 1993; Wernerfelt, 1984) does not directly deal with firm
boundaries. However, Penrose (1959) is quite clear in viewing the firm as an administrative, as well
as a productive, hierarchy. In particular, Penrose (1959) emphasizes organizational learning,

7 Because the dynamic capabilities approach is driven by the firm’s role in setting up its resource portfolio
(Santos & Eisenhardt, 2005), the nature of the resources themselves (e.g., similarity of underlying knowledge
base) is critical. However, the current paper maintains that even more fundamental is the contractual aspect
of coordinating these combinations (Liebeskind, 1996).
entrepreneurial and managerial cognition, and the importance of tacit knowledge (Kogut & Zander, 1992; Kor & Mahoney, 2000; Teece, 1982). These ideas are consistent with the contractual aspect of how firm boundaries may be drawn since learning and cognition (e.g., dominant logic, Prahalad & Bettis, 1986) have implications for contracting (Argyres & Mayer, 2004; North, 2005).

The importance of tacit knowledge in Penrose (1959) is more apparent when we consider managerial expectations and judgment under uncertainty and the firm’s subjective opportunity set, which is a decidedly “Austrian” perspective with implications for the entrepreneurial function (Foss, Klein, Kor, & Mahoney, 2008). Indeed, growth opportunities are enacted as a result of entrepreneurial foresight (Kor & Mahoney, 2000). The difficulties in identifying entrepreneurial opportunities (and thus the economic value of entrepreneurial foresight) increase when the underlying resource in question is proprietary information such as technical know-how (Teece, 1982).

A central aspect of the so-called “Penrose effect” is managerial attention and training as the limiting factor in the growth of the firm (Penrose, 1959). Furthermore, some specific human capital is co-specialized to the physical capital owned by the firm (Hart, 1995; Pitelis, 1999). For Penrose (1959), the co-specialization between human resources and a particular firm is a driver of the growth of the firm, and by extension its existence. 8

Since resources are bundles of property rights (Foss & Foss, 2005; Kim & Mahoney, 2002), the entrepreneur’s (the Penrosean firm’s) role in determining the services of resources of the firm is analogous to securing property rights to those underlying resources. The firm, as an institution for bringing together distributed resources and capabilities, does not need to own all the property rights of the underlying resources and capabilities; nor is it possible to do so. Indeed, the firm brings together combinations of resources and capabilities, which include varying extent of control and

8 Teece (1982) is more explicit about the market failures underlying the growth opportunities alluded to by Penrose (1959) by citing indivisible specialized physical capital and human capital as critical elements for extending firm boundaries (firm growth) and to fully utilize unused or under-utilized resources.
levels of formality (*i.e.*, *de jure* rights vs. *de facto* rights), so that the semi-permanent (Wernerfelt, 1984) links between combinations of resources and capabilities are governed by *incomplete* contracts (Aghion & Bolton, 1992; Aghion & Tirole, 1997).

In sum, transaction cost economics takes a broader view than Penrose (1959) of contracting difficulties in coordinating economic activities across firm boundaries. That said, the limits of administrative and productive effectiveness that Penrose (1959) emphasizes can be subsumed under the concept of transaction costs – for instance, the existence of the administrative unit due to the tacitness of the managerial function and stickiness in transferring managerial know-how quickly and effectively. Firm boundaries in the resources and capabilities perspective, therefore, are limited by administrative and productive effectiveness, anticipating Barzel’s (1982, 1987) measurement cost approach to entrepreneurship. The entrepreneur (or the manager in the Penrosean firm) engages in complex activities for which the results are highly uncertain, much like the subjective level of uncertainty that is known only to the entrepreneur (to the extent that it is even knowable).

**Generating economic rents**

Another important distinction that can be made between transaction cost economics and (the Penrosean) resources and capabilities approach is that transaction costs theory focuses on economizing on governance costs (*i.e.*, *ex ante* incentive provisions and *ex post* attenuation of opportunism), whereas the dynamic resource-based view deals with production-side efficiencies and dynamic capabilities. Firm-level economic profits in transaction costs economics have two primary sources: (1) economizing on the costs of transacting across firm boundaries; and (2) capturing at least a part of the quasi-rents (Klein, Crawford & Alchian, 1978). The conventional resource-based logic indicates that economic profits that accrue from scarce resources (which are more efficient) are Ricardian rents (Peteraf, 1993). But economic profits in Penrose (1959) are different from Ricardian rents, as the economic rents generated come from the firm’s ability to allocate (human capital)
resources more effectively (Kor & Mahoney, 2000; Prescott & Visscher, 1980). Superior recognition of the “subjective opportunity set” of certain managers over others is the source of economic rents, since managers who can seize new market opportunities will reap benefits from such entrepreneurial foresight. Therefore, Rumelt’s (1987) concept of entrepreneurial rents captures the economic profit concept in Penrose’s (1959) resources approach. The concept of entrepreneurial rents is consistent with Austrian economics’ antecedents of the dynamic capabilities approach with its emphasis on entrepreneurial alertness (Kirzner, 1973) and creative destruction (Schumpeter, 1950).

Just as the actual process of market competition is taken for granted in neoclassical theory (McNulty, 1968), the resource-based view (Barney, 1991; Peteraf, 1993; Rumelt, 1984) offers the formal static conditions for competitive advantage, but lacks consideration of the processes whereby firms achieve such an advantage. Similar to transaction costs economics (and even more so, agency theory), the resource-based view implies that alternatives and their consequences are known to the firm and it is fundamentally a matter of overcoming market frictions. This approach is not fully satisfactory, however, since competitive market processes entail searching for partners and (price and non-price) bargaining need to be brought to the foreground of the theory (Coase, 1960).

The competitive market process is a search for knowledge about the identity of trading partners and the conditions under which economically efficient transactions might take place (Coase, 1960), and how to bring together dispersed information in order to allocate resources and create economic value (Hayek, 1945). A key aspect of entrepreneurial discovery is knowledge of value (Kirzner, 1985), which entails not only an understanding of possible economic valuations under different contingencies, but also an endogenous generation of new (growth) options. Austrian economics, and by extension the dynamic capabilities approach, views entrepreneurial alertness (Kirzner, 1973) as a key aspect of entrepreneurial discovery.

9 The resource-based view (Barney, 1991; Peteraf, 1993) emphasizes economic profitability in equilibrium. Moreover, the managerial rents concept of Castanias and Helfat (2001) is in the (static) equilibrium tradition. In contrast, Penrose (1959) posits economic profitability in disequilibrium (Foss, 1999), and is consistent with the Austrian tradition (e.g., Kirzner, 1973; Schumpeter, 1934).
1973) and innovative capacity (Schumpeter, 1934) of firms as endogenous drivers of market competition, and this competitive process is a means for firms in the market to discover new knowledge that can be a source of economic profitability via new products or reformulating the value chain.

Property rights theory brings a contractual approach to the Austrian idea of entrepreneurial discovery (Kim & Mahoney, 2006). The dynamic capabilities approach, following the Austrians, views the search for entrepreneurial rents as a discovery process, whereby feasible opportunities that had been hidden due to market incompleteness are uncovered (Denrell, Fang & Winter, 2003). Indeed, market incompleteness means that all possible potential products or services have not been created, and that because of the absence of such products or services, we cannot place an economic value on that particular (as-yet-to-exist) product or service (Makowski & Ostroy, 2001).

Similarly in property rights theory, incomplete contracts that may allow opportunism (by one or more transacting parties) also may allow economic rents to be appropriated (Anderson & Hill, 1991). Firms will, through the bargaining process, seek to capture property rights left in the public domain (Barzel, 1997; Demsetz, 1967). In particular, as exogenous conditions change, for instance, in the form of changes in prices making such efforts now worthwhile or changes in technology, making property rights enforcement more feasible, firms seek to establish property rights over unclaimed rights. This suggested process is analogous to the entrepreneurial process in the Austrian tradition, and to organizational processes in the dynamic capabilities approach (Teece, Pisano & Shuen, 1997). Firms may also (endogenously) utilize such opportunities by leveraging existing complementary activities or capabilities (Denrell, Fang & Winter, 2003). Indeed, ingenious new contractual solutions (devising hitherto unrealized bundles of resources and capabilities) may be discovered through the competitive market process (Alchian, 1965; Coase, 1960).

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**Dynamic capabilities & property rights – A more systemic view**

The section above shows the usefulness of the property rights approach for joining dynamic capabilities with contractual approaches in terms of firm boundaries and generating economic rents. We now consider how competitive contracting and organizational processes develop and rejuvenate dynamic capabilities. Indeed, contracting processes are at the heart of creating and capturing value, as well as rejuvenating economic value over time. Thus, our theoretical focus considers how certain resource-combinations might be implemented and how such combinations might be kept within the organization.

Central to dynamic capabilities (and to Austrian economics) is the firm’s capacity to sense opportunities (Denrell, Fang & Winter, 2003) and to utilize them through organizational processes like integration, learning, and reconfiguration/transformation (Teece *et al.*., 1997). However, such capabilities are by definition difficult to predict *ex ante*, and this inability to predict might be considered a flaw as a theory (Kirzner, 1985). To address this possible flaw, a more concrete definition of capabilities is needed to better account for organizational processes – for instance, discussions of organizational forms (Teece, 1996). Organizational processes in the form of routines (Nelson & Winter, 1982) and patterned activities (Winter, 2003) give context to how such capabilities might be developed, such as in implementing intangible resources (Itami & Roehl, 1987), particularly human (intellectual) capital that reside within human resources.

The capability to sense new opportunities requires access to information as well as the ability to recognize and shape opportunities (Teece, 2007). Property rights theory can play a complementary role in addressing these issues since property rights theory focuses on interactions among various resources and capabilities by analyzing property rights of resources and capabilities that are established and bundled through a dynamic *contractual process* whereby economically efficient bundles
of property rights can be realized. The contractual process enables gaining access and distributing effectively the information necessary to sense new opportunities.

This contracting process is crucial for uncovering new information about the market and possibilities for economic value creation. Given the importance of users, suppliers, and even competitors for exchanging information and generating new knowledge, interactions across firm boundaries, whether formal or informal, are important sources of innovation (von Hippel, 1988). Also crucial is the organizational capability to determine where in the organization certain decisions are made and how to control and provide the correct incentives (Hellman, 1998; Jensen & Meckling, 1992). Just as Hayek (1945) suggests the co-location of knowledge and decision-making authority, property rights models maintain that the control rights should reside with whomever can best utilize (and have the most impact on) the outcomes of the decisions (Grossman & Hart, 1986; Hart & Moore, 1990; Lerner & Merges, 1998).

Once the firm has created economic value, it next must capture that economic value. While the dynamic capabilities approach emphasizes economic value creation, transaction costs economics (and agency theory) emphasize capturing economic value (distribution). This paper maintains that property rights theory is uniquely situated in that both economic value creation and the distribution of that economic value are simultaneously considered (Coase, 1988; Kim & Mahoney, 2005).

The establishment of institutions (Davis & North, 1971; North, 1990) and the formation of (economic) property rights where legal rights were only imperfectly enforced (Libecap, 1989; Umbeck, 1981) are ways in which economic decision-makers seek to establish rights over valuable property. This process of establishing property rights is also one of generating relevant information about bundles of property rights and about transactions, whether those rights are realized or remain

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10 By extending the dynamic resources approach to consider the divergence between potential and realized economic rents, it is also possible to move beyond a shareholder perspective to encompass a broader stakeholder theory that has as solid property rights foundation (Asher, Mahoney & Mahoney, 2005; Blair, 1995; Donaldson & Preston, 1995; Kim & Mahoney, 2007; Zingales, 2000).
unrealized (only potential rights). The situation where entrepreneurs observe and seek to mitigate the risk of opportunism brought on by contractual incompleteness is often a situation that the entrepreneur (at least partially) has had a hand in creating, since such is an opportunity for economic value creation – by definition – that is not necessarily easily seen by others in the market. The firm can be usefully thought of as a coalition of resource owners (Eggertsson, 1990), and it is the role of the entrepreneur to put together a value-creating combination as well as structure the relationship in a way that gets the economic incentives and governance right (Mahoney, 2005).

A NEXUS OF INCOMPLETE CONTRACTS: A SYNTHESIS

Theoretical developments in the resource-based and dynamic capabilities approach offer formal conditions for sustainability of firm-level economic rents, while transaction costs theory has advanced our understanding of firm boundaries (Mahoney, 2005). However, the dynamic capabilities approach is still at a nascent stage concerning economic distribution and to whom the economic rents accrue. The implicit assumption is that the firm controls all the resources necessary to generate economic rents. However, since firms are viewed as coalitions of resource owners (Eggertsson, 1990), the firm’s shareholders may have difficulty appropriating the economic rents, particularly if these resources are inalienable human capital. The nature of the firm in the dynamic capabilities approach emphasizes increasing the value of the firm’s resource portfolio (Santos & Eisenhardt, 2005) and property rights theory enables an institutional analysis of this competitive process.  

11 In contractual theories, transaction cost economics (Coase, 1937; Hennart, 1988; Teece, 1980; Williamson, 1996) is one of the prominent theories of the firm that is frequently drawn upon in the strategic management literature. We deal with agency theory only tangentially as our focus is on firm boundaries.

12 The dynamic capabilities approach (Eisenhardt & Martin, 2000; Teece & Pisano, 1994) deals with institutions and technologies in the context of appropriability regimes (Teece, 1986). While the legal and institutional frameworks may be mostly outside the control of individual firms, the parts that the firm can control in establishing property rights over resources and capabilities in novel ways are important concerns for the dynamic capabilities approach. By juxtaposing intellectual property rights (institutional/legal aspects) with inherent replicability (technical aspects), the dynamic capabilities approach joins the exogenous intellectual property regime with an endogenous element of managerial insight and decision-making.
By combining insights from dynamic capabilities and property rights, we can now define the firm as a “nexus of incomplete contracts.” The idea of “nexus of (complete) contracts” (Fama, 1980) is rightly discarded in the dynamic capabilities approach (Teece, Pisano & Shuen, 1997) because it rules out competitive advantage, which requires, by definition, a certain degree of market imperfections. A “nexus of (complete) contracts” does not allow for strategy, so that there are no surprises, thereby eliminating the possibility of entrepreneurship. A nexus of (complete) contracts implies that the firm has chosen the best available contracts and has written efficient contracts. If the contracts that make up the various relationships that the firm has with all its input providers are complete contracts, then the outcome is all but predetermined with little need for innovation or entrepreneurial alertness.

The coordination of resources and capabilities, whether within or across firm boundaries, is done through various (price and non-price) mechanisms. Thus, rather than thinking of a continuum of ideal types (markets vs. hierarchies), economic activities (both within and across firm boundaries) can be understood as being coordinated by multiple mechanisms, and these organizational forms are hybrids (Hennart, 1993). Because of the complex nature of coalitions of resources and capabilities, many different coordination mechanisms are employed simultaneously, where some mechanisms may be closer to sales contracts and others are closer to employment contracts (Simon, 1951). Expanding the notion of contracts to include employment contracts – and even more broadly to include implicit, or relational contracts (Baker et al., 2002) – we can now define the firm to be the focal point of a multitude of contractual relationships. The concept of organizational routines (Nelson & Winter, 1982; Winter, 2003) can be analyzed in the context of these contractual control mechanisms. This complex web of contractual relationships that make up the firm can be described as a “nexus of incomplete contracts.” Relationships governed by incomplete contracts are likely to concern resources and capabilities that are difficult to contract upon, such as tacit know-how (Nelson & Winter, 1982; Teece, 1982) or are highly co-specialized (Teece, 1986) so that the risk of
economic holdup is high (Williamson, 1985). Indeed, strategy implementation often requires resources and capabilities that are non-appropriable, since property rights are not well defined, or it may even be that these resources and capabilities are not traded on the market at all (Dierickx & Cool, 1989; Eswaran & Kotwal, 1985; Peteraf, 1993).

With incomplete contracts, contracts cannot be written to take into account all possible contingencies so that there is room for various exchange hazards to threaten the smooth working of the transaction. The source of these exchange hazards can come from asymmetric information and opportunism, leading to a need for adaptive response such as vertical integration or credible commitments (Williamson, 1985). The extent to which a contract is incomplete is the extent to which potential exchange hazards exist. To put it differently, the extent to which residual control rights exist (relative to specified rights) (Grossman & Hart, 1986; Hart 1995) is another indication of the incompleteness of a contract. But this potential for exchange hazards masks the other side of the coin: there is also a potential for gain to the extent that the contract is incomplete. The value of “trust,” where firms substitute “trust” for hierarchical control (Gulati, 1995), is the extent to which the contract is incomplete but will be covered by “trust” and in turbulent contracting environments retain flexibility in adapting to new situations (Bernheim & Whinston, 1998).

A nexus of incomplete contracts implies that the firm has many different providers of resources and capabilities contributing to the value-creation process, but with varying degrees of

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13 The key insight of the modern property rights model of Grossman and Hart (1986) is to minimize economic incentive dilution by giving the residual rights of control to the party who has the bigger impact on the total economic value that can be created by the collaboration between the two parties. Grossman and Hart’s (1986) model of asset ownership that equates ownership with residual control rights is highly stylized since it precludes residual control rights being divided, and hence precludes the possibility of shared ownership such as an equity joint ventures (Kim & Mahoney, 2005). There are at least two economic elements critical for understanding ownership: residual control rights (Hart & Moore, 1990); and residual rights to income or residual claimancy (Alchian & Demsetz, 1972). The appropriate allocation of residual control rights mitigates ex post contractual hazards, while appropriately aligning residual claims mitigates ex ante contractual problems. Both residual control and residual claimancy (ex ante and ex post contractual) issues are at the heart of a definition of ownership (Kim & Mahoney, 2005; Milgrom & Roberts, 1992).
overlap in commitment and alignment of incentives. For instance, human resources employed by the firm cannot be owned by the firm, but the firm can exert control over certain aspects of human capital (Holmstrom, 1999; Wernerfelt, 2001). At the same time, those human resources who provide highly specialized human capital to the firm may be able to appropriate economic rents from the firm as well. Such human resources do not necessarily get residual claimant status in the organization through partial ownership, but rather by developing human capital that is co-specialized to the firm’s critical assets, human resources can make themselves more economically valuable to the firm via access rights to other resources within the firm (Rajan & Zingales, 1998). This kind of dynamic interaction between the firm and specialized input providers suggests the need for firms to constantly reconfigure their mix of resources to more fully capture the economic value created. Defining the firm as a nexus of incomplete contracts can help in this process of constant adaptation since the firm can now deal with not only organizational (appropriability) issues but also with the coordination processes of how to mix the different resources and capabilities together in a value-creating coalition.

CONCLUSIONS AND DISCUSSION

One of the challenges of strategic management beyond theoretically explicating the formal conditions of sustainable competitive advantage is to explain and predict how the firm can build such an advantage, especially in a world of fast-paced technological, economic, and organizational changes. For the firm attempting to gain and sustain competitive advantage, it is a fine balancing act to create and/or exploit market opportunities (market frictions) but at the same time maintain stability once the competitive advantage is gained. Theoretical issues concerning the sustainability of economic rents are addressed by the so-called VRIN characteristics (Barney, 1991) and by the “four cornerstones” of competitive advantage (Peteraf, 1993) in the resource-based view and by the
analysis of imitability and appropriability regimes in the dynamic capabilities approach (Teece, Pisano & Shuen, 1997). In terms of strategy implementation, the dynamic capabilities approach delves deeper by considering organizational processes in which the firm brings together resources and capabilities in ways that create economic value via integration, reconfiguration/transformation, and learning. This focus on dynamic organizational processes emphasizes endogenous managerial and entrepreneurial functions behind combinations of co-specialized assets (Teece, 1986) and combinative capabilities (Kogut & Zander, 1992).

The current paper maintains that property rights theory gives context to key constructs in the dynamic capabilities approach; in particular, concerning the nature of organizational processes and asset positions. Property rights and legal frameworks are institutional mechanisms within which firms set *ex ante* incentives (agency theory), deal with *ex post* governance issues (transaction costs theory), and acquire and/or develop VRIN resources and capabilities (the resource-based and dynamic capabilities approach). Institutional and legal frameworks are macro-level environmental aspects of business decisions that are at least partially endogenous processes through which new knowledge can be brought together and new opportunities created (Makowski & Ostroy, 2001; Schumpeter 1934, 1950).

A key insight of property rights theory is that different specifications of property rights arise in response to resource allocation problems due to scarcity (Pejovich, 1982). This insight does not necessarily imply, however, that an impersonal market mechanism ruthlessly drives towards an efficient outcome. Quite to the contrary, efficient outcomes are achieved through intense bargaining (Coase, 1960) and sometimes from moments of ingenuity (Alchian, 1965; Demsetz, 1966), which suggests a much more active role for firms whose endogenous choices are drivers for competitive market processes as well as for the organizational processes that seek to identify and exploit market opportunities.
In this way, the issue of determining firm boundaries is intricately intertwined with the idea of managerial or entrepreneurial insight as a driver in the growth and economic profitability of firms. Although Penrose’s (1959) theory of the growth of the firm - mostly in the context of diversification – did not fully consider Coase’s (1937) insights on the contractual and institutional perspectives on firm boundaries, the modern dynamic capabilities research literature has been much more willing to incorporate transaction costs (broadly construed) into the analysis (Argyres, 1996). The current paper maintains that the seminal insights of Coase (1960) and Alchian (1965) concerning contractual processes as a discovery process should stimulate even more conversation between these research literatures, particularly through systematic consideration of property rights theory.
Table 1: Key elements in dynamic capabilities

<table>
<thead>
<tr>
<th>Key constructs in dynamic capabilities</th>
<th>Direct antecedents</th>
<th>Contributions from property rights theory</th>
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</thead>
<tbody>
<tr>
<td><strong>Processes:</strong></td>
<td></td>
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<tr>
<td>▪ Coordination/</td>
<td>TCE (integration of external activities &amp; technologies; Penrose (1959) (subjective opportunity set)</td>
<td>Combinations of partitions of property rights (Alchian, 1965) as an adaptive response</td>
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<td>▪ Integration</td>
<td></td>
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<td>▪ Learning</td>
<td>Evolutionary economics (routines)</td>
<td>Coasean (1960) bargaining process as a discovery process</td>
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<td>▪ Reconfiguration/</td>
<td>Schumpeter (1934), Hayek (1945): new combinations, divided knowledge</td>
<td>Internalizing externalities (Coase, 1960; Demsetz, 1967)</td>
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<tr>
<td>transformation</td>
<td></td>
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<tr>
<td><strong>Positions:</strong></td>
<td>Resource-based view (Barney, 1991; Peteraf, 1993)</td>
<td>Resources as a bundle of (partitions of) property rights; particularly consistent with co-specialized assets (systemic view of strategic assets)</td>
</tr>
<tr>
<td>▪ Technological assets</td>
<td>Technology management (Henderson &amp; Clark, 1990; Teece, 1986)</td>
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<td>▪ Co-specialized assets</td>
<td>Complementary assets (Richardson, 1972; Teece, 1986)</td>
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<td>▪ Financial assets</td>
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<td>▪ Locational assets</td>
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<tr>
<td><strong>Paths:</strong></td>
<td>Evolutionary economics, Alchian (1950)</td>
<td>Property rights theory/ Economic history</td>
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<tr>
<td>▪ Path dependencies</td>
<td>Schumpeter (1934)</td>
<td>(Libecap, 1989; North, 1990)</td>
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<td>▪ Technological opportunities</td>
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<td>▪ Appropriability regime</td>
<td>Intellectual property rights; technology management (Oxley, 1999; Teece, 1986); imitability (resource-based view)</td>
<td>Arrow (1962) on intellectual property rights; see Besen &amp; Raskind (1991) for a review</td>
</tr>
<tr>
<td>▪ Capabilities</td>
<td>Penrose (1959): the services of resources, not the resources themselves</td>
<td>Coase (1960): Resources as bundle of property rights</td>
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<td></td>
<td>Transaction cost economics</td>
<td>Resource-based view</td>
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<td>Firm boundaries</td>
<td>Opportunism</td>
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<tr>
<td>Economic profits</td>
<td>Quasi-rents</td>
<td>Ricardian rents</td>
</tr>
<tr>
<td>Contributions from PRT</td>
<td>“Nature of the firm”</td>
<td>Resources as a bundle of property rights</td>
</tr>
</tbody>
</table>
REFERENCES


