Appropriating economic rents from resources: an integrative property rights and resource-based approach

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Abstract: Resource-based theory focuses on how economic value is created and sustained, providing the theoretical underpinnings for explaining and predicting sustainable competitive advantage. An implicit assumption of resource-based theory is that the firm's property rights to such resources are secure. However, where property rights to potentially value-creating resources are not fully secure, as in business contexts where multiple parties are jointly participating in creating economic value, potentially value-creating combinations of resources may not be realised. Similar difficulties may arise within the firm, where multiple stakeholders that supply factor inputs are jointly producing economic value. To address these theoretical issues, we map out a property rights theory of the firm that is grounded in resource-based theory on economic rents. We emphasise how firms create economic rents (*ex ante*) as well as how firms appropriate or capture economic rents (*ex post*).

Keywords: stakeholders; property rights; economic rents; appropriation; externalities; value creation; distribution; institutions.

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1 Introduction

A central tenet in the resource-based research literature is that economic rents accrue to firms holding resources that are valuable, rare, inimitable, and non-substitutable (Rumelt, 1984; Wernerfelt, 1984; Barney, 1991; Amit and Schoemaker, 1993; Peteraf, 1993). In particular, resource-based theory focuses on how economic value is created and sustained, and thus provides the theoretical underpinnings for explaining and predicting sustainable competitive advantage. One of the implicit assumptions of resource-based theory, however, is that the firm's property rights to such resources are secure. The firm's property rights may be secure due to various mechanisms such as the inherent properties of resources and capabilities like causal ambiguity (Lippman and Rumelt, 1982) and social complexity (Dierickx and Cool, 1989); control over complementary and co-specialised assets (Teece, 1986; Helfat, 1997); and effective self-enforcement or efficacious third-party enforcement (Williamson, 1985). Where the firm's property rights to such a resource are secure, the firm can capture the economic rents. In business contexts where there is a struggle for property rights, however, we can no longer safely assume that the firm necessarily captures the economic rents. The current paper takes a resource-based approach in the context of those business contexts where there is a struggle for property rights.

Where property rights to potentially value-creating resources are not fully secure, as in business contexts where multiple parties are jointly participating in creating economic value, potentially value-creating combinations of resources may not be realised (Barney and Hansen, 1994; Kim and Mahoney, 2002). Similar difficulties may arise even within firms, where multiple stakeholders that supply factor inputs are jointly producing economic value (*i.e.*, team production; Alchian and Demsetz, 1972; Holmstrom, 1982), as in our Merck example. Indeed, economic history documents that such instances of contractual failure are more the rule rather than the exception (Eggertsson, 1990; North, 1981; 1990). Many historical examples – the oil field unitisation case in the USA (Libecap, 1989; Kim and Mahoney, 2002) being an especially important one economically – show that the potential for economic value creation (and economic rents) does not guarantee actual economic value creation (and *realised* economic rents).

Transaction cost economics (Williamson, 1975; 1996) and the modern property rights models (Grossman and Hart, 1986; Hart and Moore, 1990) do not explicitly focus on the possible gap between *potential* economic value and *realised* economic value. Most of the theoretical perspectives in organisational economics (Barney and Ouchi, 1986; Mahoney, 1992a; 2005) are rather optimistic about efficient economic outcomes (Kim and Mahoney, 2005). However, where the methods of resolving potential economic holdup problems (*e.g.*, in vertical integration) (Klein *et al.*, 1978; Mahoney, 1992b) are not readily available or are inadequate, it is quite possible that potential relation-specific rents that can be derived from coordination and cooperative efforts may not be realised.

Fundamentally, economic rents accrue to resource owners, not to the resources themselves (Coff, 1999). Thus, firms do not necessarily appropriate economic rents from value-creating resources, rather owners of those value-creating resources appropriate economic rents. If the firm can be defined as a nexus of contracts, and therefore a legal fiction (Jensen and Meckling, 1976), the resource (factor input) providers who participate in team production (Alchian and Demsetz, 1972; Holmstrom, 1982) should properly accrue the economic rents (if any) that are generated by the firm. Indeed, competitive advantage is consistent with a resource being tied to other resources within the firm (becoming relation-specific) in an economically value-creating way (*e.g.*, via co-specialisation and combinative capabilities, Kogut and Zander, 1992). Such co-specialisation, however, under incomplete contracting situations may enable resource owners and/or stakeholders to appropriate economic rents (residual claims) from the firm (*i.e.*, the legal owners of the residual claims).

Based on this property rights perspective, even where we can expect potential economic rents to accrue to a firm's resources, contractual difficulties can lead to economic rents not being realised by the firm. To address these theoretical issues, we map out a theory of the firm that is grounded in resource-based theory on economic rents (Mahoney, 2001). In the current paper, we emphasise how firms create economic rents (*ex ante*) as well as how firms appropriate or capture economic rents (*ex post*). In business contexts where contracting for property rights is fraught with contractual hazards and market frictions (Libecap, 1989; North, 1990; Kim and Mahoney, 2002), a vital function of the firm is that it is an institution for generating new combinations of resources (Penrose, 1959; Grant, 1996; Spender, 1996) in a comparatively efficient way relative to coordination through price mechanisms (Teece, 1986).

The structure of the paper proceeds as follows. A brief description of property rights theory is provided (Coase, 1960; Alchian, 1965; Demsetz, 1967; 1998; Alchian and Demsetz, 1972; Cheung, 1970; 1983; Grossman and Hart, 1986; Hart, 1988; 1995; Libecap, 1989; Hart and Moore, 1990; North, 1990). Next, we provide an overview of how property rights theory complements dynamic resource-based theory (Nelson and Winter, 1982; Mahoney and Pandian, 1992; Peteraf, 1993; Teece *et al.*, 1997; Makadok, 2001; Helfat and Peteraf, 2003). In particular, we discuss how property rights theory is able to address business situations where certain assumptions under resource-based theory do not hold. Brief case examples are provided in support of our theoretical arguments. Discussion and conclusions are then provided.

2 Appropriating economic rents from resources

2.1 Complementing resource-based theory with property rights theory

Resource-based theory (Barney, 1991; Peteraf, 1993) maintains that resources that are valuable, rare, inimitable, and non-substitutable can lead to economic value creation and sustainable competitive advantage. Implicit in this proposition is that the firm's property rights to the value-creating 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). However, there is evidence to suggest that successful contracting for property rights is more the exception rather than the rule, and the development of efficient institutions is by no means assured (Libecap, 1978; 1989; Eggertsson, 1990; North, 1990). Property rights theory (Alchian, 1969; Barzel, 1989) complements an apparent shortcoming of resource-based theory by relaxing the implicit assumption that property rights to resources are fully secure and by dealing with the processes whereby property rights are established.

Property rights theory contributes to a better understanding of how firms create and appropriate economic rents in at least two ways. First, property rights are multi-faceted (Alchian, 1965; Alchian and Demsetz, 1972; Ostrom, 1990; 2000). For instance, the property rights to use a resource may be held separately from the property rights to buy or sell that same resource. Thus, from the property rights perspective, resources that a firm 'owns' are not the physical resources but rather are bundles of property rights (Coase, 1960). The theoretical insight that resource ownership is a complex concept allows us to view resources as bundles of property rights rather than physical entities in the case of tangible resources. Furthermore, viewing intangible resources as bundles of property rights makes it possible to better define these resources, and is consistent with Penrose's (1959) initial theoretical insight that it is not the resources themselves but how the resources are utilised that is critical for understanding resources as a source of competitive advantage. Moreover, these different bundles of property rights (*i.e.*, in a macro sense, institutions, and under microanalysis, organisational forms) arise in response to problems due to scarcity of resources (Coase, 1960; Alchian, 1965; Pejovich, 1982).

Consistent with the perspective that resources are bundles of property rights, the corporation is viewed as a "method of property tenure" (Berle and Means, 1932, p.1). Alchian and Demsetz (1972) define ownership of the "classical capitalist firm" in property rights terms as:

- the right to appropriate economic returns from a resource (in team labour production the right to receive the residual income)
- the right to use and change the form of the resource (in the case of labour the right to terminate or revise membership)
- the right to transfer the above mentioned rights (*i.e.*, alienability).

Private ownership is particularly important for property rights theory in that ownership provides economic incentives (residual claimancy) as well as control over how the resource is utilised in economic production (residual control). Because asset ownership can be shared in this way, the firm is viewed as a "nexus of contracts" (Jensen and

Meckling, 1976), and in a world of incomplete contracts, the economic rents generated by this nexus (which is viewed as a legal fiction in agency theory) will be appropriated by the various parties who hold aspects of property rights to the rent-generating resource. Property rights theory can help in better understanding the critical link between value-creating (*i.e.*, potentially rent-generating) resources and appropriation of economic rents by the firm.

Second, by being more explicit about the potential failure of contracting for property rights over economically valuable assets (and hence, potential streams of economic rents), we can better address the issue of the role of the firm in eliciting economic commitment from the suppliers of various factor inputs. Early property rights analyses (*e.g.*, Demsetz, 1967; Davis and North, 1971; North and Thomas, 1973) provide an optimistic view of how an economically efficient system of property rights that 'internalises externalities' usually emerges over time. This theoretical point was one of the key insights of Coase (1960). Economic institutions are posited to evolve towards more efficient economic solutions through negotiations between interested (contracting) parties. If the transaction costs of negotiating are negligible, we expect theoretically to arrive at a Pareto optimal outcome. Even in a world of positive transaction costs, Demsetz (1967) 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 those potential economic gains being realised through adjustments in market prices and production possibilities to which existing institutional arrangements are poorly attuned (Furubotn and Richter, 1997). Indeed, "[i]t 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).

In a world of positive transaction costs, however, this transactional process can be quite time consuming and gradual at best. In fact, there are clearly cases where systems of property rights are not efficient (North, 1990). More recent property rights analyses have questioned Demsetz's (1967) optimistic economic assessment (*e.g.*, Eggertsson, 1990; North, 1990; Alston *et al.*, 1996). For instance, Eggertsson (1990) critiques Demsetz's (1967) economic view for its failure to account for political processes in contracting for property rights and free-riding problems involved within interest-group decision making. Historical examples that support Eggertsson's (1990) critique of Demsetz's (1967) optimistic view include the 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 unitisation in the USA (Libecap, 1989). These economic examples show that the market price system does not inevitably lead to economically (Pareto) efficient outcomes due to political dynamics, imperfections in third-party enforcement, and constraints due to institutional frictions, which are influential factors in determining just how effective property rights can become. In this light, we can better interpret Furubotn and Pejovich's (1972, p.1140) statement that: "[A] theory of property rights cannot be truly complete without a theory of the state".

The evolution of property rights is more fruitfully considered as a path-dependent process because of vested interests in existing political, social, and economic positions of contracting parties (Libecap, 1986), and for the reasons stated above, the evolution of property rights is not necessarily an efficient process. Moreover, such considerations as inefficient political processes and vested interests lead to, in certain cases like contracting for unitisation of oil fields, failure in reaching an agreement. It is now well articulated in

the property rights research literature that the development of efficient institutions is more the exception rather than the rule (Libecap, 1989; North, 1990). And this limited development of efficient property rights not only applies to natural resources, but also to any type of resource where there may potentially exist a struggle for property rights to the economic rents.

From a resource-based perspective (Barney, 1991; Peteraf, 1993) individual firms are able to create economic value (*i.e.*, generate economic rents) by holding economically valuable resources that are difficult to imitate. Penrose (1959) first analysed how the productive services (potentially) available from its resources can be a fundamental driver of firm heterogeneity, and that the key to creating economic rents is how firms utilise such resources. The main driver of creating economic rents is a lack of competition in either acquiring and/or developing resources that are potentially valuable to customers (Mahoney and Pandian, 1992). Resources must be valuable, rare, inimitable, and non-substitutable (Barney, 1991; Peteraf, 1993) in order to create economic rents. Although the potential for economic rent creation is there, we must also be aware that the economic rents will be shared between the suppliers of the key resources (factor input suppliers) and the firm employing them (Peteraf, 1993). And because such key resources are likely to be specialised resources, the situation can be one of *bilateral monopoly* (Williamson, 1975), in which case, the distribution of economic rents is indeterminate (Mahoney and Pandian, 1992; Coff, 1999).

How the economic rents will be shared is an important consideration for at least two reasons. First, there are (*ex ante*) economic incentive issues. Grossman and Hart (1986) and Hart and Moore (1990) introduce a static model of vertical integration where key control rights (*i.e.*, residual control) are allocated to minimise dilution of economic incentives. The model solves the problem of how the residual control rights would be allocated *given* that the two contracting parties will engage in a relationship (whether it is an arms-length contractual relationship where the two parties are independent or if one party acquires the other). The key insight of the modern property rights model of Grossman and Hart (1986) and Hart and Moore (1990) is to minimise economic incentive dilution (*i.e.*, to maximise incentives), the residual control rights are given to the party who has the bigger impact on the total economic value that can be created by the collaboration between the two parties.

Second, if we take a step back from the above setting where the choice to collaborate is a given, we should also consider the possibility that potentially value-creating collaboration between two contracting parties may well break down (*i.e.*, contractual failure may occur). Given an expected division of economic rents *ex ante*, rational actors will look ahead to assess whether the division of economic rents will in fact be acceptable *ex post* in deciding whether to supply the factor input (*i.e.*, there is "incomplete contracting in its entirety", Williamson, 1985), especially since the suppliers of factor inputs are often not fully compensated for those inputs that ultimately contribute to the firm's economic rents. This logic leads us to consider a critical aspect of generating economic rents: *the potentially rent-generating resource combinations may not be realized due to transaction costs* (defined in a broad sense; Libecap, 1989; North, 1990). One of the key lessons of the property rights approach is that institutions matter. Institutions, whether they are in the realm of public policy (North, 1990) or in the realm of firm-level governance (Williamson, 1996), play an important role in setting "the rules of the game" for various stakeholders. In this sense, the function of the executive in

'inspiring sacrifice' is essentially influencing norms of responsibility, building convergent expectations, and establishing economic incentives and property rights (Barnard, 1938; Malmgren, 1961; Miller, 1992).

We provide two examples to illustrate theoretical points that have not been in the foreground of theory development in the modern resource-based approach. The first example considers the business case of oil field unitisation in the USA, particularly in the state of Texas (Libecap, 1989; Kim and Mahoney, 2002). The second example shows how key stakeholders were able to exert extraordinary influence on how the pharmaceutical giant, Merck dealt with developing a cure for river blindness (The Business Enterprise Trust, 1991; Bollier, 1996). The oil field unitisation example illustrates external conflicts of interests between independent contractual parties, while the Merck example considers internal conflicts of interests among stakeholders within an organisation. At the same time, both examples illustrate how an inability to establish property rights increases substantively the transaction costs, thus inhibiting potential rent-generating resource combinations.

2.2 Oil field unitisation: a case of contractual failure

Extraction of oil is economically costly because crude oil is trapped in pore spaces of the rock with little compressibility, so that crude oil cannot expel itself. In early stages of the oil field's life, extraction is relatively easy (without the need to inject gas and/or water). In later stages of the oil field's life, gas and water are injected into a well to force oil towards another series of wells. This process accounts for roughly 50% of US domestic production (Office of Technology Assessment, 1978). It is now fairly well understood that by maintaining reservoir pressure as long as possible, production efficiencies can be optimised (Tiratsoo, 1976). In order to maximise production, proper techniques must be used in extraction in early stages of the oil field's life. Efficient production requires extraction not be too rapid to prevent early venting of water and natural gas (which help drive oil to the surface) (Libecap, 1998), and spacing and location of wells must be such that necessary pressures are maintained (Weaver, 1986).

The right to drill on an oil reservoir is usually shared by multiple leaseholders. Since property rights to oil and gas are assigned only upon extraction, common law rule of capture allows leaseholders to drill a well on their land and drain oil (and gas) from their neighbours without liability (Lueck, 1995; Weaver, 1986), resulting in a classic common pool dilemma (a 'tragedy of the commons').

Unitisation refers to a private contractual arrangement – the formation of a unit (*i.e.*, joining oil leases within the reservoir) – to reduce economic losses associated with common-pool extraction. Under oil field unitisation, drilling is delegated to a single operator, so that instead of trying to maximise the economic value of an *individual lease*, the economic value of the *unit* is maximised (Libecap, 1998). The economic gains from oil field unitisation have been well established.[1] Bain (1947, p.129) notes: "It is difficult to understand why in the USA, even admitting all obstacles of law and tradition, not more than a dozen pools are 100% unitised (out of some 3000) and only 185 have even partial unitization". 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 unitisation.

Oil field unitisation is the most straightforward economic solution to the serious common pool problem in oil and gas production. However, despite the theoretically economically value-enhancing potential of unitisation, the actual rate of oil field unitisation is surprisingly low, particularly in the state of Texas. The problem was particularly acute in Texas because a unanimous agreement had to be reached in order for unitisation to take place (whereas in states such as Wyoming and Oklahoma, majority or super-majority participation would make unitisation possible).

Although oil field unitisation yields substantial increases in productive efficiency, many economic aspects of the contracting situation such as the length of the contract (usually the life of the oil reservoir), the feature of a once-and-for-all contract, the requirement of site-specific investments with little economic salvage value, substantial uncertainty about behaviour of contracting parties, and inherent risk involved in drilling for oil, all contribute to difficulties in unitisation contracting. In short, information asymmetry was the key driver in the divergent valuations of what each contracting parties' respective shares of the returns should be. Since each contracting party makes calculations by doing tests based on their own land, it is not surprising that those calculations vary greatly across different parties (Libecap and Wiggins, 1984). Moreover, how drilling is initiated in the reservoir, as a whole, impacts those calculations. There is also the potential for strategic behaviour by some contracting parties seeking to gain greater economic benefits by holding out. Holding out can be a serious threat especially in the state of Texas where the decision to unitise must to be unanimous.

An important resource-based framework is Peteraf (1993) providing the "four cornerstones" of competitive advantage. The four conditions for competitive advantage are:

1 *resource heterogeneity* from which come economic rents

2 *ex post limits to competition* via isolating mechanisms (Rumelt, 1984) that are necessary for sustaining economic rents

3 *ex ante limits to competition* to prevent economic costs from offsetting economic rents (Barney, 1986)

4 *imperfect resource mobility* due to high transaction costs.

These four cornerstones of competitive advantage ensure that economic rents are bound to the firm. Applying these conditions, it is clear that a natural resource like an oil lease is unique and non-uniform as there is geological (resource) *heterogeneity* between different oil leases that make up a single oil field. Furthermore, it is plausible to assume such heterogeneity would be preserved. The oil lease, being a natural resource that is limited in supply, satisfies the condition of *ex post limits to competition*, as the particular oil lease cannot be imitated nor substituted for. There is considerable *ex ante* uncertainty involved in acquiring property rights to a particular oil lease since the *ex post* realisation of the oil production from that oil lease may not correspond with the *ex ante* costs of acquiring the oil lease. And, given *imperfect mobility* in resource factor markets (Barney, 1986), the oil lease satisfies the *ex ante limits to competition*.

The oil lease satisfies the four criteria outlined by Peteraf (1993) as a source of *potential* economic rents. However, economic rents are often not realised due to contractual failure. Property rights theory complements Peteraf's (1993) resource-based framework for the purpose of moving beyond *potential* value creation to analyse *realised*

value creation. The case of (the lack of) oil field unitisation is an illustration of how difficult it can be to get the institutional details of the property rights correct for *realised* value creation. Property rights theory emphasises that in an environment where there are negative externalities, information asymmetry, and distributional conflicts, a sub-optimal economic outcome may be the end-result (a prisoners' dilemma situation). We turn next to a second case example to illustrate the theoretical complementarities of resource-based and property rights theory.

2.3 Merck and river blindness: appropriation of economic rents by stakeholders

The oil field unitisation case is an example of where potential economic value is not realised due to contractual failure, while the following example of Merck is where stakeholders may appropriate economic value so that the firm fails to realise (at least parts of) the economic rents. Research scientists have significant bargaining power in a research-oriented firm such as Merck. Because human capital resides within human resources and cannot be alienated from them, the firm's control over the property rights of the key resources in the economic value-creation process in Merck (scientists' human capital in the form of their research activity) is incomplete and the firm may be unable to appropriate above-normal rates of return from those resources.

It is fairly well established that pharmaceutical firms in general, and Merck in particular, have had better-than-average financial performance over time, but at the same time, even as Merck was being touted as a leader in corporate social responsibility and ethical management (voted the 'most admired' company in *Fortune* magazine's Corporate Reputations Survey from 1986 to 1992; Bollier, 1996), investors have complained that Merck could do better as it did not seem to have enough good new drugs (*The Economist*, 2002). In contrast to the well-established tenets of resource-based theory (Barney, 1991; Peteraf, 1993), Merck's human resources that are valuable, rare, difficult to imitate and/or substitute have apparently not led to commensurate economic rents for the firm (*i.e.*, specifically, above-average economic returns to the shareholders). We argue that this outcome is due, at least in part, to the key stakeholder group, the research scientists, by virtue of their bargaining power within Merck, appropriating economic rents from the firm. Perhaps, the research scientists are not necessarily actively pursuing rent appropriation for their own monetary benefit, but nevertheless the managerial emphasis is not on shareholder profit maximisation either (at least not in the short term), and we would argue that stakeholder bargaining power is driving this tendency.

Merck decided to develop and eventually to distribute *Mectizan*, a cure for the river blindness disease (*Onchocerca volvulus*) that had afflicted millions in the Third World, despite the fact that the potential customers had no way to pay for the drug. Although Merck did hold out hope that governments and/or other such organisations like the United Nations would be able to shoulder at least part of the financial burdens of getting the drug to market, even as it became apparent that there would be no help forthcoming, Merck still went ahead with their initial plan to distribute the drug, which was estimated to be at a cost of $250 million over a 12-year time period.

Mectizan was based on a veterinary drug, *ivermectin*, which treated a fairly unimportant gastrointestinal parasite (*Onchocerca cervicalis*) in animals (The Business Enterprise Trust, 1991). Because the drug treated a parasite that was closely related to the parasite that causes river blindness, Dr. William Campbell, a research scientist at Merck who specialised in parasitology, had an idea that a variation of the veterinary drug could perhaps be used to treat river blindness. However, the costs of developing the drug – financial and otherwise – were prohibitive. At least $20 million would be necessary initially, and attempts to get the US government (the Reagan White House, State Department, and the US Agency for International Development) involved were unsuccessful (Bollier, 1996).

There was no way to know whether the new drug would be effective, and furthermore, unsuccessful efforts to develop *Mectizan* might have adverse spillover effects on sales of the already successful veterinary version of the drug (*ivermectin*). And somewhat ironically, Merck's generosity in providing this drug today might actually make it more difficult for Merck to invest in future drug development projects for Third World countries since these countries may be less willing to pay for drugs in the future (The Business Enterprise Trust, 1991).

Eventually, Merck decided to give the drug away, at a large cost to itself. Merck made the decision to develop and to distribute *Mectizan* in spite of the fact that it was unlikely that Merck would be able to recover the cost of developing the drug, much less the cost of distributing it. The problem with *Mectizan* was not that the drug would treat a rare disease so that the potential customer base would be too small, but that the potential users were in Third World countries that did not have the financial means to pay for the drug. Despite many obvious issues with developing and distributing this drug, Merck moved forward with plans to provide the drug to all who needed it at no charge. Although the famous quote by George W. Merck, an early chairman, that "medicine is for the people. It is not the profits. The profits follow." is often cited as the company's guiding policy for dealing with ethical dilemmas, there were more compelling reasons for going ahead with a project that was quite likely to lead to net losses for Merck. Key among them was that Dr. Vagelos, then head of Merck's research labs (and later CEO) believed that Merck should proceed with the project because for one, it would advance their knowledge of parasitology (in effect, investing in a type of 'real option' for future potentially positive NPV projects), and for another, it was also the case that failure to investigate this possibility would have a demoralising effect on Merck scientists (The Business Enterprise Trust, 1991).

The latter reason is especially relevant. Merck's most important assets are their human resources, particularly their research scientists (Nichols, 1994). According to the resource-based view of the firm (Barney, 1991; Peteraf, 1993) Merck's capability in consistently attracting the best scientific talent should be considered a valuable, rare, inimitable, and non-substitutable resource that should lead to economic rents for Merck.

Following Peteraf's (1993) *four cornerstones* framework, it seems quite clear that human resources such as Merck's research scientists are unique (resource *heterogeneity*). This heterogeneity would be preserved ex post and also be limited in supply (*ex post limits to competition*), especially as the research scientists develop research capabilities that are specific to the firm or specific even to the research teams within the firm (Kor and Mahoney, 2000; 2004). Increasing asset specificity over time as research scientists become somewhat specialised to firm-specific needs and co-specialised to other research scientists within Merck (Teece, 1986) satisfies the condition of *imperfect mobility*

(Peteraf, 1993). In recruiting human resources, there are considerable information asymmetry problems in evaluating the level of human capital possessed by human resources, particularly in knowledge-intensive industries such as the pharmaceutical (*ex ante limits to competition*). Merck has been able to recruit the best research scientists, at least in part, because Merck is an attractive place to work (for both pecuniary and non-pecuniary reasons) and therefore is able to attract the best scientific talent (*The Economist*, 2002). Research scientists come to Merck because Merck offers them the resources and the freedom to pursue research projects that are not necessarily the most economically profitable ones, and these scientists are essential for the competitive advantage of Merck in developing pharmaceutical drugs.

However, human capital is inalienable from the research scientists themselves in the absence of slavery (Barzel, 1989). Because the firm cannot own the human capital of the research scientists, the firm does not hold all the property rights to these economic value-creating resources of the firm. Firms, like Merck, that require highly specialised human resources face the problem of human resources who, once hired, can gradually increase their bargaining power (and therefore, possibly appropriate economic rents) through having *access* to the firm's critical assets (*e.g.*, laboratories, financial resources, other human resources, *etc.*). Such human resources do not necessarily get residual claimancy status in the organisation through partial ownership, but rather by developing human capital that is co-specialised to the firm's critical assets, human resources can make themselves more economically valuable to the firm (Rajan and Zingales, 1998). In essence, the firm is a nexus of incomplete and implicit contracts (Blair, 1995; Zingales, 2000; Asher *et al.*, 2005) and therefore it is conceivable that certain stakeholders of the firm can gain a disproportionate level (*i.e.*, *de facto* control in excess of what their *de jure* rights afford them) of influence on the allocation of resources, and hence, on the distribution of economic rents. Under such circumstances, potential rent-generating resources may not necessarily result in realised economic rents for the firm.

Such an economic outcome is especially relevant in the case where resources are semi-permanently tied to the firm, such as is the case with firm-specific human capital (Blair, 1995). Because human capital cannot be alienated from human resources, they are able to exert bargaining power over the firm by reserving their residual rights to withdraw their human capital from the value-creating process. Therefore, the firm may only earn normal economic returns on human capital, and this outcome can be attributed to the bargaining power that the research scientists may have in the distribution of economic rents within pharmaceutical firms. If internal stakeholders such as research scientists are dissatisfied with the distribution of economic rents, these scientists can quit and dissipate the firm's rent-generating capabilities (Coff, 1999). Moreover, research scientists do not necessarily have to quit in order for the firm's economic rents to be dissipated. Dilution of economic incentives also needs to be considered as well. In the Merck example, the Merck senior managers worry over whether a decision not to pursue the river blindness project may harm the morale of the research scientists (The Business Enterprise Trust, 1991).

In the case of Merck, we would argue that it is not only the current research scientists but also the future stream of scientists who might come to work at Merck that are of additional concern. The Merck management is aware that an important point of appeal for their research scientists in choosing to come to work for Merck and not for one of their competitors is their focus on pure science (*The Economist*, 2002) and an emphasis on

extending the benefits of medications to the disadvantaged and not exclusively on maximising shareholder returns (*The Gazette*, 1999). This emphasis on not only the current research scientists' interests but the ability to attract research scientists to be employed at Merck in the future is consistent with the coherent corporate culture of maintaining the tradition of scientific research and the ethic of strong patient care (Vagelos and Galambos, 2004).

Where there are significant externalities in the form of the influence of certain stakeholders in determining the level of economic rents of the firm, it is not clear whether the firm is able to appropriate fully the economic rents that accrue to potentially economic value-creating resources held by the firm. Such appropriation of economic rents arise because managers often cope with the internal stakeholders who have disproportionate influence by encouraging such stakeholders to participate more in the firm's decision-making processes (Coff, 1997; Henderson, 2001), in an effort to better align and prioritise interests of these stakeholders within the firm (*i.e.*, with the economic interests of the shareholders).

In contrast to property rights theory, resource-based theory does not adequately address those economic situations where negative externalities are significant enough to inhibit (potentially value-creating) new resource combinations from being realised. Therefore, property rights theory complements resource-based theory by questioning the assumption that the firm necessarily appropriates the economic rents accruing to resources that satisfy Peteraf's (1993) *four cornerstones* framework. Property rights theory suggests several conditions under which the resource-based correspondence between the economic value-creating resource and economic rents does not hold and where we have to go beyond the standard resource-based framework (*e.g.*, Peteraf, 1993) to account explicitly for the divergence between *potential* and *realised* economic rents.

In sum, in an environment of multiple contracting parties on an oil reservoir, the presence of negative externalities in the form of severe information asymmetry and distributional conflicts leads to a sub-optimal economic result (a prisoners' dilemma situation). Similarly, where certain stakeholders in a firm have disproportionately strong bargaining power over some of the key managerial decisions of the firm, such stakeholders are able to have an impact on the creation and distribution of economic rents generated by the firm (Asher *et al*., 2005).

Where the property rights to the value-creating resources are incomplete, resource-based theory needs to be complemented by property rights theory for at least the following two reasons:

1 Resource-based theory assumes away (implicitly) certain appropriability issues due to both positive externalities (*e.g.*, complementary and co-specialised resources) and negative externalities (*e.g.*, the lack of oil field unitisation for migratory oil), and hence, the resource-based framework has difficulty in addressing cases where there is a struggle for establishing property rights to economic rent-generating resources.

2 The presence of a feedback loop with distribution issues impacting productive utilisation of resources (as well as the failure to utilise resources) also typically falls outside the attention of current resource-based theory.

3 Discussion and conclusions

Strategic management is a "continuing search for [economic] rents" (Bowman, 1974, p.47), where economic rents are defined as economic returns above the normal (competitive) rate. Market frictions are a necessary condition for competitive advantage (Yao, 1988; Mahoney, 2001). Yet, fundamental sources of market frictions derived from property rights considerations have not received much (theoretical or empirical) attention in the strategic management literature.[2] According to resource-based theory, resources that are valuable, rare, inimitable, and non-substitutable can lead to economic value creation and sustainable competitive advantage (Barney, 1991). Implicit here is that the firm's property rights to such resources are secure due to certain inherent attributes of the resources and/or by being effectively protected by third-party enforcement and self-enforcing agreements (Rumelt, 1984; Williamson, 1985). In the current paper, we suggest that there are certain business contexts where there are struggles in establishing property rights, so that distribution issues are prominent. *The (expected) distribution of economic rents among resource providers* ex post *has important implications for value-creation activities* ex ante.

The history of economic thought has been concerned with economic *value* and the *distribution* of that value (Coase, 1988; Schumpeter, 1954; Weintraub, 1977). An important lesson that we draw from property rights theory (*e.g.*, as in the case of oil field unitisation) is that conflicts over *distribution* and *realised economic value* are interdependent. Therefore, we conclude that resource-based theory in strategic management (*e.g.*, Peteraf, 1993) needs to consider how distributional conflicts affect economic value creation and sustainable competitive advantage. Or put differently, strategic management needs to move beyond a shareholder view of economic value creation towards a more complete *stakeholder view* of strategic management that considers both economic value creation *and* distribution and the interdependence between them (Blair, 1995; Donaldson and Preston, 1995; Coff, 1999; Zingales, 2000; Asher *et al*., 2005). A joining of property rights theory and resource-based theory can potentially provide this more complete view of economic value creation and the distribution of that economic value.

In conclusion, resource-based theory and property rights theory are complementary in the following way: the more economically valuable the resources, the more economic 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 (Anderson and Hill, 1975; 1983; 1991; Demsetz, 1967; Libecap, 1989; Umbeck, 1978; 1981). In essence, the process of making property rights more precise can be another way of looking at the economic value creation process (*e.g.*, bidding for bandwidth to establish property rights initiates a series of economic value creating activities; Coase, 1959; Shelanski and Huber, 1998).

Efficient organisational or institutional responses to create economic value cannot be taken for granted in more complete resource-based analyses of economic value creation in strategic management. Asymmetric information and expected distributional conflicts inherent in any new property rights arrangement, even one that offers important efficiency gains (such as is the case for oil field unitisation) can critically constrain the organisational or institutional responses that can be adopted due to, for instance, path-dependence, and therefore result in a divergence between potential and realised

economic rents. Furthermore, where there are key stakeholders who are able to exert disproportionate amounts of influence on the firm's managerial decision making (as in the case of Merck's decision on river blindness), this divergence between potential and realised economic rents is quite plausible. 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, resource-based theory must move beyond providing criteria for *potential* economic value and must explain the more theoretically difficult (but pragmatically relevant) issue of determination of *realised* economic value. Moreover, by extending the resource-based theory to consider the divergence between potential and realised rents, it is also possible to move the resource-based theory beyond a shareholder perspective to encompass a broader stakeholder perspective, which has a solid property rights foundation (Asher *et al*., 2005).

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Notes

1 Economic benefits of unitisation have been demonstrated as increasing production by as much as twice the amount produced under no unitisation (Weaver, 1986). In the state of New Mexico, for instance, after adding a compulsory unitisation statute in 1977, there was an increase of 280 million barrels of oil from 33 statutory unitisations in a span of 20 years (*Oil and Gas Journal*, 5 May 1997). Using the experience of New Mexico to project effects of such a statute in Texas, it was predicted that 165 state-assisted (compulsory) unitisations would yield 1.4 billion barrels of oil over 20 years (*Oil and Gas Journal*, 5 May 1997). To put this figure in perspective, the estimated production of crude oil for 1999 in the USA was approximately 1.95 billion barrels (US Department of Energy, 2000).

2 Notable exceptions are Barney and Ouchi (1986), Teece (1986), Mahoney (1992a; 2005), Chi (1994), Liebeskind (1996), Miller and Shamsie (1996), Argyres and Liebeskind (1998), Oxley (1999), Kim and Mahoney (2002; 2005), Asher *et al*. (2005), and Foss and Foss (2005).