

Chapter Twenty

Organizational Economics

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Organizational economics has thrived as a field of study for nearly three decades. Although Barney and Hesterly (1996) note exceptions, the field of organizational economics can generally be distinguished from other fields within organization theory by its assumption that managers attempt to maximize profits, its reliance on rationality (bounded or perfect), and its emphasis on competition as a discipliner of wayward organizations. As such, organizational economists tend to favor efficiency explanations for organization, believing that many non-efficiency issues highlighted by other organization theorists are likely to be resolved through the price mechanism (for example, see the discussion of resource dependence below).

Neoclassical economic theory highlights the profound ability of markets to efficiently allocate resources to production of desired goods, yet leaves a limited role for firms, which serve as "black box" production functions that frictionlessly convert a set of inputs into a set of outputs. It was left to Coase (1937) to ask the twin questions: If markets are so effective, then why do firms ever exist? And, if firms exist because they are in fact better than the market at allocating resources, then why is the economy not organized into a single huge firm? Coase's answer was that firms and markets differ in their ability to manage economic exchange, and that those activities for which firms provide less costly management will be organized within firms, and vice versa. Coase's work thus placed transaction costs at the center of the market-hierarchy choice. However, lacking a proposal for operationalizing transaction costs, his work was "frequently cited, but little used" for 35 years (Coase, 1972, p. 63).

In the early 1970s, a number of economic theorists returned to the comparative analysis of organizations and markets with renewed vigor. Among their efforts, Williamson's (1975) conception of transaction cost economics has become perhaps the most widely known.¹ Resting on the behavioral assumptions of bounded rationality and opportunism, transaction cost economics asserts that transactions will be organized within governance structures based on a set of observable characteristics correlated with transaction costs of organizing. In the mid-1980s a second wave of theorists, drawing on Penrose (1959), Schumpeter (1942), and Demsetz (1973), introduced the

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resource-based view of the firm, in which the firm is conceived as a bundle of idiosyncratic resources and capabilities. For these scholars, who invoke a particularly bounded form of rationality, organizations exist to combine productive resources in ways that markets cannot.²

Organizational Economics – Theory and Evidence

TRANSACTION COST ECONOMICS (TCE)

Building on Coase (1937), Commons (1934), Barnard (1938), and Hayek (1945), among others, and conceptualizing markets and firms as alternative structures for governing economic activity, transaction cost economics (TCE) proposes that economic actors "align" transactions, which differ in their attributes, with governance structures, the costs and competencies of which differ, in a discriminating, mainly, transaction cost economizing, way" (Williamson, 1991, p. 270). Resting on the behavioral assumptions of bounded rationality and opportunism, transaction cost economics asserts that transactions will be located in governance structures based on their characteristics – chiefly uncertainty, frequency, asset-specificity (Williamson 1985) and appropriability (Teece, 1986).

Why bounded rationality and opportunism? If rationality were not bounded – that is, "intendedly rational, but limitedly so" (Simon, 1947, p. xciv) – then economic actors could write complete contracts specifying appropriate responses to any potential event. Organization plays no role in a world in which complete contracting is possible. Similarly, in the absence of opportunism – defined as a propensity for self-interest seeking with guile, or, more colloquially, the propensity to take advantage of a situation for one's own benefit – actors could simply agree to "work things out" as future events unfold. Again, organization plays no role in a world in which all people can be relied upon to selflessly cooperate at all times.³ Given bounded rationality and opportunism, however, economic exchange can be hazardous to one's health. Consequently, transacting parties seek governance forms that will cost-effectively mitigate potential problems in exchange. Hierarchical governance is typically more effective than markets at mitigating high levels of transactional hazard and at managing coordinated adaptation, but this comes at a cost of higher fixed setup costs and weaker incentives (Williamson, 1975).

TCE illuminates those characteristics of a transaction, defined as any actual or potential exchange across a technologically separable interface, that are likely to create exchange hazards. It also illuminates characteristics of governance structures that are likely to attenuate these hazards. Most important is the degree of specific investment required to support a transaction, termed "asset-specificity." An asset is specific to a particular transaction if its value in its next-best use (i.e., in a transaction with a different party) is less than its use in this transaction. The greater the difference between the value of an asset in its first-best and its next-best use, the more specific that asset is to the transaction (Klein et al., 1978; Williamson, 1979). If a transaction is supported by generic assets, then breakdown in exchange is not problematic; each party may seek out new exchange partners with no loss in value of its assets. However, if a transaction is supported by specific assets, then breakdown in exchange imposes a loss of value on the owner of the transaction-specific assets. More importantly, once a party to an ex-

change has made an investment in specific assets, its exchange partner may be tempted to renege on the exchange agreement to extract a better deal. Since the first party's assets are worth less in their next-best use, the party is willing to pay up to the difference in its first-best and next-best use to the second party. Specific assets arise in the form of physical asset specificity (e.g., a machine that is tailored to serve only one customer), human asset specificity, site specificity, dedicated assets, or temporal specificity (e.g., a need for timely response).

Consider an example based loosely on Joskow's (1985) study of coal mine contracts and an illustration from Barney (1997, ch. 10). Imagine a coalmine owner, A, whose riverside mine currently relies on barges to transport its coal. Suppose mine owner A and railroad B are negotiating a deal under which B will build a rail spur to A's mine and then carry some specified portion of A's coal at some specified price. Once B has built the rail spur, however, A has an incentive to reopen negotiations over price. Since the already-built rail spur has little value for B in any other transaction, B would be willing to take a lower price ex post than it agreed to ex ante. Thus, exchange between A and B is fraught with ex post hazard for B. This phenomenon, by which pre-investment bargaining conditions are transformed post-investment, is often termed the "fundamental transformation" (Williamson, 1985, pp. 61–3). Anticipating this, B will only agree to a deal that includes sufficient safeguards for its investment. In contrast, the contract between mine owner A and barge firm C is likely to be characterized by lower degree of hazard, since C's assets can be relocated without as substantial a loss of value.

Increased environmental uncertainty surrounding a transaction is also predicted to increase the level of hazard, since such uncertainty increases the difficulty of ex ante contracting. Put differently, in a world devoid of uncertainty, even boundedly rational parties could anticipate perfectly how a transaction would evolve in the future. In such a world, railroad B and mine owner A could write cheaply and enforce easily a contract specifying price and quantity to be transported. However, uncertainty introduces the likelihood that unforeseen events will lead to (or provide a pretext for) contractual breakdown. Thus, increased uncertainty – when coupled with asset-specificity – leads to increased exchange hazards.

Appropriability, or the ability to appropriate returns from investments, is a relevant attribute of transactions, particularly transactions related to innovation (Teece, 1986; Oxley, 1997). The presence of a weak "appropriability regime" (Teece, 1986) increases the risk that proprietary technological knowledge will leak from one party to another during the course of an economic exchange. Finally, the frequency with which a transaction occurs is predicted to increase the likelihood of hierarchical governance, essentially due to scale economies of bureaucracy (e.g., the cost associated with setting up a personnel office can be amortized across many employment decisions). Of the transaction attributes discussed by Williamson (1975, 1985), frequency is perhaps the least frequently tested.

When exchange hazards are negligible – broadly, when assets supporting a transaction are generic – spot markets offer the lowest-cost form of governance. Market discipline provides strong incentives for effort, and parties incur few set-up costs for governing spot market transactions. Reliance on generic assets allows parties to adapt autonomously to subsequent environmental changes, and disputes arising between transacting parties can be nearly costlessly resolved by exiting the relationship. As the level of asset-specificity in a transaction increases, along with the attendant hazards, parties will

prefer intermediate governance forms such as long-term contracts, franchises, and alliances. Although these entail higher bureaucratic costs and weaker incentives than spot markets, such forms provide additional safeguards (e.g., minimum volume purchase guarantees; extended property rights) that protect investment in specialized assets and that may encourage coordinated adaptation efforts. At high levels of hazard – when assets are extremely transaction-specific – the costs of markets and of intermediate forms exceed that of hierarchy. Although hierarchy further mutes incentives and incurs additional fixed set-up costs, these are outweighed by savings associated with managing the exchange. Within a hierarchy, disagreements can be resolved by authority rather than through legal recourse, providing sharper control over specific investments. These different governance arrangements are supported by different legal regimes, ranging from classical contract law for market governance to “forebearance” law for hierarchy (Masten, 1988; Williamson, 1991; Rubin, 1995).

Over the years, TCE has evolved in numerous respects. One of these relates to the development of appreciation for credible commitments in supporting exchange. In its original formulation, TCE highlighted the problem of bilateral dependence – that is, when both parties to a transaction are dependent on the other – as the most hazardous form of transaction (Williamson, 1975). Yet this raises a question: if I am as dependent on my exchange partner as she is on me, then what incentive do I have to upset our exchange relationship? In the coal mine-railroad example, it does not appear that the relationship would be less stable if the mine owner had no recourse to barge carriage. Research in the 1980s indicated that such bilateral dependence might actually be more stable than unilateral dependence, and that one way to support a market-based exchange relationship that requires specific investments by one party is to increase the level of specific investment made by the other party (Williamson, 1983). With both parties at risk of loss if the exchange relationship breaks down, the relationship may be stronger. A second area of development relates to the institutional environment. Although early TCE theory was generally silent about macro-level institutions, recent research has explicitly incorporated institutional features such as legal regimes and norms (Williamson, 1991).

EMPIRICAL RESEARCH

As recently as 1991, TCE was occasionally derided as a theory without empirical support (Simon 1991). Yet today there are more than 600 empirical studies whose results are consistent with transaction cost principles (Boerner and Macher, 2000). These encompass qualitative studies, small sample survey-based research, and large-scale econometric studies relying on secondary-source data. Table 20.1 summarizes the studies selected for review.

The transaction cost lens was used initially to examine make-or-buy phenomena, including backward integration in automobile components (Monteverde and Teece, 1982a) and aerospace system construction (Masten, 1984), forward integration into an in-house sales force (Anderson and Schmittlein, 1984), and product or geographic diversification (Teece, 1980; Hennart, 1982; Henisz, 2000). Elaborations on this framework have been applied to numerous arrangements other than the polar modes of market and hierarchy. These include the “lending” of idiosyncratic assets to exchange partners (Monteverde and Teece, 1982b), long-term contracts (Joskow, 1987), take-or-pay con-

Table 20.1 Transaction cost economics: Representative empirical studies

| Reference | Key concepts | Key variables | Key predictions/findings | Key contribution | Method, sample |
|-----------------------------|--|--|--|--|---|
| Classic make-or-buy | Make-or-buy decision is a function of asset-specificity. | DV: make-or-buy Input IV: asset-specificity | Asset-specificity is positively associated with internal sourcing. | Pioneering study of vertical integration through TCB lens | Probitt, 133 automobile component sourcing decisions by GM and Ford |
| Monteverde and Teece, 1982a | Make-or-buy decision is a function of asset-specificity. | DV: make-or-buy Input IV: asset-specificity | Asset-specificity is positively associated with internal sourcing. | Pioneering study of vertical integration through TCB lens | Used expert ratings to code asset-specificity |
| Masten, 1984 | Make-or-buy decision is a function of asset-specificity and uncertainty. | DV: make-or-buy Input IV: asset specificity; uncertainty (complexity) | Asset-specificity and uncertainty are positively associated with internal sourcing. The interaction between these further increases the likelihood of internal sourcing. | Pioneering study of vertical integration as function of both asset-specificity and uncertainty | Probitt, 1,887 aircraft component sourcing decisions used survey methods to code specificity and complexity variables |
| Joskow, 1987 | Contract duration is a function of asset-specificity. | DV: contract duration IV: asset-specificity | Asset-specificity is positively associated with contract duration. | Pioneering study of relational contracting through TCB lens | OIS and MRE, 277 contracts between coal suppliers and electric plants |
| Alliances | Make-or-buy choice is a function of contractual hazards. | DV: make-or-buy for R&D IV: asset-specificity; appropriability | Asset-specificity and appropriability concerns are positively associated with in-house R&D. | Pioneering study of alliances through TCB lens | Probitt, 92 biotechnology R&D projects undertaken by pharmaceutical firms |
| Pisano, 1990 | Make-or-buy choice is a function of contractual hazards. | DV: degree of equity hazards; strength of appropriability | Appropriability concerns are positively associated with equity stakes in alliances | Pioneering study of appropriability effects on alliance structure. | 165 alliances undertaken by US firms; 727 international alliances |
| Oxley, 1997, 1999 | Alliance structure is a function of appropriability hazards. | DV: degree of equity hazards; strength of appropriability | Appropriability concerns are positively associated with equity stakes in alliances | Pioneering study of appropriability effects on alliance structure. | 165 alliances undertaken by US firms; 727 international alliances |

tract provisions (Masten and Crocker, 1985), franchising (Lafontaine, 1992), the exchange of offsetting specific investments (Heide and John, 1988), and alliances (Pisano, 1990; Oxley, 1997). TCE logic has also been extended to such traditionally non-economic phenomena as the internal organization of political bodies (Weingast and Marshall, 1988; Moe, 1990), relations among lobster fishermen (Acheson, 1985), and even the rise in popularity of engagement rings (Birnig, 1990).

Empirical studies typically identify the governance of a particular type of transaction, either within a single firm or across many firms, and measure those characteristics of a transaction that are hypothesized to affect the governance decision. Quantitative studies then typically use statistical techniques to test whether transaction characteristics are associated as predicted with governance choices.

Monteverde and Teece (1982a) is paradigmatic of many transaction cost studies in its identification of a single type of transaction, its use of survey data to collect otherwise elusive measures of asset-specificity, and its reliance on binary estimation models. Noting that US automobile manufacturers produced some components in-house and sourced other components externally, the authors hypothesize that an automaker's decision to make or buy a given component turned on the degree to which the production process for that component generated specialized know-how. They identify 133 automotive components with the help of executives at one auto assembler, and obtain from General Motors and Ford information on the extent to which each component was sourced or produced in-house. They next survey industry experts to obtain Likert scale response data on the degree to which each component required significant design engineering investment, and was specific to a particular manufacturer, make and model of vehicle. Finally, they estimate a probit regression of governance on component attributes and find that, as predicted, component engineering investment (interpreted as a measure of specialized know-how) and component specificity are positively associated with vertical integration of component production. In subsequent studies of the automobile industry, Walker and Weber (1984, 1987) use similar survey techniques to measure uncertainty in component volume demand and in a component's technological stability. They find that increased volume uncertainty is associated with vertical integration – but only when the competition to supply that component is “thin” (i.e., when asset-specificity is high).

An alternate empirical approach that obviates the need for survey data is to identify observable characteristics of transactions that permit an *ex ante* ordinal ranking of the transactions' asset-specificity. In a study of coal-burning power plants, Joskow (1985) divides plants into several different categories, one of which is “mine-mouth.” In contrast to “typical” plants built to use coal from multiple mines, a mine-mouth plant is located directly next to a mine and is designed to burn coal of the quality found in that mine. Joskow deduces that mine-mouth plants are characterized by more asset-specificity than typical plants, and consequently that such plants and their coal sources are more likely to be vertically integrated than are typical plants and their coal sources. He finds evidence consistent with this prediction.

More recent empirical research has explored phenomena between markets and hierarchies, while also incorporating more explicitly institutional features. For example, Oxley (1999) explores the impact of alliance characteristics and institutional environment on the structure of alliances. Using the CATT database of alliance announcements (Hagedoorn and Schackenraad, 1994), Oxley codes the governance structure of each

| Reference | Key concepts | Key variables | Key predictions/findings | Key contribution | Method, sample |
|----------------------------|---|---|--|---|--|
| Spiller, 1985 | Vertical mergers are rewarded for increasing efficiency, and not for increasing market power. | DV: abnormal stock market returns IV: announcement of merger IV: asset-specificity; power is not associated with gains. | Asset-specificity is positively associated with stock market gains from merger announcement; market power is not associated with gains. | Pioneering study of mergers through TCE lens; test conflicting hypotheses derived from competing theories of the firm | System of equations; studied 29 mergers in the US |
| Guthrie and Anderson, 1988 | Mode of foreign direct investment is a function of asset-specificity. | DV: Degree of equity ownership IV: asset-specificity; uncertainty These effects are exacerbated in the presence of asset-specificity. | Behavioral uncertainty (environmental uncertainty) is positively (negatively) related to degree of equity ownership. These effects are exacerbated in the presence of asset-specificity. | Pioneering study of mode choice of foreign direct investment | Multinomial logit; 1,267 foreign subsidiaries of US firms |
| Masten et al., 1991 | Direct measurement of transaction costs | DV: cost of internal organization IV: asset specificity; rather than increasing costs of market organization. | Asset specificity and uncertainty reduce costs of internal organization, rather than increasing costs of market organization. | Pioneering study that measures transaction costs | 2SLS; studied 74 components in naval shipbuilding. Used survey to obtain and code data. |
| Silverman et al., 1997 | Proper transactional alignment should have measurable performance consequences. | DV: firm failure (exit) IV: misalignment in governance of 1) driver employment relation; 2) capital structure | Firms whose key transactions are properly aligned will enjoy superior survival rates than firms whose key transactions are not properly aligned. | Pioneering study of link between governance and economic performance | Hazard rate models based on population of several thousand large motor carriers, 1977–89 |

Note: DV = dependent variable; IV = independent variable.

alliance (equity vs. non-equity) as well as alliance features that are presumed correlated with technology leakage concerns, such as alliance scope – commercialization only, design only, or design and commercialization. Using CATI's identifications of alliance partners' nationality, she then employs published ratings of countries' intellectual property systems to measure the strength of the "appropriability regime" surrounding each alliance. Oxley finds that increased likelihood of technology leakage and weaker appropriability regimes are associated with reliance on the more hierarchical equity joint venture form.

Although TCE predicts that governance choice depends on attendant transaction costs, empirical research typically eschews direct measurement of such costs in favor of reduced form estimation. This reliance on reduced form estimation, which is common throughout strategy and organization research, occurs for two reasons.⁴ Although some scholars have made bold attempts to measure transaction costs (Dyer, 1997), their measurement is extraordinarily difficult, particularly for contracting costs. As Masten et al. (1991, p. 3) note, "many hazards of exchange, such as inflexibility in response to changing circumstances ... are either implicit or latent to the transaction." Put differently, it is difficult to construct measures of expectations of costs – particularly for market exchanges where potential costs arise from events such as a supplier's attempt to renegotiate a contract. Estimation of comparative costs of governance is also hampered by standard selection problems: how can we obtain information on the cost of the governance mode not selected?

Building on the structural modeling boom in the late 1980s (Bresnahan, 1989), Masten et al. (1991) address these obstacles in a study of 74 transactions undertaken by a large naval shipbuilder. Through a survey, the authors obtain data similar to that of Monteverde and Teece (1982a), and further obtain data on the costs of internal organization – measured as the number of hours management spent planning, directing, and supervising a particular transaction (multiplied by the average hourly management wage rate) – for the 43 transactions performed in-house. They then estimate a two-stage model in which the second stage estimates the cost of organizing those in-house transactions, correcting for selection bias. Masten et al. thus estimate the costs of organizing transactions in-house, and, more importantly, the costs that would be incurred had these transactions mistakenly been organized through the market or had the market-based transactions mistakenly been organized in-house. The numbers are substantial: organization costs totaled roughly 14 percent of production costs, and reliance on the wrong governance mode would more than double organization costs on average.

TCE thus offers a framework involving comparative institutional analysis to infer which mode of organization – market, hierarchy, or hybrid – will best govern a given transaction and what contractual provisions are likely to support exchange. By considering the firm in terms of both production and organization technologies, TCE illuminates organizational issues in ways beyond the scope of neoclassical economics. By applying an efficiency criterion and a relatively sparse parameterization of human behavior, TCE generates a wide set of refutable predictions concerning organization form. Although these have been framed most frequently in the make-or-buy context, a wide range of economic, political, and social institutions have proven amenable to TCE reasoning. Further, the last two decades have witnessed the development of a substantial body of empirical evidence consistent with TCE predictions of organizational form.

RESOURCE-BASED VIEW OF THE FIRM (RBV)

Although the resource-based view offers an approach to understanding organization form, it initially arose in response to the prevailing structure-conduct-performance (SCP) theory of firm performance in economics (Bain, 1956; Caves and Porter, 1977) and strategic management (Porter, 1980). Adhering closely to neoclassical assumptions about firm homogeneity, SCP attributes most variation in firm performance to differences across industries or strategic groups. Yet scholars in the early 1980s voiced concern that such a view ignored important within-firm features. The early RBV emphasized how variation in firms' access to key factor inputs (Wernerfelt, 1984; Barney, 1986), and/or impediments to firms' ability to imitate one another (Rumelt, 1984) could lead to variation in firm performance within an industry, and to variation in the attractiveness of a particular industry for a particular firm. A firm's ability to succeed in a given product market is thus predicated on its access to necessary factor inputs or entrepreneurial insight – resources – relevant to that product market. For example, if resource X is crucial to success in product market Y, then a firm that owns X and competes in market Y will earn greater profits than its market Y rival that does not own X, all else equal. Further, market Y will represent a more attractive opportunity for a potential entrant that owns X than for one that does not (Rumelt, 1984; Wernerfelt, 1984).

This framework rests on the assumption that resource profiles vary persistently across firms (Dierckx and Cool, 1989; Barney, 1991; Peteraf, 1993). Although neoclassical economics assumes that most resource advantages erode over time, Lippman and Rumelt (1982) provide a formal model in which uncertain imitability discourages rivals from attempting to copy a firm's resource-based advantage. As Mahoney and Pandian (1992) relate in their overview of the resource-based literature, scholars have identified a wide range of "isolating mechanisms" (Rumelt, 1984) to explain persistence of resource heterogeneity.

A second branch of the resource-based view focuses on a firm's capabilities – its ability to combine inputs (Teece et al., 1997). This branch, which draws on routine-based evolutionary theory proposed by Nelson and Winter (1982), focuses almost exclusively on the role of knowledge – particularly tacit knowledge – in explaining firm behavior. In the 1990s, this competence-based branch has devoted most of its attention to explaining how knowledge affects organization structure, rather than how it affects variation in firm performance. As such, the competence-based branch positions itself in reaction to transaction cost economics far more than to the SCP model (Langlois and Foss, 1997).

The competence-based branch proposes that firms embody different capabilities and that firm boundaries are determined by the nature of what firms can do particularly well. Predicated on strong assumptions of bounded rationality and cognitive limitations, a firm that has unique strengths and weaknesses in its productive capability, is expected to internalize those activities that are complementary to its unique features. Given variability in productive capabilities, identity matters more in the competence-based branch than in transaction cost economics.

In the competence-based branch, bounded rationality not only precludes the writing of complete contracts, but also implies that tacit knowledge about production is likely to

vary across economic actors: see also Williamson (1975, pp. 31-7). Further, bounded rationality prevents two actors from communicating their needs to each other, even if both are acting in good faith: "thus, members of one firm may quite literally not understand what another firm wants from them" (Langlois and Foss, 1997). In such a world, costs incurred in market exchange are not associated with opportunism, but with information processing problems attendant on communication and coordination (Gulati and Singh, 1998). As such, this view is related as much to the information processing view of Galbraith (1977) and to coordination costs (Thompson, 1967) as to concern over contractual hazards. Firms are assumed more efficient than markets at combining and diffusing key knowledge to the appropriate individuals. Rather than focusing on hazard-inducing transaction attributes such as asset specificity, the focus is thus on coordination-sensitive attributes of routines such as the degree of interdependence, the degree of tacit knowledge that must be circulated, and the consequent need for coordination under uncertainty (Conner, 1991).

Whereas the "canonical transaction" for TCE was explicitly vertical integration, the implicit canonical transaction for the early RBV was diversification. This prototypical transaction draws on Teece's (1982) discussion of multiproduct firms. The RBV has also devoted attention to interfirm collaboration, focusing in particular on predicting which firms are likely to select each other as alliance partners. In this view, generic absorptive capacity (Cohen and Levinthal, 1990) is less important than dyad-specific absorptive capacity (Dyer and Singh, 1998; Mowery et al., 1998); hence, a firm faces a distinct cost-benefit profile for each potential alliance partner. In addition, Kogut (1988) and Teece (1992) have focused on the ally-or-make-or-buy decision, proposing that alliances are undertaken when economic actors need to obtain rapid access to new resources or capabilities. Thus, alliances are used not in response to intermediate levels of asset specificity but in response to

- 1 the gap between existing capabilities and desired capabilities, and
- 2 the time frame over which this gap must be closed.

EMPIRICAL RESEARCH

A relatively young theoretical approach, the resource-based view has a briefer empirical history than does transaction cost economics. Although much empirical support comes from reinterpretation of studies predating the RBV (Gort, 1962; Rumelt, 1974), the theory boasts qualitative case studies, small sample survey-based research, and large-sample estimation relying on secondary-source data. Although initial theoretical work emphasized single-business issues, the locus of empirical resource-based research shifted rapidly to the issue of diversification, where it has had perhaps its most sustained impact. Table 20.2 summarizes the studies selected for review.

Like many resource-based studies of diversification, Montgomery and Hariharan (1991) rely on published data to support large-sample econometric tests. The authors use FTC Line of Business data, collected from large US firms between 1974 and 1977, to explore diversification choices. The FTC database records information on the industries (at 3- or 4-digit SIC level) in which each reporting firm operates as well as the firm's sales, R&D expenditures, advertising expenditures, and the like. The authors perform a logit estimation of the likelihood that firm j diversifies into industry k , finding that a firm is more

Table 20.2 Resource-based view: Representative empirical studies

| Reference | Key concepts | Key variables | Key predictions/findings | Key contribution | Method/sample |
|---|---|---|---|--|---|
| Diversification Montgomery and Hariharan, 1991 | Diversification is a function of a firm's resource profile. | DV: diversifying entry IV: resource similarity | Resource similarity is positively associated with entry. | Comprehensive study of diversification direction through RBV lens | Logit, 1,120 entry decisions by 350 large US firms |
| Performance Montgomery and Wernfelt, 1988 | Firm performance is a function of "appropriate" diversification. | DV: Tobin's q IV: diversification relatedness | The relatedness of a firm's diversification is positively associated with its value. | Comprehensive study of diversification-performance relationship through RBV lens | OLS: 126 large, publicly traded US firms |
| Rumelt, 1991 | Within-industry variation in performance exceeds inter-industry variation. | DV: business unit profitability IV: industry, firm, and business unit effects | Business unit effects account for at least as much variance in performance as do industry effects. | Pioneering study of intra- vs. inter-industry performance differences | Variance components model; 2,810 business units operated by 463 large US corporations over a four-year period |
| Alliances Mowery et al., 1996 | Alliance partner selection is a function of partner-specific technological overlap. | DV: alliance partner choice IV: technological overlap | Technological overlap has an inverted-U relationship with partner selection. | Early study of alliance partner selection in the RBV | OLS and logit; 160 alliance decisions; matched control sample |
| Capabilities Henderson and Cockburn, 1994 | A firm's research productivity is a function of its technical competence. | DV: patents IV: "pro-pub" - scientific publication to promotion; other research-friendly firm features | A firm's commitment to a pro-pub patenting output, as is R&D resource allocation by committee (as opposed to a "dictator"). | Pioneering operationalization of firm's research productivity | Poisson, negative binomial, non-linear least squares; 3,210 research program-year observations from 10 pharmaceutical firms over 30-year period |

likely to diversify into an industry the more similar are the industry's R&D intensity (i.e., the ratio of R&D spending to sales), advertising intensity, and capital expenditure intensity to those of the firm. To the extent that these intensity measures proxy for technological, marketing, and project management resources, respectively, these results are consistent with the proposition that firms diversify in directions that enable them to exploit existing resources.

Related research has explored the effect of diversification on firm performance. Montgomery and Wernerfelt (1988) and Wernerfelt and Montgomery (1988) use secondary source data on public firms to estimate the relationship between the extent of a firm's diversification and its stock market value. The authors find that more "related" diversification - measured by proximity of the firm's businesses in the SIC system (Caves et al., 1980) - is associated with higher Tobin's q , which, as the ratio of a firm's market value to the replacement cost of its assets, is a conventional measure of a firm's expected future profits. Relatedly, using FTC categorizations of acquisitions as "related" or "unrelated," Singh and Montgomery (1987) find that stock market gains associated with acquisition announcements are higher for related than for unrelated acquisitions.

How well do the measures used in these studies proxy for resources? Intensity measures appear far removed from the actual resources they are intended to measure. Further, whereas theory proposes that a key resource is valuable in only a narrow range of applications, reliance on R&D intensity implies a high degree of fungibility of technological resources. Similarly, proximity of two industries in the SIC numbering system may not map sufficiently closely to similarity in terms of the resource profiles needed to compete successfully in those industries. Recent research has, however, begun to develop more fine-grained measures of resources, both through published data and through surveys. In a study of technology-driven diversification by large US firms, for example, Silverman (1999) links each firm's patent portfolio to specific industries in which its patents are likely to provide value, thus developing a measure of technological resources that is more industry-specific and less fungible than R&D intensity. He finds that addition of such resource measures significantly improves the explanatory power of models predicting the direction of corporate diversification. Patent-based measures of resources have also expanded the scope of alliance research, which indicates that the technological resource overlap of firms affects both the selection of alliance partners and the outcome of alliances (Mowery et al., 1996, 1998).

Combining survey and published data, Henderson and Cockburn (1994) explore the effect of R&D competence on the research productivity of ten pharmaceutical firms. Granted access to the archives of these firms, the authors are able to identify R&D inputs by research program (e.g., all of Merck's research projects related to hypertension) for up to 30 years. Separately, they identify patents awarded to these firms and match them to the relevant research program. Finally, they augment this with surveys at each firm that yield, among other items, Likert-scale responses to questions about organizational practices hypothesized to influence the development of research competence. Henderson and Cockburn use Poisson estimation to relate firms' patent productivity to measures of research competence, finding evidence of both firm-specific heterogeneity in research productivity and systematic competence-based effects on research productivity. Zander and Kogut (1995) have also employed survey data to characterize manufacturing knowledge or capabilities to explore how these characteristics affect the speed of intrafirm transfer and interfirm imitation.

Note: DV = dependent variable; IV = independent variable.

| Reference | Key concepts | Key variables | Key predictions/findings | Key contribution | Method/sample |
|-------------------------------|--|---|---|--|---|
| John RBV-TCB Argyres, 1996 | Make-or-buy decision is a function of asset-specificity and differential firm capabilities. | DV: make-or-buy IV: asset-specificity; Input | Asset-specificity is positively associated with internal sourcing; superior internal capabilities are positively associated with internal sourcing. | Pioneering case study Integrating RBV and TCB | Case study of 13 transactions in large US electrical component firm |
| Popo and Zenger, 1998 | Distinguish between TCB and RBV by effect of asset specificity on costs of exchange • TCB: market performance degrades as asset specificity increases. • RBV: hierarchy performance improves as asset specificity increases. | DV: exchange performance IV: firm-specific performance assets: measurement difficulty; technological uncertainty; expertise | Asset-specificity is negatively associated (not market-based performance of internalized transactions); other IVs also demonstrate different effects on performance of market exchange than on hierarchy. | Pioneering study examining conflicting hypotheses of TCB and RBV | 2SLS; 1,368 information systems transactions undertaken by 152 Fortune 500 firms Used survey responses to code performance |
| Silverman, 1999 | Diversification is a function of a firm's resource profile and of contractual hazards. | DV: entry IV: resource similarity; contractual hazards | Resource similarity is positively associated, and appropriability is negatively associated, with entry. | Pioneering study Integrating RBV and TCB in diversification of US firms | Logit; 2,416 entry decisions by 436 large US firms operationalization of technological resources |

Thus, the RBV offers an approach to infer which mode of organization will best govern a given resource. Perhaps because research in this area is unusually context-bound – there are few general rules regarding which resources will matter for a given firm or industry – the RBV still must address several basic questions to define its explanatory framework (Williamson, 1999), including: When is a resource crucial? Are more resources always better than less? It remains unclear how quickly this approach will mature, and whether it will ultimately serve as rival or complement to TCE. Nevertheless, the RBV continues to generate excitement among organizational economists and strategy scholars: four of the papers honored as “Best Paper” in *Strategic Management Journal* over the last eight years have been contributions to the resource-based view (Wernerfelt, 1984; Rumelt, 1991; Amit and Schoemaker, 1993; Peteraf, 1993).

Current Issues and Debates

OPPORTUNISM

A number of scholars have taken issue with TCE's emphasis on the opportunistic nature of human actors. On occasion this appears to stem from moral repugnance for the idea of opportunism as much as from concerns over the predictive power of the theory (Donaldson, 1990; Ghoshal and Moran, 1996).⁵ However, resource-based critics have generally argued that opportunism is simply an unnecessary assumption for a theory of organization (Conner and Prahalad, 1996). Others have also proposed that “trust” may obviate concerns about opportunistic behavior (Ring and Van de Ven, 1992).

In response to the RBV's dismissal of opportunism, TCE adherents propose the following thought experiment: take a firm as described by the RBV, where people located in close proximity to each other have repeated contact and the expectation of continued repeated contact. Now, imagine that everything were to remain the same, with the exception that hierarchical governance is removed – that is, all of these people still interact as before, but their federation is governed by market agreements rather than by hierarchy (not unlike the “putting out” system common in the 1800s (Williamson, 1975)). Why in the absence of opportunism is this market arrangement any less capable than the firm (Foss, 1996)?⁶

This debate remains central to the broader conversation between TCE and RBV, and between TCE and organization theory at large. The debate will likely continue, in part because it is exceedingly difficult to disentangle opportunism, bounded rationality, and trust empirically (or theoretically); see Craswell (1993) and Williamson (1993a, b). For example, while RBV scholars argue that tacit knowledge encourages hierarchy due to coordination costs entirely independent of opportunism, TCE predicts that tacit knowledge will be positively associated with hierarchy due in part to concerns over opportunism. Unless the RBV lens can generate conflicting hypotheses, or researchers can find a way to measure directly variables such as opportunism, RBV faces the difficult task of challenging an established theory without compelling empirical evidence.

FIRM HETEROGENEITY AND PATH DEPENDENCE

The debate over heterogeneity and path dependence in a model of organization can be conceived as a debate between parsimony and operationalization on one side and realism on the other. Critics charge that, by assuming that firms generally have access to the same production functions, TCE assumes away differences in productive abilities that might shape firm boundaries (Langlois and Foss, 1997), leading to a focus on minimizing governance costs to the exclusion of increasing productive value (Rindfleisch and Heide, 1997). By throwing off such constraints, the RBV emphasizes the responsibility of economic actors to create and exploit specialized, rent-generating assets under conditions of uncertainty (Barney and Hesterly, 1996). In response, Williamson (1999) and others have noted that although RBV's embrace of heterogeneity along multiple dimensions may enhance its list of the factors affecting organization, this embrace in turn complicates the development of a rigorous operationalization of relevant resource attributes. Put differently, as long as everything is heterogeneous, the RBV is vulnerable to charges of tautology similar to those that afflicted TCE before the 1970s.

“YOU'RE BOTH WRONG!” – SOCIOLOGICAL CRITIQUES

Sociology-based organization theorists often criticize organizational economics for underemphasizing the impact of social processes on the nature of economic activity (Perrow, 1981). Three criticisms stand out. First, resource dependence adherents argue that the predictions of TCE and RBV are strikingly similar to those arising from resource dependence – specifically, that firms integrate to “manage” their dependence on their environment – and that integration in the presence of “key resources” is driven in fact by power relations rather than efficiency (Pfeffer and Salancik, 1978). Second, social network scholars argue that the atomistic, calculative approach embodied in organizational economics ignores the fact that transactions are embedded in a rich social context (Granovetter, 1985). Consequently, organizational economists ignore key attributes of transactions such as social relations between transactors. More generally, TCE's emphasis on dyadic ties lead it to underemphasize the contextual effect that an actor's social network may have on governance (Podolny, 1994; Uzzi, 1997), and on the range of transaction opportunities facing that actor (Burt, 1992). Third, institutional theorists argue that organizational economists should consider norms and other institutional pressures in addition to formal legal regimes (Oliver, 1997; Roberts and Greenwood, 1997).

Is organizational economics just wrong-minded resource dependence? I suggest not, for three reasons. First, resource dependence assumes a peculiarly myopic view of economic behavior (Williamson, 1985). Actors muddle along without much forethought, suddenly find themselves dependent on an outside party, and only then rush to “manage” this relationship. In contrast, organizational economists assume that economic actors at least try to anticipate future developments. This suggests an empirical test to distinguish between the two theories: look at the evolution of exchange relationships over a period of time. Second, organizational economics offers far sharper predictions than does resource dependence. For example, Pfeffer and Salancik (1978) note the

"power" that General Motors has over its suppliers, and credit this power with GM's ability to dictate terms to its suppliers. Although likely, this offers no insight into why GM chooses to make some components and purchase others. In contrast, TCE offers a discriminating and empirically supported prediction of this decision. Third, for organizational economists, the notion that GM has power relative to its suppliers does not negate an efficiency explanation of organization. Assume that GM does dictate terms to its supplier. Presumably GM offers a price that enables the supplier to barely break even, thus taking all profits for itself. Given that GM is going to gain all of the profits, what governance structure will GM want to impose? Presumably, GM will want to impose that structure that will maximize profits. Which structure will maximize profits? The most efficient structure will do so, by definition. More generally, organizational economists frequently see power relations playing out in prices, and so having limited impact on organization form.

Regarding the "embeddedness" argument, some RBV scholars explicitly incorporate social context into their work. Kogut and Zander (1992, 1996) invoke the social nature of a firm as the basis of its coordination advantages vs. the market. TCE research has not embraced social structure arguments as warmly. To a TCE adherent, a social tie looks suspiciously similar to a hostage or credible commitment: it involves a relationship-specific investment that is of no value should the relationship terminate. One exception that points toward benefits of incorporating social structure is Jones et al. (1997), who attempt a synthesis between TCE and embeddedness, proposing that in some circumstances embeddedness may safeguard against opportunism by diffusing information about reputations and by facilitating collective sanctions.

At the same time, organizational economists' insight may inform social network theory. For example, although network theorists have prescribed that firms should attempt to develop ties with high-status organizations (Stuart et al., 1999), organizational economists raises concerns about the price of such ties. Suppose that biotech firm A can ally with pharmaceutical firm B or C, which are identical except that B is of higher status than C. Firm A would prefer to ally with B in order to obtain status conferral benefits. But presumably B, being cognizant of its status advantage, will charge contractual terms regarding future drug products, etc.). In fact, if the price premium charged by B doesn't exactly equal the incremental benefit A gets from allying with B rather than with C, then B is leaving money on the table. Hence, if we take into account the different costs to biotech firm A of allying with each potential partner, A should be indifferent between the two allies. Generally, to the extent that network position is something that firms invest in and exploit (Podolny and Phillips, 1996), the logic of organizational economics should be able to inform network research as much as network research will inform organizational economics.

Finally, with respect to institutional theory, several organizational economics studies incorporate the role of norms. Ellickson's (1989) study of whaling and Acheson's (1985) study of lobstering both ascribe transaction cost efficiency properties to norms developed over time in these communities. Argyres and Liebeskind (1998) argue that biotechnology startups arose to take advantage of institutional norms that constrained universities' ability to delineate property rights over academic biotechnology research. In turn, it is likely that an efficiency approach to institutions offers powerful insights that can inform institutional theory. For example, although institutional theorists often imply

that state-enforced institutions dominate private institutions (Ingram and Clay, 2000), some TCE studies indicate that efficiency seeking may be so powerful as to encourage private norms that overwhelm inefficient state institutions. Palay (1985) highlights the use of informal efficiency-enhancing "contracts" between railroads and shippers even though these rules, which explicitly violated the mandate of the Interstate Commerce Commission, could not be legally enforced. In sum, it is clear that further integration of background institutions (Davis and North, 1971; Meyer and Rowan, 1977; North, 1990) and transaction-level governance – with particular emphasis on ways that firms organize to influence background institutions (de Figueiredo and Tiller, 2001) – is a fruitful area for further research.

Future Avenues for Research

INTEGRATION OF TCE AND RBV

Although adherents of TCE and RBV each offer criticisms of the other, they also note strong complementarities between the two lenses. Adherents of both approaches (Langlois and Foss, 1997; Williamson, 1999) propose that joint application of the approaches may provide a more comprehensive analysis of organizations. Thus, where the RBV identifies which assets or activities ought to be combined to generate rents, TCE can provide insight as to how this combination should be governed (Chi, 1994). Silverman (1999), for example, studies the effect of firms' *ex ante* technological resource base and of contracting hazards on diversification. He finds that although a firm is more likely to diversify into an industry the more applicable its *ex ante* technological resource base is to that industry, the presence of feasible technology licensing markets in an industry reduces the likelihood of diversifying entry. This suggests that there are circumstances in which firms exploit their technological resources through contractual means, which in turn offers one way in which TCE and RBV can be intertwined.

Analogously, where TCE acknowledges that variation in firms' production technologies may affect governance choice, the RBV may provide direction as to when and where such variation is likely to arise. Argyres's (1996) study of several vertical integration decisions in a Fortune 500 company demonstrates how such variation, in conjunction with transaction cost concerns, affects governance decisions. To the extent that the RBV points out which assets should be joined to create value, and TCE points out how these assets should best be governed, a joint TCE-RBV approach may enrich strategic management as well as organization theory. Recent efforts to combine TCE, RBV and strategic management (Nickerson, 1997; Ghosh and John, 1999; Nickerson et al., 2001) provide first steps in this ambitious agenda.

Finally, recent attempts to incorporate history into governance choice may facilitate integration of TCE and RBV. In response to criticisms that TCE has not adequately incorporated history into current governance decisions, several researchers have begun to explore ways of relaxing the standard TCE assumption that each transaction should be analyzed in isolation. If interdependence across transactions is allowed, then governance of a focal transaction can depend on investments that support other, related transactions and on prior governance decisions. Argyres and Liebeskind (1999) propose the concept of "governance inseparability," according to which an actor's governance choice

for a new transaction is shaped by unanticipated consequences of its past governance choices. For example, a firm that accepts collective bargaining for one group of employees may find that its decisions regarding scope of activities or subsequent relations with other employees are constrained. Relatedly, Nickerson (1997) and Nickerson and Silverman (1998, 1999) propose the concept of "transaction interdependence," in which investments made to support one transaction can introduce hazards for other transactions as well; see also Bercovitz (2000). For example, an investment in firm-specific reputation to support a motor carrier-customer transaction can be tarnished by poor driver (supplier) performance, and thus introduces a hazard into the carrier-driver transaction that leads to the use of company drivers rather than owner-operators.

Each of these ideas requires operational refinement. As Argyres and Liebeskind acknowledge, the fact that a firm's actions are constrained at time $t + 1$ due to commitments made at t may demonstrate the proper functioning of TCE, whereby an actor constrains his actions in $t + 1$ to ensure that a desired action goes through in t . Thus, it can be difficult to distinguish empirically whether ex post constraints are due to farsighted contracting or to unanticipated shocks. As for transaction interdependence, unless precise conditions under which interdependence matters are spelled out, then any governance form can be "explained" by simply expanding the range of allegedly related transactions until finding one that accounts for the observed governance arrangement. Recognition of relations among transactions may nevertheless allow TCE to incorporate a stronger dose of historicity and path dependence. And, because resources might fruitfully be operationalized as "clusters" of transactions (Williamson 1999), approaches that consider multiple transactions through some form of interdependence or inseparability may facilitate the integration of TCE and RBV.

PERFORMANCE CONSEQUENCES OF TCE AND RBV: STRATEGY, ORGANIZATION STRUCTURE, AND PERFORMANCE

What happens to an economic actor whose transactions are not aligned with appropriate governance structures? TCE presumes that such an actor will suffer adverse performance consequences. Actors whose transactions are misaligned are presumed more likely to display poor financial performance and to fail (or adapt) than those whose transactions are properly aligned. TCE research has been generally silent on the issue of performance consequences.⁷ Indeed, some contend that the lack of research on the performance-alignment relationship is a weakness of TCE (Gulati, 1998; Winter, 1990). Thus a useful future direction for TCE research is to explore the performance effects of misalignment: Does misalignment in fact harm performance? Under what conditions? Do misaligned firms attempt to change governance structures so as to reduce this misalignment?

Studying performance effects of organizations' decisions is quite difficult for economists (Masten, 1993). Since economic actors are presumed to behave as boundedly rational profit maximizers, it follows that each firm makes optimal governance decisions, conditional on its own idiosyncrasies. Given this presumption, what should a researcher conclude when she sees that (a) firms whose transactions have similar attributes vary in their governance decisions and (b) firms whose governance choices vary from those prescribed by TCE also have lower performance? Absent other information,

she must conclude that for those firms that are "misaligned," being misaligned is optimal due to some unobserved firm or transaction characteristics (which may also affect performance). Anything else would be hubris.

One way to overcome this is to correct for selection bias via Masten et al.'s (1991) structural modeling approach. An alternate method is to conduct quasi-experiments on firms that undergo an environmental "shock." Silverman et al. (1997) and Nickerson and Silverman (2000) take advantage of the 1980 deregulation of US interstate trucking to study performance effects of misalignment among motor carriers. They find that misaligned carriers incur lower profitability and higher failure rates than their appropriately aligned rivals. They further find that misaligned carriers attempt to realign their transactions, but that such adaptation occurs slowly and is subject to adjustment costs.

Relatedly, a great deal of empirical resource-based research has studied performance effects of resource heterogeneity, in particular performance effects associated with different types of diversification. However, much of this research has ignored the unobserved heterogeneity issue noted above. (See also Shaver's (1998) critique of the foreign direct investment literature.) Future RBV research would benefit from more careful consideration of unobserved heterogeneity. Effort devoted to surmounting these issues is well spent: investigating how firm strategy and organization form interact to affect firm performance presents one of the most exciting frontiers of research in strategy and organization theory today.

ORGANIZATIONAL ECONOMICS AND SOCIOLOGY-BASED ORGANIZATION THEORY

Organizational economics will likely progress through greater consideration of social and political features and processes. Organizational economists are likely to incorporate these features as "shift parameters" (Williamson, 1991; Oxley, 1999) that operate in the background of economic action, changing governance choices on the margins but not substantively altering the basic logic of organizational economics. For other organization theorists interested in this area, research that can demonstrate where, how, and under what circumstances such features actually alter this logic would make a substantial contribution to organizational economics.

As noted above, however, insights from organizational economics may also be fruitfully extended to other branches of organization theory. An efficiency lens and an appreciation of prices can enhance research on perspectives including social networks, institutions, and power and dependence.

Connections Across Levels

Van Witteloostuijn (this volume) notes that interorganizational economics emphasizes the strategic motivations of firms. Insights from interorganizational economics may prove particularly fruitful for introducing firms' strategic motivations to organizational economics, and consequently enhancing our understanding of the linkages between firms' strategizing and economizing impulses. For example, the literature on vertical foreclosure (Hart and Tirole, 1990), in which a firm vertically integrates to deny its rivals access to key assets, may provide additional context to efficiency-motivated verti-

cal integration decisions in TCE and the RBV. Similarly, the literature on multimarket contact (Bernheim and Whinston, 1990), which assesses the effect on competitive intensity of meeting the same rival in multiple markets, may provide additional context to efficiency-motivated diversification decisions from organizational economics.

Further, many of the effects in van Witteloostuijn's "eight-effects" model of interorganizational economics affect the context in which organizational choices are made. Although these contextual effects are typically included in organizational economics studies, additional attention to the sources of these effects – perhaps possible through explicit integration of interorganizational economics concepts – may yield more insight. For example, organizational economics provides strong prescriptions for governance of assets such as brand names, but provides little insight into circumstances in which investment in such assets is likely to occur. Interorganizational economics provides insight into this latter question (Sutton, 1991).

Just as interorganizational economics may provide deeper contextual background for organizational economics, organizational economics may do so for intraorganizational economics. Zajac and Westphal (this volume) describe research on the monitoring and incentive system for a firm's senior managers. Such research typically takes as given the set of activities inside an organization. The fundamental question of organizational economics – which transactions or activities should be performed within the organization and which through the market – raises issues concerning exactly what changes when, say, two firms are merged such that one becomes a subsidiary of the other. At the very least, this question suggests a need for intraorganizational studies of mid-level managers. It also suggests the benefits of comparative institutional analysis even in considering intraorganizational issues. Of course, any intraorganizational research that sheds more light on the motivation and coordination of managers will inform organizational economics' continued exploration of make-or-buy decisions.

Conclusion

In this chapter, I have surveyed transaction cost economics and the resource-based view of the firm, two prominent strands of organizational economics. Although the two approaches are at different stages of maturity, each has a bright future. I encourage organization theorists to explore the research on which they are based, and to conduct research that pushes forward the frontiers of organizational economics and bridges it more concretely to other perspectives within organization theory.

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Notes

1. Alternatives include Alchian and Demsetz (1972), who view the firm as a "nexus of contracts" that can efficiently overcome problems in monitoring team production; Jensen and Meckling (1976), who view the firm as a mechanism to overcome agency problems; and

Grossman and Hart (1986) and Hart and Moore (1990), who view the firm as a collection of property rights over physical assets that can efficiently motivate individuals through allocation of residual claims.

2. The field of organizational economics has benefited from several thoughtful surveys by Shelanski and Klein (1995), Barney and Hesterly (1996), Rindfleisch and Heide (1997), and Klein (1999) as well as theoretical critiques (Williamson, 1999). I highly recommend these to interested readers.
3. Acknowledging opportunism does not imply that all people are always opportunistic. The mere fact that some individuals will behave opportunistically under some circumstances, and that this propensity cannot be observed ex ante, is sufficient to create contractual frictions such that organization form matters.
4. For example, organizational ecologists theorize about legitimation and competition, but measure these indirectly through density counts; resource dependence scholars theorize about power, but instead measure interdependence.
5. Yet opportunism arises in organization theories such as resource dependence, where managers selectively pass information to advance their own interests (Pfeffer, 1978, p. 18–19), and bureaucracy, which purportedly ameliorates featherbedding (Perrow 1972). (Thanks to Bill Hesterly for raising this point.)
6. In a sense, this argument stands Teece (1982) on its head. Teece argues that, in the absence of transaction costs, the mere fact that an asset can be used to produce for two different product markets does not imply that the same firm has to produce in both markets – the firm could contract out the asset's use in one market. The above argument states that the mere fact that two assets should be joined together to produce for a product market does not imply that the same firm has to own both assets – unless there are hazards that preclude contracting.
7. A few cross-sectional TCE studies have investigated alignment and negotiation costs (Walker and Poppo, 1991) or customer satisfaction levels (Goodman et al., 1995; Poppo and Zenger, 1998).

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