MANAGERIAL AND DECISION ECONOMICS
Manage. Decis. Econ. **23:** 225–245 (2002)
DOI: 10.1002/mde.1063

Resource-Based and Property Rights Perspectives on Value Creation: The Case of Oil Field Unitization

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Resource-based theory implicitly assumes that property rights to resources are secure. Extant property rights theory enables us to relax this assumption to take into account processes where there are struggles in establishing property rights that enhance the realized economic value of resources. A case study of oil field unitization (where a single firm is designated as unit operator to develop the oil reservoir as a whole) is analyzed to illustrate the following points: a full resource-based analysis of value creation must incorporate the role of property rights to internalize externalities and to solve prisoners' dilemma problems of common-pool resources. Copyright © 2002 John Wiley & Sons, Ltd.

INTRODUCTION

Resource-based theory in strategic management maintains that resources that are valuable, rare, inimitable, and non-substitutable can lead to value creation and sustainable competitive advantage (Barney, 1991). Implicit in this resource-based proposition is that property rights (Coase, 1960) are secure due to the inherent attributes of resources (Lippman and Rumelt, 1982) as well as being effectively protected by a combination of third-party enforcement and self-enforcing agreements (Rumelt, 1984; Williamson, 1985). In the current paper, the objective is to expand the scope of resource-based theory to a business context where there are struggles in establishing property rights that will enhance the economic value of resources. Focusing on frictions in establishing property rights highlights how in some instances there are large and persistent economic gaps between *potential* and *realized* values. Property rights theory enables resource-based theory to move beyond potential value creation and to analyze even more challenging economic and strategic management issues concerning realized value creation. To illustrate these fundamental points in property rights and resource-based theories, we examine the case of oil field unitization in the United States.

Oil field unitization is where a single firm is designated as the unit operator to develop the oil reservoir as a whole. Unitization is economically desirable because with a single unit operator (and the other leaseholders acting as residual profit claimants) there are joint incentives to develop the reservoir in a manner that maximizes aggregate value creation over time. Resource-based theory focuses on whether the oil field satisfies the necessary criteria for potential value creation (assuming that oil field unitization will occur). Property rights theory explains why the realized value creation can be disappointingly below

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potential value creation. This business context of oil field unitization helps illustrate a basic theoretical point: the determination of value creation—a focus of resource-based theory—is critically informed by an analysis of property rights. Indeed, in many cases (where positive and negative externalities exist), property rights need to be placed at the foreground of resource-based analysis of the *realized* value creation.

The paper proceeds as follows. The following section provides an overview of property rights theory. The next section provides property rights issues for the case of oil field unitization in the United States. The subsequent section applies Peteraf's (1993) cornerstones of competitive advantage in resource-based theory to the case of oil field unitization. It is also shown how property rights and resource-based theory are complementary for analyzing value creation and distribution. The last section provides conclusions.

AN OVERVIEW OF PROPERTY RIGHTS THEORY

Introduction

Why is property rights theory important for strategic management? To address this question, we review its antecedents, its place in the overall framework of organizational economics (Barney and Ouchi, 1986), and how property rights theory contributes to the discipline of strategic management. The focus of strategic management is why certain heterogeneous firms outperform others (Rumelt, *et al*., 1994). An important theoretical perspective for answering this fundamental question comes from resource-based theory (Rumelt, 1984; Barney, 1991; Conner, 1991; Amit and Schoemaker, 1993; Peteraf, 1993). The seminal contribution to resource-based theory is Penrose's (1959) *The Theory of the Growth of the Firm*. Several contemporary contributions to resource-based theory explicitly recognize Penrose's influence on modern strategic management theory concerning economic value creation and sustainable competitive advantage (e.g., Teece, 1982; Wernerfelt, 1984; Mahoney and Pandian, 1992; Mahoney, 1995; Foss, 1997; Kor and Mahoney, 2000).

Contemporary resource-based research seeks to understand sources of competitive advantage from owning certain resources, and to explain and predict the kinds of resources that enable a firm to sustain competitive advantage.[1] Resource-based theory implicitly assumes that resources are secure due to the inherent attributes of the resources as well as being effectively protected by third-party enforcement and self-enforcing agreements such as mutual sunk cost commitments to support exchange (Williamson, 1985; Mahoney and Pandian, 1992).[2] Property rights theory complements an apparent shortcoming of resource-based theory by relaxing the implicit assumption that resources are secure and by dealing with the processes whereby property rights are established.

Property rights refer to 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 (Libecap, 1986, 1989). According to Coase (1960), it is useful to think of resources as *bundles of rights* rather than physical entities. Thus, from the 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, 1969). In the property rights approach, the corporation is viewed as a 'method of property tenure' (Berle and Means, 1932, p. 1). In fact, Alchian and Demsetz (1972) define ownership of the 'classical capitalist firm' in property rights terms as: (1) the right to appropriate returns from a resource (in team labor production the right to receive the residual); (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).

Property rights theory has common antecedents with transaction costs and agency theories. Williamson (1985, p. 24) provides a 'cognitive map of contract' where transaction costs, agency, and property rights theories are placed under a common branch of an economic efficiency theory of contracting. These theoretical traditions are influenced by dissatisfaction with neoclassical economic theory in explaining firm behavior.

Transaction costs theory provides theoretical underpinnings for analyzing important business phenomena such as diversification and vertical integration (Teece, 1982; Mahoney, 1992b). Williamson's (1975) classic book provided the initial impetus for transaction costs theory to be widely applied in research disciplines such as economics, finance, marketing, organization theory, sociology, and strategic management (Carroll *et al*., 1999). Agency theory also has had wide use in a number of research disciplines, including accounting, finance, marketing, political science, organization theory, sociology, and strategic management (Eisenhardt, 1989). Although not without some detractors, transaction costs theory and agency theory form parts of the theoretical core of the discipline of strategic management.

Property rights theory, however, has been relatively neglected by strategic management researchers.[3] Moreover, recent theoretical developments in property rights and ownership issues in economic modeling have gone on without much reference to early property rights works. We refer to this earlier set of works as 'classical property rights theory' to contrast with 'modern property rights theory', of the formal models of Grossman and Hart (1986) and Hart and Moore (1990) (also sometimes called 'The GHM model'). In modern property rights theory, ownership matters because it is a source of power over *residual control rights* under incomplete contracting (Hart, 1988, 1995). Residual control rights to resources are the rights to determine uses of resources under circumstances that are not specified in a contract. Analyzing the relevance of the GHM model for strategic management, Foss and Foss (1999) conclude that the GHM model is not an unambiguous scientific advance over classical property rights theory of Coase, Alchian, and Demsetz, among others (see also, Paul *et al*., 1994; Demsetz, 1998).

We submit that property rights theory has much to offer strategic management, especially in an environment with increasing importance of intellectual property rights and knowledge-based resources. In particular, property rights theory complements resource-based and dynamic capabilities research because they all deal with appropriating economic rents accruing to resource ownership. Moreover, property rights theory is able to extend these strategic management theories by relaxing implicit assumptions that resources are secure due to the inherent attributes of the resources as well as being effectively protected by third-party enforcement and self-enforcing agreements.[4] This theoretical extension enables expanding the scope of resource-based theory to analyze *realized* value creation in strategic management.

Origins

Coase (1960) introduced property rights into mainstream economics. Neoclassical economic theory portrays the market as an economic system where the price mechanism costlessly coordinates economic activities, allocating economic resources to their most productive use, and thus arriving at an efficient level of output (i.e., Pareto optimality). Why do firms exist at all, if markets are efficient? Coase (1937) observes that employees behave in certain ways because they are told to do so in an authority relationship, not because of the price mechanism. The firm exists because there are transaction costs to operating the price mechanism.

There are strong parallels between Coase's 'Nature of the Firm' (1937) paper and his 'Social Cost' (1960) paper. In the 'Nature of the Firm', because of costs of operating the market (i.e., positive transaction costs), there are alternative modes of transacting (e.g., the firm). If transaction costs are zero, it does not matter for efficiency purposes whether economic activities are organized within firms or through the price mechanism. In the 'Social Cost' paper, impediments to perfect market competition are (positive and negative) externalities and subsequent transaction cost difficulties in clearly delineating private property rights. A classic example of (negative) externalities is the harmful effects of smoke from factories on nearby residential districts. Pigou (1932) proposes that the government should resolve an apparent shortcoming of the market by levying taxes on these factories. Coase (1960) criticizes Pigou (1932) on the theoretical grounds that the reciprocal nature of the economic problem had not been taken into account. Harmful byproducts of factory operation (pollution, health concerns, etc.) have to be weighed against beneficial effects (jobs for the community, value created toward increasing social welfare, etc.). Therefore, a comparative efficiency framework informs the governance choice between different modes of coordinating economic activities. The method of comparing an ideal norm with an existing 'imperfect' institution is called the

nirvana approach (Demsetz, 1969, 1973) and is to be contrasted with what Coase (1960) is proposing: a comparative institutional approach in which the relevant choice is between alternative real institutional arrangements. Coase's viewpoint plays a central role in Williamson's transaction costs framework where "'[f]lawed'' modes of economic organization for which no superior feasible mode can be described are, until something better comes along, winners nonetheless' (Williamson, 1985, p. 408).

An important insight of property rights theory is that different specifications of property rights evolve in response to the economic problem of allocating scarce resources, and the prevailing specification of property rights affects economic behavior (Coase, 1960; Pejovich, 1982, 1995). Whereas, in the 'Nature of the Firm', the theoretical focus is on explaining the firm as an alternative institution to markets for reducing transaction costs, the 'Social Cost' paper analyzes how law evolves to reduce transaction costs (Coase, 1991). Both seminal papers explain why different modes of coordinating economic activities exist, and the main thesis of the 'Nature of the Firm' paper can be summarized in the language of the 'Social Cost' paper (a restatement of the 'Coase Theorem'): given zero transaction costs, governance choice between different modes of resource allocation will not matter for economic efficiency (Mahoney, 1992b). A review of the dual nature of Coase's 'Nature of the Firm' and 'Social Cost' papers suggests a need for comparative assessment of institutional responses to issues of economic efficiency and distribution, which are the basis for property rights theory.

Another key insight in Coase (1960) concerns the dynamic aspect of institutional responses. This research area was subsequently taken up in a number of important property rights works (e.g., Alchian, 1965, 1969; Demsetz, 1967, 1988). Economic institutions are posited to evolve toward more efficient economic solutions through negotiations between interested (contracting) parties. If costs of negotiating are negligible, we expect theoretically to arrive instantly at a Pareto optimal outcome.[5] In a business world of positive transaction costs, this is a gradual transactional process at best. In fact, there are clearly cases where systems of property rights are not efficient (North, 1990). For example, slow, incomplete and controversial privatization efforts contributed to a stagnation of the economies of Russia, the Ukraine, and other transitional economies. The evolution of property rights is also a path-dependent process because of vested interests in existing political, social, and economic positions of contracting parties (Libecap, 1981, 1989). Moreover, such considerations as politics and vested interests lead to, in certain cases like contracting for unitization of oil fields, failure in reaching an agreement. Indeed, a comparative institutional framework with predictive power requires taking into account these relevant contracting factors.

In summary, property rights theory provides a comparative economic efficiency framework and an evolutionary perspective of the processes through which institutional choices are made. In the next section, we examine property rights in the business context of oil field unitization in the United States.

A PROPERTY RIGHTS THEORY OF OIL FIELD UNITIZATION

> ... [P]roperty 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... [T]he emergence of new private or state-owned property rights will be in response to changes in technology and relative prices (Demsetz, 1967, p. 350).

Demsetz (1967) and Davis and North (1971) portray an optimistic view of the emergence of an efficient system of property rights that 'internalizes externalities'. Given zero transaction costs, the economic system will move toward an efficient outcome, costlessly and instantly—the so-called Coase Theorem (1960, 1988). Even in a world of positive transaction costs, Demsetz's (1967) theory suggests that as long as the cost–benefit calculus indicates potential economic gains to be expected, we will observe a change in the system of property rights that leads to potential economic gains being realized. Forces that drive

adjustments in property rights include new market prices and production possibilities to which old institutional arrangements are poorly attuned (Demsetz, 1967; Furubotn and Richter, 1997). Davis and North argue that: 'It is the possibility of profits that cannot be captured within the existing arrangemental structure that leads to the formation of new (or the mutation of old) institutional arrangements' (Davis and North, 1971, p. 39).

However, more recent property rights analysis has questioned Demsetz's (1967) optimistic economic assessment (Eggertsson, 1990; North, 1990). For example, Eggertsson (1990) criticizes Demsetz's (1967) economic view for its lack of accounting for political processes in contracting for property rights and free-riding problems involved in group decision making. There are many historical examples supporting Eggertsson's (1990) criticism of Demsetz's (1967) 'optimistic view', such as persistence of inefficient outcomes observed in development of forestry resources in the Pacific Northwest in the late 19th and early 20th centuries and the case of oil field unitization in the United States (Libecap, 1989). These economic examples show that the market does not inevitably lead to (Pareto) efficient outcomes since political dynamics, third-party enforcement, and the overall institutional framework are influential factors in determining effective property rights. The efficiency of the government mechanism is also crucial. Indeed, 'a theory of property rights cannot be truly complete without a theory of the state' (Furubotn and Pejovich, 1972, p. 1140).

Such economic problems are especially evident in the case of representative governments where elected officials must compete for votes and political support. Where private negotiations are difficult due to dispute, political consensus on effective regulatory policies to support private contracting also becomes difficult to achieve (Libecap and Wiggins, 1985). North (1981) argues that a successful theory of institutional change will require not only theories of the state and demographic change but also theories of ideological behavior and technical change. Effective political structures respond to these changes and create a set of property rights that induce economic value. North (1981), in sharp contrast to his earlier theoretical view (e.g., Davis and North, 1971), suggests that the coercive power of the state has been employed throughout most of history in ways that have been inimical to economic growth. Historical investigation of property rights law in the United States also suggests a less optimistic view of property rights change. This more complete view of property rights is based on an examination of interest groups and economic conflicts among them over distributional effects of property law and government regulation (Hurst, 1960; Friedman, 1985).

In the remainder of this section, we consider the business case of oil field unitization in the United States. The purpose of this section is to illustrate that in an economic world of positive transaction costs, property rights theory must come to the foreground in an analysis of realized economic value creation.

Oil Field Unitization

In the United States, land over subsurface oil reservoirs is often owned by multiple owners. More importantly, oil is migratory,[6] meaning that it moves within the reservoir so that it is possible for one landowner to drill on his land and extract oil that had been under a neighbor's land. Common law rule of capture allows landowners to drill a well on their land and drain oil (and gas) from their neighbors without liability (Weaver, 1986; Lueck, 1995), as property rights to oil and gas are assigned only upon extraction. Initial property rights to oil are assigned to all landowners with access to the oil reservoir, so that each landowner, if he wanted other landowners to stop causing negative externalities, would have to compensate them sufficiently. It is the joint condition of multiple landowners of the surface over an oil reservoir, and the migratory nature of oil (McDonald, 1971) that leads to an inefficient economic outcome concerning contracting for oil field unitization.

A unit is formed by joining oil leases within the reservoir. Unitization refers to a private contractual arrangement to reduce economic losses associated with common-pool extraction.[7] Unitization is characterized by several important contracting specifications. The unitization contract assigns a single unit operator to develop the oil field, with economic sharing rules specified in advance. Under oil field unitization, drilling is delegated to a single operator who is a residual claimant to profits from the reservoir, whereby strategic intent shifts from maximization of economic value of an *individual lease* to

maximization of economic value of the *unit* (Libecap, 1998). Normally, the oil firm that is appointed as the (lone) operator is the firm that has the most to gain (and the most to lose), in order to align economic incentives of the operator with maximizing production of the oil reservoir as a whole. Thus, oil field unitization is the most straightforward economic solution to a serious common-pool problem in oil and gas production where there are potentially large economic efficiency losses. This recommended economic outcome is consistent with Grossman and Hart's (1986) theoretical arguments of assigning ownership (residual control) to the economic party with the most to gain or lose from performance of a particular resource, so that economic incentives of the owner are aligned with maximizing economic performance of that resource.

Unitization provisions include governance mechanisms such as voting rules, notification requirements, grievance and arbitration procedures, unit operator reporting and accounting practices, establishment of a supervisory committee, compensation for private capital equipment (typically, wells, pipelines, and possibly injection plants) taken over by the unit, and the economic sharing formula by which production, capital, and operating costs are distributed among the working interests (Libecap and Smith, 1999). Unitization contracts are typically 10–20 years long, and capital investments are highly site-specific since equipment is set up to accommodate geological characteristics of the oil reservoir. Moreover, the exact magnitude of expected increase in productivity of oil extraction from implementing unitization is highly uncertain. Estimation of oil production in the case of unitization is not straightforward and involves many geological variables for which the objective estimates are difficult to derive. Relevant parameters for each reservoir vary greatly, and there are disputes whether a particular parameter should be used, as well as on what the weights of certain parameters should be, in the economic sharing formula (*Oil and Gas Journal*, Sept. 13, 1993). Furthermore, initiation of unitization changes the characteristics of the reservoir so that it would be impossible to estimate, after initiating actual extraction under unitization, what extraction results of each lease would have been had unitization not taken place. Therefore, the basic framework of the contract, including economic sharing rules, has to be worked out once-and-for-all in advance of unitization. However, in practice, not all unitization contracts are complete, leaving potential for various forms of competition among owners that dissipates economic rents. Moreover, only if the parties to a contract have unit production shares that are the same as their cost shares will the contract be self-enforcing (i.e., incentive compatible), thus avoiding moral hazard problems. Otherwise, conflicts over production and investment and resulting economic rent dissipation follow (Libecap and Smith, 1999).

Extraction of oil is a costly project because crude oil is trapped in pore spaces of the rock with little compressibility, so that crude oil cannot expel itself, but needs to have compressed gas and water within the reservoir to push it out. In early (primary recovery) stages of the oil field's life, extraction is possible without injection of gas and water. Later on in the oil field's life, gas and water are injected into one well to force oil toward another series of wells. This process is 'secondary recovery', accounting for roughly 50% of US domestic production (Office of Technology Assessment, 1978). Such pressures are initiated after primary recovery is exhausted. It is now commonly understood that by maintaining reservoir pressure as long as possible, and at its highest level, primary production efficiency is optimized (Tiratsoo, 1976). In order to maximize production of these fields, proper techniques must be used in extraction in early stages of its life. Otherwise, irreparable damage may be done, leading to premature abandoning of the oil field. It is economically desirable to initiate such processes as soon as sufficient knowledge of geology of the reservoir has been gathered, rather than waiting for primary oil to be exhausted. For efficient extraction, the rate of production and the location of the wells are important variables (McDonald, 1979; Weaver, 1986). Efficient production requires that extraction should not be too rapid so that early venting of water and natural gas (which help drive oil to the surface) is prevented (Libecap, 1998), and spacing and location of wells must be such that necessary pressures are maintained (Weaver, 1986).

Since oil fields are owned by many different owners, each owner of a tract of land will attempt to maximize his or her own economic returns, resulting in competitive drilling and a 'race to produce'. Accordingly, at any point in time,

individual production decisions are made to enhance the economic value from leases rather than to maximize economic value of the overall reservoir. This competitive drilling goes against efficient extraction principles of carefully locating wells and maintaining extraction rates to optimize production.[8] As firms compete for migratory oil and gas, they dissipate reservoir economic rents with excessive capital, too rapid production, and lost total recovery of oil (McDonald, 1971; Smith, 1987; Libecap, 1998).

The economic gains from oil field unitization have been understood for a long time, perhaps since the first oil discovery in the United States in Pennsylvania in 1859. Bain notes that: 'It is difficult to understand why in the United States, even admitting all obstacles of law and tradition, not more than a dozen pools are 100 percent unitized (out of some 3000) and only 185 have even partial unitization' (Bain 1947, p. 129). Similarly, Libecap and Wiggins (1985) report that as late as 1975, only 38% of Oklahoma production and 20% of Texas production came from reservoir-wide units due to failure of contracting for oil field unitization. Wiggins and Libecap (1985) show how difficult it is to achieve oil field unitization due to disagreements over economic sharing formulas. Libecap and Smith (1999, 2001b) present empirical evidence that reveals more precisely the kinds of economic problems that oil and gas firms face in negotiating unit contracts. Uncertainty in valuing holdings in gas and oil leads to bargaining disputes in arriving at a single share formula. Libecap and Smith (2001a) show that this poor economic outcome appears to be particularly evident when holdings on the reservoir are heterogeneous (e.g., when some parties primarily own oil and others gas). In fact, a large number of oil fields are heterogeneous. According to the database of significant oil fields compiled by Nehring (1981), some 63% of those fields containing oil also contained natural gas.

One example of economic waste is Slaughter oil field in Texas, one of the largest in the state (87 000 acre field). This oil field is divided into 25 unitization areas and 28 recovery projects that have not achieved unitization. On this oil field, there are 427 offset injection wells, which are wells that are set up for the purpose of preventing oil migration to an adjacent tract of land (but unnecessary for extraction). Costs for setting up such injection wells amounted to approximately $156 million (Weaver, 1986, pp. 319–320). Such costs presumably do not take into account opportunity costs of oil lost by using inefficient extraction methods, making inefficiencies of competitive drilling that much greater than a cooperative unitization solution. Indeed, failure to achieve unitization has far-reaching implications for overall loss, such as disincentives for exploration by excessive drilling that drives up costs (Murray and Cross, 1992).

To prevent waste and extract oil more efficiently, the most complete solution is oil field unitization (Libecap, 1989). Economic benefits of unitization have been demonstrated as increasing production by as much as twice the amount produced under no unitization (e.g., Cromwell field). In Shuler–Jones oil field, ultimate recovery was increased 50%, from 32 to 50 million barrels with unitization (Weaver, 1986). In the state of New Mexico, after it added a compulsory unitization statute in 1977, it added 280 million barrels of oil from 33 statutory unitizations in a span of 20 years (*Oil and Gas Journal*, May 5, 1997). Using the experience of New Mexico to project effects of such a statute in Texas, it was predicted that 165 state-assisted (compulsory) unitizations would yield 1.4 billion barrels[9] of oil over 20 years (*Oil and Gas Journal,* May 5, 1997). And, although availability of new technologies such as horizontal drilling allows for extraction from previously depleted reservoirs, at the same time, because of these new technologies, oil field unitization becomes even more important. For instance, in the case of secondary and enhanced recovery methods, the Texas Conservation Committee for Unitization finds that oil field unitization increases production two fold or threefold (Murray and Cross, 1992, p. 1138).

Impediments to Contracting

Despite the theoretically value-enhancing potential of unitization, we observe empirically a surprisingly low rate of oil field unitization, particularly in the state of Texas. For instance, among all secondary projects in Texas (about 3298 projects in all), only 821 achieved oil field unitization, producing an average of 577 000 barrels per project in 1979, while the remaining 2477 projects that had not achieved unitization, produced an average of 45 117 barrels per project (Weaver, 1986, pp. 315–316).

As noted above, oil field unitization yields substantial increases in productive efficiency. Nevertheless, many economic aspects of the contracting situation such as: the length of the contract, the feature of a once-and-for-all contract, the requirement of site-specific investments with little economic salvage value, substantial uncertainty about behavior of contracting parties, and inherent risk involved in drilling for oil, all contribute to difficulties in unitization contracting.[10] Contracting problems that are especially relevant are *ex ante* opportunism problems and (strategic) holdouts. Assigning residual profit claimant status and residual control rights to a single unit operator, normally the firm with the greatest stake in the unitization venture, serves as an effective method of curtailing *ex post* problems that might arise during the life of the contract. Although economic sharing rules are clearly specified in advance so that potential for shirking and *ex post* opportunism is minimal (especially since the unit operator's incentives are well-aligned with maximizing returns from the unit as a whole), the economic problem of the unit operator cheating the other residual claimants (e.g., violating the contractual agreement) nevertheless exists, with the result that incentive design costs and monitoring costs still need to be incurred (Hennart, 1993, Chi, 1994).

Asymmetric information leads to greatly diverging valuations of each contracting parties' shares. The subjective nature of estimating geological variables due to lack of uniformity in the geology of the reservoir plays an important role. Since each contracting party undertakes calculations by doing tests based on their own land, with a limited number of observations at well bores, it is not surprising that calculations vary greatly across different parties (Libecap and Wiggins, 1984, 1985). Moreover, the extent to which drilling is initiated in the reservoir as a whole impacts the above calculations, since there is a great deal of interdependence between different tracts of oil producing land on a single reservoir. There is also the potential problem of strategic behavior[11] by some leaseholders seeking to gain greater economic benefits by holding out. Because reservoirs are not uniform, certain tracts of land have inherent structural advantages that allow more efficient production than others. Leaseholders of such advantageous positions would have little economic incentive to participate in oil field unitization unless sufficiently compensated. Contrary to McDonald (1979), Wiggins and Libecap (1985) find little empirical evidence of strategic holdouts in their study of seven oil fields in the states of Texas and New Mexico, and they conclude that asymmetric information is the more significant driver of contractual failure. Distributional conflicts are intensified when there are known serious information asymmetries among competing parties regarding evaluation of individual claims (Libecap, 1989).

Both imperfect information about valuations of individual leases and potential for strategic holdout behavior by some business firms lead to individual firms' economic incentives to drill competitively. Since oil firms in an oil reservoir are drawing from a common resource pool that is exhaustible, competitive drilling generates negative externalities for neighboring oil firms. Imperfect information and strategic holdout are impediments in the evolution of property rights for internalizing externalities. Thus, the individual oil firm faces a prisoners' dilemma: if it extracts oil too quickly, it will not be able to extract efficiently. However, if it does not extract quickly enough, other firms in the reservoir will drain oil, not only taking a substantial share of oil, but also leaving the slower firm to use even more expensive methods in the near future as more pumps and injections of water and gas, and even chemicals, become necessary.

A seemingly obvious (and rational) remedy to this economic situation is side payments. If the potential for aggregate economic gain is great (i.e., if indeed unitization is a Pareto-improving solution), then even with the presence of asymmetric information and strategic holdout problems, contracting parties with the most to gain from unitization would be able to bargain successfully for unitization by making side payments to dissenting firms. However, we must consider the nature of side payments in this particular economic situation. Not only must side payments be agreed upon at the outset of contracting (recall that the unitization agreement is necessarily a once-and-for-all contract), but inherent uncertainty involved in accurately estimating economic value of unitization requires continual payments to compensate those firms sufficiently. Indeed, if uncertainty involved in economic valuation of actual side payments is extremely high, and if many contingencies are difficult to foresee,

additional safeguards become necessary for the contractual agreement to take place. One way to alleviate this economic problem is use of third-party enforcement (e.g., arbitration) and reciprocal commitment (Williamson, 1985, pp. 177–178). A logical choice for third-party enforcer is the government. However, as mentioned above, many problems encountered in private contracting present themselves at the public policy level, as constituents attempt to influence public policy decisions to their own economic benefit (Buchanan *et al*., 1980; Benson, 1984). In particular, the side payment scheme reached through the (imperfect) political process may be too incomplete to resolve distributional conflicts needed for more than minimal institutional change to occur at any time (Libecap, 1978, 1989).

A theory of vested interests or 'interest-group theory' (Eggertsson, 1990) provides additional insights why a suboptimal economic outcome persists. Eggertsson (1990) criticizes Demsetz (1967) for implicitly assuming that governments will typically act to minimize transactions costs. In the case of oil field unitization in the United States, such an assumption does not hold. The Railroad Commission of Texas, the primary regulatory body in oil production in Texas, and the legislature of Texas, for instance, are systematically biased toward protecting smaller, higher cost producers. This tendency is rooted in the Texas legislature's distrust of major oil firms for fear of antitrust immunity that unitization might provide those firms (Weaver, 1986). Only in Wyoming, where federal lands make up the majority of leased oil fields, did government regulation encourage oil field unitization (Libecap, 1989).

Libecap (1989) suggests that the greater the number, and the more heterogeneous the bargaining parties, the greater the impediments to contracting. Larger numbers of bargaining parties make it difficult for political powers to broker tradeoffs between influential bargaining parties (Olson, 1965). In fact, since holdings in many oil reservoirs are fragmented among dozens (sometimes hundreds) of owners, excessive transaction costs can make it simply impractical to achieve oil field unitization economically (Libecap and Smith, 2001a). Likewise, heterogeneity of bargaining parties has a similar effect, with problems in forming winning political coalitions (Libecap, 1989). Furthermore, because smaller firms have more to gain or lose, in proportion to their size, than larger firms, they will be more committed to influencing the legislative and regulatory bodies. And it is plausible to expect that such smaller firms would have stronger ties to the region than would larger oil firms whose economic interests may span great geographical regions. This situation is particularly relevant in the case of oil field unitization, where the larger firms have oil and gas interests not only in the state of Texas, but also all over the world. These conditions help explain not only market failure (Akerlof, 1970; Williamson, 1975), but also government failure (Lindblom, 1977; Miller, 1992), and highlight the limited role of government in effective institutional change.

The firm, by engaging in activities that influence the value of the resource (in terms of economic rents generated from utilization of the resource), also impacts distribution. Just as property rights theory informs resource-based theory of the importance of understanding distributional issues in the creation of economic value, resource-based theory informs property rights theory of a better explanation of value creation. Viewing resources in terms of property rights attached to its utilization allows several potentially useful avenues for extension of resource-based theory by clarifying what is meant by a 'resource' (Furubotn and Richter, 1997). It is the unique bundle that can potentially lead to sustainable competitive advantage (Foss, 1997). The 'bundle of property rights' view looks at economic interrelationships between resources, such as co-specialized assets with mutual sunk cost commitment (Williamson, 1985; Teece, 1986).

Libecap (1989) emphasizes that the assignment of property rights has consequences for distribution of wealth and political power. Similarly, we suggest that it is equally important to understand that the *expected* distribution of wealth and political power has consequences for assignment of property rights. The following section applies property rights theory to resource-based theory.

A RESOURCE-BASED ANALYSIS OF OIL FIELD UNITIZATION

Resource-based theory in strategic management posits that resources that are valuable, rare, inimitable, and non-substitutable (Barney, 1991)

can generate economic rents for the firm that possesses these resources. Implicit here is the assumption that property rights to resources are secure, suggesting that ownership of certain resources automatically lead to generation of economic rents. There are at least two strategic management issues that need to be considered beyond this simplified notion of rent generation. First, economic rents in the context of resource-based theory are understood to be appropriated by the firm, and not by the individual resource (Amit and Schoemaker, 1993). Since economic rents accrue to the firm, and not to the individual resource, expectations of subsequent distribution issues impact decision making regarding individual resources in the initial rent-generation stage. For instance, it will impact whether, and how much, firm-specific (sunk cost) investments will be undertaken by various resource providers (e.g., investment in firm-specific human capital; Hart and Moore, 1990). Firm-specific investments are important for generating potentially value-enhancing complementarities and co-specialization between various productive resources (Lippman and Rumelt, 1982; Rumelt, 1984; Teece, 1986). Second, how would resource-based theory apply to cases where property rights to resources are not secure, but instead where there are struggles for establishing property rights?

We apply resource-based theory to the business case of oil field unitization. An important resource-based framework is Peteraf (1993) providing the 'four cornerstones' of competitive advantage. Four conditions for competitive advantage are *resource heterogeneity* from which come economic rents. *Ex post limits to competition* via isolating mechanisms (Rumelt, 1984) are necessary for sustaining rents. *Ex ante limits to competition* prevent costs from offsetting rents (Barney, 1986). *Imperfect resource mobility* due to high transaction costs ensures that economic rents are bound to the firm and shared by it. Utilizing Peteraf's (1993) 'four cornerstones' framework, first, *heterogeneity* is considered. A natural resource like an oil field is unique, and non-uniform as there is geological heterogeneity between different tracts of land within the land. Furthermore, it is plausible to assume such heterogeneity would be preserved. *Ex post* limits to competition consist of imperfect imitability and imperfect substitutability (Peteraf, 1993). The oil field, being a natural resource that is limited in supply, satisfies such a condition. *Ex ante* limits to competition refer to asymmetry between the ex ante cost of acquiring the resource and the *ex post* realization of its economic value ('entrepreneurial rent', Rumelt, 1987). Considerable *ex ante* uncertainty involved in drilling for oil, and *imperfect mobility* in resource factor markets (Barney, 1986), lead to *ex ante* limits to competition. Given the strategic management resource-based framework suggested by Peteraf (1993), the oil field satisfies the four criteria as a source of *potential* economic rents.

The property rights theory complements Peteraf's (1993) resource-based framework for the purpose of moving beyond *potential* value creation to analyze *realized* value creation. In particular, the property rights theory considers the game-theoretic prisoners' dilemma in common-pool economic environments. The theoretical focus then turns to internalizing externalities to reduce the gap between potential and realized value creations. The case of (the lack of) oil field unitization in the United States illustrates how difficult it can be to get the institutional details of the property rights correct for *realized* value creation.

The property rights theory emphasizes that in an environment of multiple landowners and leaseholders on an oil reservoir, and due to the migratory nature of oil in the reservoir, externalities exist for more extensive bundles of property rights (Ostrom, 2000). The presence of negative externalities, information asymmetry, and distributional conflicts, leads to a suboptimal economic result (a prisoners' dilemma situation).

In the case of oil field unitization, resource-based theory is lacking in two respects that can be remedied by the property rights theory: (1) the resource-based theory assumes away (implicitly) certain appropriability issues due to both positive externalities (e.g., complementary and co-specialized resources) and negative externalities (e.g., the lack of oil field unitization for migratory oil), and hence, business cases where property rights to resources are not secure fall outside its analytical framework, and (2) the presence of a feedback loop with distribution issues impacting productive utilization of resources also falls outside current resource-based theory.

The property rights theory relates to Peteraf's (1993) resource-based framework in the following way: individual resource owners participate in the

firm because they expect economic rents to be generated by the *bundle* of complementary and co-specialized resources (i.e., by the bundle of property rights). These bundles promise *potential* economic rents. As shown in the oil field unitization case, the presence of *potential* aggregate economic gains does not guarantee agreement on the sharing rules. In this sense, Peteraf's (1993) framework anticipates the property rights theory to the extent that internalizing externalities can be readily incorporated. We submit, however, that Peteraf's (1993) framework must be extended even further to consider conflicts over the distribution of economic rents as possible impediments in *realizing* economic rents.[12]

Furthermore, viewing resources in terms of property rights attached to its utilization allows several potentially useful avenues for additional extensions of resource-based theory. First, the property rights theory clarifies what is meant by a 'resource'. One criticism of the resource-based theory is that almost everything that leads to value creation can be subsumed under the rubric of 'resource'. Clearly defined property rights are specific in delineating what utilizations are possible with a particular resource. Penrose (1959, p. 25) defines resources in a similar manner:

> [I]t is never *resources* themselves that are the 'inputs' in the production process, but only the *services* that the resources can render. The services yielded by resources are a function of the way in which they are used... the very word 'service' implying a function, an activity.

The concept of resource is a dynamic concept, more 'flow' than 'stock' (Dierickx and Cool, 1989). The link between this flow concept of resources (*services* of resources) and property rights provides an analog for considering the contractual aspect of Schumpeterian 'new combinations' emphasized by Penrose (1959) and also by Nelson and Winter (1982). The fundamental insight of the property rights theory is that new ways to the bundle property rights are (imperfectly) adaptive responses to internalize externalities in new contractual situations in order to allocate resources more efficiently.

Second, property rights are, for the most part, relational (Williamson, 1985; Furubotn and Richter, 1997), especially rights that are most frequently analyzed in business settings. This relational nature of property rights adds an important strategic element that has been somewhat neglected in the resource-based theory, namely the interdependent nature of resources that are utilized in a competitive environment. Complementarity (Richardson, 1972) and co-specialization of mutual sunk cost commitments (Williamson, 1985; Teece, 1986) are important concepts in the resource-based theory that go directly to Penrose's (1959) initial theoretical insight in distinguishing between the *resources* and *services* of those resources. The way that resources are bundled (which can be attributed to managerial services) in the firm can have important implications for sustained competitive advantage (Foss, 1997).

In summary, the resource-based and property rights theories are complementary in the following way: the more valuable the resources, the more incentives there are to make property rights of resources more precise and the more precisely delineated the property rights of resources, the more valuable resources become (Demsetz, 1967; Anderson and Hill, 1975, 1983, 1991; Umbeck, 1978, 1981; Libecap, 1989; Mahoney, 1992a). In essence, the process of making property rights more precise can be another way of looking at the value creation process (e.g., bidding for bandwidth to establish property rights initiates a series of value creating activities; see Coase, 1959, 1998; Hazlett, 1990, 1998; Robinson, 1998; Shelanski and Huber, 1998). We hasten to add, however, that the current paper emphasizes that even when there are large and uncontroversial potential aggregate economic benefits that would be derived from changes in property rights, there are business cases where property rights do not necessarily transfer in ways that facilitate higher yield uses. In the business case of oil field unitization, heterogeneous firms in an environment of uncertainty and asymmetric information result in a sustained inefficient property rights regime. The upshot is that a more complete resource-based theory must be developed to incorporate these property rights and transaction costs considerations (Libecap, 1989; Williamson, 1996). Or put differently, the resource-based theory must move beyond providing criteria for *potential* value and must explain the more theoretically difficult (and pragmatically relevant) issue of determination of *realized* value. Table 1 summarizes important similarities and differences between the property rights and resource-based theories.

Table 1. Similarities and Differences Between Property Rights and Resource-based Theories

Similarities
- The function of the firm is to combine and utilize resources productively
- Resource accumulation and deployment are path-dependent processes
- The ways in which property rights/resources are bundled are a result of the managerial function
- Complementarities and co-specialization of resources are critical for value creation
- The services of resources are determined by the property rights of those resources
- Clearly defining property rights to potentially valuable resources can be a source of competitive advantage

Differences
- In the resource-based theory, firm boundaries are difficult to delineate. In the property rights theory, ownership and appropriability issues help to explain and predict firm boundaries
- In the resource-based theory, sources of market frictions are in resource factor markets (e.g., in the intrinsic attributes of resources). In the property rights theory, a source of market frictions is contractual incompleteness (partly due to behavioral aspects of economic actors)
- The distribution of income among resource providers falls outside the scope of the current resource-based theory. The property rights theory explicitly considers mitigation of distributional conflicts as a source of value creation
- The resource-based theory focuses on shareholder wealth. The property rights theory enables us to analyze a stakeholder's view of the firm by introducing distributional issues as the essential element in explaining value creation processes
- The resource-based theory assumes that resources are secure due to the inherent attributes of the resources as well as being effectively protected by the third-party enforcement and self-enforcing agreements. The property rights theory allows for struggle in establishing property rights
- The resource-based theory considers the *potential* value of resources. The property rights theory considers *realized* value by accounting for various institutional constraints that impede the evolution of property rights toward internalizing externalities. Thus, there is a persistent wedge between the *potential* and *realized* economic values.

DISCUSSION AND CONCLUSIONS

Why is the property rights theory important to the discipline of strategic management? One of the fundamental issues in strategic management deals with why firms differ in their economic performance, and why such heterogeneities persist over time (Rumelt *et al*., 1994). Strategy is a 'continuing search for rents' (Bowman, 1974, p. 47), where economic rents are returns above the competitive rate. One of the major tenets of orthodox economic thought is that perfectly competitive markets lead to only normal rates of return, implying that market frictions are a necessary condition for competitive advantage (Yao, 1988). Yet, fundamental sources of market frictions derived from the property rights considerations have not received much (theoretical or empirical) attention in the strategic management literature.[13] According to the resource-based theory, resources that are valuable, rare, inimitable, and non-substitutable can lead to value creation and sustainable competitive advantage (Barney, 1991). Implicit here is that property rights to such economic resources are secure due to the inherent attributes of the resources as well as being effectively protected by the third-party enforcement and self-enforcing agreements (Rumelt, 1984; Williamson, 1985). In the current paper, we expand the resource-based theory to include business contexts where there are struggles in establishing property rights, whereby distribution issues come to the forefront. The (expected) distribution of wealth among resource providers *ex post* has important implications for value-creation activities *ex ante*. Failure of widespread oil field unitization, despite significant potential aggregate economic gains from unitization, shows that asymmetric information and distributional conflicts over rental shares can limit the evolution of property rights to "internalize externalities" and thereby create economic value. This business case highlights the fact that in an economic world of positive transaction costs, a full resource-based analysis must consider not only whether resources are valuable, rare, inimitable and non-substitutable but must also consider the role of property rights in (realized) value creation. Similarly, Peteraf's (1993) resource-based framework provides insights concerning *potential* value, and the property rights theory proves complementary to the resource-based theory in evaluating the *realized* value creation. In the case of oil field unitization in the United States, frictions in the development of property rights lead us to challenge the implicit assumptions of the resource-based theory and Demsetz' (1967) optimistic view on the evolution of property rights to achieve (full)

economic value. In particular, frictions in the evolution of property rights toward 'internalizing externalities' are due to natural difficulties because of geological conditions, difficulties in economic trading because of uncertainty concerning prices, and regulatory-imposed difficulties (Libecap and Smith, 2001b).

Swift institutional responses to create economic value cannot be taken for granted in more complete resource-based analyses of value creation in strategic management. Asymmetric information and distributional conflicts inherent in any new property rights arrangement, even one that offers important efficiency gains (such as is the case for oil field unitization) can critically constrain institutional change and the property rights that can be adopted. Systems of property rights are, in essence, conduits upon which value-creating activities are implemented so that resources can be channeled to higher yield uses. Asymmetric information and distributional conflicts may limit resources from being channeled to these higher yield uses. Considerations of distributional conflicts and the (imperfect) evolution of property rights are essential for a more complete resource-based theory of (realized) value creation. As resource-based theory is extended to studying intellectual property (Takeyama, 1997) and value creation in transitional economies (Braguinsky, 1999), the property rights theory will take on even greater managerial significance. Therefore, we conclude that the property rights theory (along with transaction costs and agency theories) will become increasingly prominent in the next generation of resource-based research in strategic management.

Acknowledgements

We thank Rajshree Agarwal, Sung Min Kim, James Mahoney, and Regina McNally for helpful comments on the paper. We also thank participants for their comments at a seminar at the University of Illinois at Urbana-Champaign. The usual disclaimer applies.

NOTES

1. Kor and Mahoney (2000) summarize empirical research testing resource-based theory (see e.g., Montgomery and Wernerfelt, 1988; Wernerfelt and Montgomery, 1988; Chatterjee, 1990; Chatterjee and Wernerfelt, 1991; Montgomery and Hariharan, 1991; Mosakowski, 1993; Farjoun, 1994, 1998; Helfat, 1994, 1997; Henderson, 1994; Henderson and Cockburn, 1994; Markides, 1995; Robins and Wiersema, 1995; Chang, 1996; Eisenhardt and Schoonhoven, 1996; Miller and Shamsie, 1996; Sharma and Kesner, 1996; Majumdar, 1998).
2. Under resource-based theory, it is argued that unclearly defined property rights may lead to market frictions, and hence are a (necessary) condition for sustained competitive advantage (Peteraf, 1993, p. 183). However, the crux of our argument is that under the resource-based theory, the potentially value-creating resources are secure, *ex post*, from appropriation by various parties. The mechanisms that prevent appropriation can take the form of legal protection and self-enforcement as well as the inherent characteristics of the resource itself (e.g., causal ambiguity). We are grateful to an anonymous reviewer for raising this theoretical issue.
3. Early property rights research includes: Gordon (1954), Scott (1955), Coase (1959, 1960), Turvey (1963), Demsetz (1964, 1966, 1967, 1972), Alchian (1965, 1969), Cheung (1968, 1969, 1970), Cummings (1969), McKean (1970,1972), Crocker (1971), Alchian and Demsetz (1972, 1973), Calabresi and Douglas (1972), Furubotn and Pejovich (1972, 1973, 1974), North and Thomas (1973), Agnello and Donnelley (1975a, b), Ciriacy-Wantrup and Bishop (1975), Khalatbari (1977), Mueller (1977), Bromley (1978), and Castle (1978), among others.
4. More recent contributions in property rights theory are by Ault and Rutman (1979), Dahlman (1979, 1980), Clark and Munro (1980), De Alessi (1980, 1983), Polinsky (1980), North (1981, 1990), O'Hara (1981), Runge (1981), Barzel (1982, 1989, 1994), Johnson and Libecap (1982), Pejovich (1982, 1984, 1995), Wilson (1982); Cheung (1983), Batie (1984), Eswaran and Lewis (1984), Hahn (1984), Field (1985, 1987), Fischel (1985), Reynolds (1985), Anderson and Lee (1986), Bergstrom *et al.* (1986); Bolle (1986), Carlton and Lowry (1986), Johnsen (1986), Rose (1986, 1994), Sugden (1986), Dragun (1987), Evenson and Putnam (1987), Feder and Onchran (1987), McCay and Acheson (1987), Wade (1987), Acheson (1988), McCormick and Meiners (1988), Schap (1988), Quiggin (1988), Libecap (1989, 1998), Eggertsson (1990), McChesney (1990), Ostrom (1990, 2000), Swaney (1990), Allen (1991), Bromley (1991), Ellickson (1991, 1993), Johnsen (1991), Malik and Schwab (1991), Stevenson (1991), Bailey (1992), Bromley (1992), Pearse (1992), Schlager and Ostrom (1992), Sedjo (1992), Dragun and O'Connor (1993), Lele (1993), Seabright (1993), Lueck (1994, 1995), Mendelsohn (1994), Ostrom *et al.* (1994), Schlager *et al.* (1994), Torstensson (1994), Besley (1995), Colby (1995), Dam (1995), Deacon (1995), Grafton (1995), Grossman and Kim (1995), Ito *et al.* (1995), Alston *et al.* (1996a, b), Demsetz (1996, 1998), Feeny *et al.* (1996), Sethi and Somanathan (1996), Simpson (1996), Chopra and Gulati (1997), Homans and Wilen (1997), Innes (1997), Hart (1998), Nugent and Sanchez (1998), Alston *et al.* (1999), Chhibber and Majumdar (1999), Dayton-Johnson (2000),

Lichtman (2000), Oltrop (2000), Smith (2000), and Heltberg (2001), among others.

5. This proposition is more easily understood using Edgeworth boxes, where Pareto efficient states are represented by the *contract curve* (see Varian, 1996). Coase notes how this graphic representation of Edgeworth's might have inspired his formulation of the 'Coase Theorem' (Coase, 1988, p. 160).
6. A well sunk into any point in the pool tends to draw crude oil from across the whole reservoir deposit as petroleum flows, albeit slowly, to the region of reduced pressure. This geological fact means that if different economic parties have rights to draw from a single reservoir pool, there is a tendency toward rapid oil extraction. All of this is exacerbated by the possibility of sinking a well on one piece of property but drilling on an angle so that it hits the petroleum deposit under another's land. The results can be disastrous—Iraq's anger about Kuwait's alleged over-pumping and poaching in oil fields straddling the two nations' border was a major element leading to the Persian Gulf War of 1990–1991 (Milgrom and Roberts, 1992, p. 296).
7. A classic paper on the common-pool problem (of which the case of the lack of oil field unitization in the United States and consequent over-drilling is an example) is Hardin's (1968) 'tragedy of the commons' where there is over-utilization of resources. Beyond the scope of the current paper, there is also a symmetrical problem of under-utilization of resources that recent property rights literature refers to as the 'tragedy of the anti-commons' (Heller, 1998, 1999; Heller and Eisenberg, 1998; Buchanan and Yoon, 2000).
8. Many examples of contractual failure mar the early history of the petroleum industry in the United States (Pogue, 1921; Stocking, 1925; Ise, 1926; Logan, 1930; Hardwicke, 1935, 1961; Ely, 1938; Bain, 1947; Rostow, 1948; Ciriacy-Wantrup, 1952; Williams, 1952; Meyers, 1957; Campbell, 1960; Adelman, 1964, 1993; Williams and Meyers, 1980; Nehring, 1981; Kramer, 1986; Bradley, 1996).
9. To put this figure in perspective, estimated production of crude oil for 1999 in the United States was approximately 1.95 billion barrels (US Department of Energy, 2000). Just in the state of Texas, in 2000, approximately 400 million barrels were produced (Railroad Commission of Texas, 2001).
10. Even absent government restriction of mergers to achieve monopoly status, contractual frictions that apply to economic attempts at oil field unitization would also apply to economic attempts at achieving monopoly by mergers and acquisitions.
11. Holding out can lead to increase in the economic value of a structurally advantageous tract since regional migration of oil will tend to move toward the advantageous location. In fact, in oil field unitization contracts that are formed without structurally advantageous tracts participating, the pressure maintenance operations of the unit will push even greater amounts of oil *toward* the unsigned (non-participating) tracts, thereby causing positive externalities for those non-participating oil firms. Additional investment is necessary to prevent the migration of oil. In effect, by not participating in oil field unitization, the non-participating oil firm can free-ride on the pressure-maintenance operations of the unit without incurring the economic costs of those operations (Libecap, 1998, p. 643).
12. In the history of economics seminar taught at the University of Pennsylvania in the 1980s, Professor Sidney Weintraub emphasized that the history of economic thought concerned the theory of value and the theory of distribution. This idea can also be found in Coase (1988). A lesson that we draw from the case of oil field unitization is that conflicts over *distribution* and *realized value* are interdependent. Therefore, we conclude that the resource-based theory in strategic management (e.g., Peteraf's (1993) framework) needs to consider how distributional conflicts affect value creation and sustainable competitive advantage. Or put differently, strategic management needs to move beyond a shareholder's view of value creation toward a more complete *stakeholder's view* of strategic management that considers both value creation *and* distribution and their interdependence. A combination of the property rights and resource-based theories can potentially provide this more complete view of value creation and distribution.
13. Notable exceptions are Jones (1983), Barney and Ouchi (1986), Teece (1986), Liebeskind (1996), Argyres and Liebeskind (1998), and Oxley (1999).

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