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**TRANSACTION COSTS, MISTAKES,
AND PERFORMANCE:
ASSESSING THE IMPORTANCE
OF GOVERNANCE**

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TRANSACTION COSTS, MISTAKES, AND PERFORMANCE: ASSESSING THE IMPORTANCE OF GOVERNANCE

Scott E. Masten

Organizational form has long been one of the strategic management field's foremost concerns. Governance issues that have been the subject of strategy research include diversification, integration, joint ventures, and multinational organization. That transaction-cost reasoning has contributed to that inquiry is understandable. Transaction-cost economics offers a systematic way of analyzing the relative merits of alternative governance arrangements and a set of testable propositions relating those merits to attributes of transactions and the surrounding environment. In effect, transaction-cost economics offers strategy a set of normative rules for choosing among alternative governance arrangements. To the extent that governance choices are an important determinant of firm performance, managers would be well advised to heed those rules and to factor transaction-cost concerns into their decision-making calculus.

But just how important are governance choices to firm performance? From the success of Japanese kanban and keiretsu to the collapse and disintegration of central planning in Eastern Europe, organizational form is widely viewed as a critical, if not the decisive, factor. Business histories and case studies, meanwhile, recount the role of organizational innovations in the success of a variety of businesses and industries (e.g., Porter and Livesay, 1971; Chandler, 1977).

But the evidence is not all supportive. Diverse organizational forms clearly survive for extended periods within the same industry. Conglomerates compete with single-product firms; manufacturers procure inputs from integrated and independent sources; franchisors oversee both franchised and company-owned outlets; nonprofits operate alongside for-profit hospitals, day care centers, and nursing homes. The coexistence and stability of varied organizational forms have been

cited as evidence of the irrelevance of governance generally and of the inadequacy of transaction-cost theories in particular (de la Torre and Koza, 1991).

My broad concerns in this article are with what we know about the relation between governance and performance and with how we evaluate whether a particular theory provides a valid set of normative rules for business decision making. The focus is not on specific hypotheses or empirical results but rather on the disparate approaches economics and strategic management bring to this issue and, tangentially, on how those approaches relate to the objectives and assumptions underlying each field. My conclusion is that the existing empirical research tells us surprisingly little about the importance of governance to performance. In economics, the emphasis on positive analysis has led to hypotheses and empirical research seeking to explain actual patterns of organization. But whether a theory of governance choice is a good predictor of actual behavior reveals little about the cost of failing to choose the correct organizational arrangement and may be a poor guide to whether a particular theory offers sound prescriptions for business decisions. Research in strategic management, on the other hand, has been more likely to seek to assess directly the effects of governance on performance but has failed to account adequately for the purposive and systematic character of governance choices. A central message of this article is that the relation between governance and performance cannot be accurately assessed without an appreciation of the factors that lead transactors to adopt one form of organization over another. What is needed, therefore, is an approach that combines transaction-cost economics' insights regarding the selection of governance arrangements with strategy's orientation towards performance.

TRANSACTION COSTS AND GOVERNANCE

The last fifteen to twenty years have seen an enormous increase in the interest among economists in issues of governance. Needless to say, transaction-cost economics has been at the

forefront of that development. The logical foundation for analyzing organizational alternatives in transaction-cost terms is the insight, due originally to Coase (1960), that all potential gains from trade would be realized but for transaction costs. Hence, in assessing the relative merits of alternative institutions or organizational arrangements the focus of attention becomes the nature and size of the barriers preventing transactors from securing those gains. The main substantive contribution of transaction-cost economics has been to relate the limitations and costs associated with organizational alternatives to the attributes of transactions "in a discriminating way," which is to say, in a way that permits hypotheses about organizational form to be formulated and tested.¹

The success of the theory in generating testable hypotheses has led to a veritable profusion of empirical research. Though a comprehensive review of that literature is beyond the scope of this article, a conservative assessment is that the empirical findings have been broadly supportive of transaction-cost propositions.² More specifically, the empirical research to date supports the view that transaction-cost considerations influence organizational choices and, thus, that the theory is a useful tool for understanding and explaining the choice among organizational alternatives.

Were explaining managerial behavior the sole aim of transaction-cost reasoning, this research would constitute considerable progress. But transaction-cost economics aspires to influence as well as understand behavior. From its inception, transaction-cost economists have sought to address and

¹Williamson (1975, 1985). Although Ronald Coase established the logic of focusing on transaction costs much earlier (Coase, 1937, 1960), the systematic application of that insight did not begin in earnest, as Coase himself has acknowledged, until after it had been "operationalized." In a series of lectures celebrating the 50th anniversary of the publication of "The Nature of the Firm," Coase noted that his article "had little or no influence for thirty or forty years after it was published" (Coase, 1988: p. 33). Referring to Williamson's claim that this lack of influence resulted from a failure operationalize the theory, Coase concludes, "I think it is largely correct" (p. 36).

²For surveys of the empirical literature, see Williamson, 1985; Joskow, 1988; Wiggins, 1991; and Shelanski, 1991. With the exception of Shelanski, these surveys generally exclude most of the growing number of transaction-cost analyses of organizational form published in strategic management, marketing, and other traditionally "noneconomic" journals.

influence public policies, especially in the areas of law, regulation, and antitrust.³ In such areas, positive analyses of organizational form have direct relevance; if transaction costs are important determinants of actual behavior, responsible public policies will integrate transaction-cost considerations. But economists have also begun to bring transaction-cost reasoning to the classroom (e.g., Milgrom and Roberts, 1992) and to general business audiences (Rubin, 1990) not just as a positive theory of business practices but also as a normative theory of organizational choice and design.

The extent to which a theory is a good predictor of managerial behavior, however, provides at best only limited evidence regarding the value of the theory as a basis for managerial prescriptions. Observed decisions and behavior reflect the subjective perceptions and cognitive abilities of the decision makers. If managers are mistaken or ill-formed, investigations into the determinants of observed behavior will say little about a variable's actual influence on performance. To take an extreme case, if managers ignored transaction-cost concerns, estimations of the effect of transaction-cost variables on governance choice would reveal no association even if transaction costs actually affected firm performance. Alternatively, one might imagine a situation in which a generation of business school-educated managers diligently followed once-prevailing academic theories or embraced the latest managerial success formulae even though the recommended practices had little or no effect on the profitability of the business. Observed behavior reflects the beliefs and judgment of decision makers and will reflect true performance relations only to the extent those beliefs are accurate.

Of course, we would not expect governance choices that actually harmed firm performance to persist indefinitely. Presumably, managers would learn over time, and those that did not would be displaced through market forces. Where patterns of behavior are widespread and enduring,

³For an assessment of transaction-cost economics' influence on regulation and antitrust policy to date, see Joskow (1991).

economists' confidence that those patterns serve a useful purpose is probably warranted. But the processes through which decision makers learn and markets correct mistakes may be slow and inaccurate. Major organizational decisions are made infrequently. Long lags often exist between the time an arrangement is adopted and performance realized, during which time numerous events will have intervened. Organizational form, moreover, is but one of the multitude of decisions even the simplest of businesses face. The fewness of performance indicators relative to decisions and the lack of adequate conceptual models may impede the ability of managers to draw causal inferences and learn from past experience (see Lippman and Rumult, 1982).

Natural selection arguments that only firms that chose organizational form correctly would survive merely shifts the focus of the debate from the quality of managerial decisions to the speed and accuracy of competitive selection processes. Survival of an organization is often discussed, in a form of personification, as something that happens *to* the organization, like life or death to an organism. In actuality, however, the inception and existence of firms involves explicit decisions--whether to invest time and money in the continued operation of the firm, whether to liquidate or reorganize, whether to retain or replace management, and so forth--which decisions, like decisions of managers inside the firm, depend on the information, perceptions, and cognition of the respective decision makers. In this respect, the issue of the speed and accuracy of "market" processes in culling organizational forms can be seen to turn on the same considerations that affect the quality of managerial decisions. Again, given the large number of decisions and fewness of performance indicators, survivors are likely to be the firms whose management and investors made the greatest *percentage* of good decisions. The set of observed governance arrangements at any point in time is thus likely to include informed, uninformed, and misinformed decisions.

Even if managers do not systematically over- or underestimate the influence of transaction costs on organizational efficiency, the relation between governance and performance cannot be

unambiguously inferred from standard empirical tests of transaction-cost propositions. This point is apparent in the nature of results from such tests. The maintained hypothesis underlying transaction-cost analyses is that transactors choose organizational forms to minimize the expected cost of governing the transaction over the life of the relationship.⁴ Formally, the choice between alternative governance arrangements, G^1 and G^2 , would be

$$(1) \quad G^* = G^1, \text{ if } C^1 < C^2, \text{ and} \\ = G^2, \text{ if } C^1 \geq C^2;$$

where G^* signifies the governance arrangement actually adopted and C^1 and C^2 the decision makers' beliefs about the costs of organizing under the corresponding alternatives.

Since the costs of governing exchange cannot be observed for organizational forms not chosen, tests of the theory cannot be based on direct comparisons of C^1 and C^2 . Consequently, to operationalize the theory, expected governance costs must be related to observable attributes of the transaction. Allowing for managerial errors in assessing governance costs, we can represent the relation between transactors' perceptions and the true costs of governing transactions as

$$(2) \quad C^1 = aX + e, \text{ and}$$

$$(3) \quad C^2 = bX + u,$$

⁴Governance or organization costs should be understood to include both direct costs of conducting exchange and any corresponding failures to achieve desired ends as a result of these costs.

where X denotes a vector of attributes, a and b are coefficients, and e and u represent managerial mistakes or misperceptions.⁵

By substituting equations (2) and (3) into (1), we can test governance-choice hypotheses using information on only observable attributes and organizational forms adopted. Specifically, the probability that a particular organizational alternative, say G^1 , is chosen becomes $\Pr(C^1 < C^2) = \Pr(e-u < (b-a)X)$. Predictions of organizational form can then be based on the sign of $(b-a)$, which is to say, on the differential effect of attributes of the transaction on the costs of organizing.

Other things the same, the greater the differential effect of attributes on costs of organization, the more important organizational form is to performance in the sense that the cost of failing to choose the right organizational form for a particular transaction (the difference between C^1 and C^2 given X) will be greater. It is therefore tempting to infer from a finding that transaction-cost attributes have a large effect on governance choice that governance is important to performance. As already noted, however, the measured sensitivity of transactors' choices to attributes depends on the quality of their perceptions and decision making as well as on the true incidence of transaction costs. Thus, qualitative choice models, such a probit, that are commonly used to estimate these relations yield coefficients of the form $(b-a)/\sigma$, where σ^2 is the variance of $e - u$.⁶ In words, the less precise are managers' comparisons of organization costs (the higher σ), the smaller will be the estimated effect of a given attribute on the probability of choosing a particular organizational arrangement. Mistakes made by uninformed or inept transactors could, in principle, swamp even large differentials in costs. Conversely, small differences in the effects of an attribute on the costs of organizing under

⁵More generally, the error terms will capture failures of the researcher to identify or include relevant variables. Compare Madalla (1983), p. 68. The analysis that follows is formally equivalent if errors occur in governance choices represented by equation (1) rather in the decision makers' perceptions of transaction costs represented by equations (2) and (3).

⁶In a logit model, the coefficient would be $(\pi/3^{1/2}) \cdot (b-a)/\sigma$.

alternative arrangements could have relatively large effects on the estimated probability of adopting a particular arrangement if the transactors are proficient optimizers. Generally, the slower and more inaccurate the selection process, the less important governance choices will appear. Without additional information, standard empirical tests of transaction-cost propositions cannot disentangle the quality of managerial decisions from the importance of transaction costs and organizational form.

In sum, whether or not economic models of organizational choice are good predictors of actual behavior tells us little about the implications for firm performance of failing to choose the correct governance arrangement, that is, does not answer the question: What are the costs of mistaken governance? Because observed behavior reflects decision makers' perceptions, which may be mistaken, positive models of organizational choice fail to establish whether transaction-cost reasoning provides good normative rules to assist decision makers in choosing among alternative governance arrangements. Though the empirical research supports the theory's predictive value, its contribution to our knowledge of the importance of governance choices and its prescriptive value are limited.

STRATEGY AND GOVERNANCE.

Reflecting its greater concern with improving the quality of managerial decisions, empirical research in strategy has been much more likely than that in economics to focus on the performance implications of alternative organizational arrangements. By examining how governance choices influence actual performance, this research, unlike investigations into the determinants of organizational form, has the potential to assess the quality of proposed decision making rules. Unfortunately, the strategic management literature, which contains literally hundreds of empirical examinations of the relation between governance and performance, has provided few incontrovertible

insights into that relation or the value to managers of particular theories of organizational choice.⁷ Capon et al.'s (1990) review of 320 financial performance studies, for instance, reported that diversification was found to have a positive influence on performance in 107 studies and a negative influence in 174; vertical integration a positive effect in 69 and negative effect in 35; and owner (as opposed to manager) control a positive effect in 65 and negative impact in 56. Viewed collectively, these studies cannot sustain generalizations about the direction, much less the magnitude, of the effects of organizational form on performance.

These divergent and often inconsistent results owe in some degree to deficiencies in the way performance relations are estimated in this literature. By and large, the effort devoted to estimating performance relations has not been matched by attention to the conceptual issues of how governance and performance interact. The standard approach in this literature is to regress some measure of performance, P , on an organizational form, G , and a set of exogenous variables, X , thought to influence performance, or

$$(4) \quad P = \alpha X + \beta G + \epsilon.$$

The interest of the researcher is in the coefficient β , which is intended to capture the contribution of governance choice to performance.

The most conspicuous problem with this formulation is that it restricts the effect of adopting a particular organizational form to be uniform across transactions, regardless of the attributes of the transaction represented by X . In terms of managerial prescriptions, the only advice consistent with

⁷I include in this category performance studies that seek to analyze the effects of diversification "strategies." The decision to diversify can be regarded as a decision to integrate horizontally. Conceptually, the arguments made in this article generalize to any strategic decision, whence the accompanying criticisms apply broadly.

this model is that managers should always or never, depending on the sign of β , adopt the particular arrangement being analyzed. If managers followed that advice or learned over time, we would expect to see a tendency toward the universal adoption of the superior alternative.

If, however, the best organizational form varies with the nature of the transaction, governance choices will involve tradeoffs and the coefficient on governance form from estimations of equation (4) will be meaningless. Figure 1 illustrates the point. Let X_h and X_l represent high and low values of a variable believed to influence performance. As drawn, performance is higher for X_h transactions if G^1 is adopted and for X_l transactions if G^2 is adopted. Hence, for X_h transactions, the influence of G^1 will be positive but for X_l transactions negative. If the sample includes both high and low X transactions, the coefficient β clearly cannot capture both the positive influence of G^1 on X_h transactions and its negative influence on X_l transactions. What it will capture is extraneous correlations between governance form and average performance values, which will be influenced, in an immaterial way, by such factors as the distribution of observations among each of the four cells.⁸

Conceptually, this tradeoff problem could be overcome in either of two ways. One would be to partition the sample by attributes, looking only at, say, the subset of high X transactions, and to consider differences in the performance of firms that chose G^1 and G^2 organizational forms within that subset. This is, in effect, the justification for industry studies that attempt to analyze the effects of organization on the performance of firms within a single industry. Restricting attention to a particular industry controls for many of the factors that might be thought to influence organizational choice and

⁸In a competitive industry, firms choosing the correct organizational form would tend to exhibit the same performance. Hence, only if some firms were making mistakes, would we expect variations in observed performance. One of the few strategic management articles to give explicit attention to this problem is Mosakowski (1991). Mosakowski notes that in equilibrium, successful firms will have adopted efficient organizational forms and that, "[i]f equilibrium is achieved, ...organizational boundaries may be unrelated to performance" (p. 116). Masakowski attempts to deal with this problem by analyzing an "entrepreneurial industry," which she argues is less likely to have achieved equilibrium and thus more likely to contain mistakes. This argument does not, however, address the problem with a uniform β identified in the text.

performance. Insofar as the industry (including products, technology, location, and knowhow) is otherwise homogeneous, variations in performance in that industry may be legitimately associated with differences in organizational form.

Even within a given industry, however, there is likely to be considerable diversity. Unless that diversity is unrelated to the performance features of the organizational alternatives, the tradeoff problem identified above remains. For conclusions about the effects of governance on performance to be valid, the researcher must be confident that some of the organizational forms observed reflected managerial mistakes and did not reflect some uncontrolled-for factor. Given the large number and continuous nature of many of the variables that potentially influence performance, partitioning the data with sufficient precision to eliminate this problem will be difficult.

An alternative way of dealing conceptually with the problem of governance tradeoffs would be to divide the sample by governance choices. Partitioning observations by governance choice rather than attributes has the practical advantage that, in contrast to the large number and often continuous nature of environmental attributes, the set of relevant organizational categories is often limited and more easily demarcated. Having divided the sample by organizational mode, one could then estimate performance as a function of the attributes for each mode separately, that is, as

$$(5) \quad P = \alpha_i X + \epsilon_i,$$

where i indexes the set of relevant governance alternatives. The effects on performance of adopting one alternative rather than another for a transaction of a particular type could then be made by comparing the estimated values of P for the corresponding arrangements, or $(\alpha_2 - \alpha_1)X$. An equivalent formulation of this model (except for assumptions about the distribution of error terms) is to estimate a single equation of the form

$$(5') \quad P = \alpha X + \beta G + \gamma(GX) + \epsilon,$$

for the full sample of observations. Under this formulation, the difference in performance between two organizational alternatives becomes simply $\beta + \gamma X$.

Unlike (4), equations (5) and (5') permit the slopes and intercepts of the performance equation to differ for each organizational alternative. While this removes the restriction that the effect of governance choice on performance be the same for all transactions, a second problem remains. To the extent the pattern of observed governance arrangement reflect their performance attributes, estimations of equations (5) or (5') will provide biased estimates of the effect of governance on firm performance.⁹ Formally, the expected value of performance, P_1 , given attributes, X , and governance choice, G_1 , for the entire population of transactions would be $\alpha_1 X$. But because P_1 is only observed for those transactions for which G_1 was actually chosen, the expected value of P_1 in the sample will be $\alpha_1 X + E(\epsilon_1 | G=G_1)$. If managers choose organizational form randomly, $E(\epsilon_1 | G=G_1)$ will equal zero and ordinary least squares estimations of equations (5) or (5') will provide consistent estimates of the effects of governance choice on performance. But if managers (or market forces) select governance forms systematically, $E(\epsilon_1 | G=1)$ will be nonzero. Specifically, where organizational form is chosen to maximize expected performance, $E(\epsilon_1 | G=1) = E(\epsilon_1 | P^1 > P^2) = E(\epsilon_1 | \epsilon_1 - \epsilon_2 > (\alpha_2 - \alpha_1)X)$. In general, least squares estimation will yield biased estimates of the effects of governance on performance and may cause attributes of the transaction to appear significant that do not in fact influence performance (again, see Heckman, 1979).

The problem created by the endogeneity of governance choices can be grasped intuitively by considering an analogy between "safeguards" used to protect transactions from opportunism

⁹The following discussion is an application of Heckman, 1979. Also see Maddala, 1983, pp. 223-228, 260-262.

(following Williamson's terminology) and safeguards used to protect houses from break-ins. Suppose high-income neighborhoods attract more attention from burglars, and that locks and alarm systems (the safeguards) deter burglaries. It would be an obvious blunder to conclude from an observed correlation between burglaries and the use of locks that locks increase burglaries. By the same token, it would be a mistake to conclude from a correlation between, say, internal organization and opportunistic behavior within firms that internal organization increased opportunism if, for instance, higher levels of opportunism were associated with higher levels of asset specificity. The fact that income or asset specificity are controlled for in the estimation of (5) or (5') will not eliminate this problem.

In a nutshell, the problem with the empirical models commonly employed in the strategy literature is that the question implicitly asked is 'How does the performance of firms that adopt a particular governance arrangement compare to that of firms that adopt alternatives to that arrangement?' when the correct question, from a governance choice perspective, is 'How does the performance of a firm that adopted a particular arrangement compare with how *that same firm* would have performed had it adopted an alternative?' The results of the extensive research in strategic management on the effects of governance on performance will be valid only if managers choose governance arrangements indiscriminately. If managers choose organizational forms systematically, as the empirical transaction-cost literature amply demonstrates, performance estimates of the strategy literature will be unreliable.

SELECTION AND PERFORMANCE

Since the problem with estimating the effects of governance on performance derives from the systematic selection of organizational form, two ways of overcoming this problem suggest themselves. The first is to defeat the selection process somehow, and the second is to control for it. To defeat the

selection process one could, for instance, conduct controlled experiments in which organizational forms are randomly assigned to transactions. The cost of varying organizational form in real world experiments is likely to be prohibitive, however, while laboratory experiments are unlikely to capture the complexity that makes organizational choices problematic.

An alternative approach would be to examine situations in which the selection process has been defeated by the interference of some external authority such as a court or regulator. The relation between organizational form and performance could then be assessed by comparing performance in those situations or cases in which external constraints are binding with those in which the constraints do not apply or are not binding.

Keith Crocker and I had earlier confronted the problem of identifying mistakes in our research on the relation between contract design and the efficiency of contractual relationships (Crocker and Masten, 1988). Although the theory predicts that contract designs that promote efficient adaptation to changing circumstances would lower the costs of being bound to long-term agreements, "as a general rule, the difficulty of gauging whether the terms of a particular agreement are 'appropriate' hinders our ability to test such basic propositions. Ex ante the choice of contract terms depends on the subjective beliefs of the actors.... This inference problem can be overcome, however, when external interference with contractual relationships directly or indirectly causes contract terms to depart from the optimum" (p. 328). Using data on natural gas contracts, we went on to show that regulatory-induced distortions in take-or-pay provisions shortened the duration of long-term producer-pipeline contracts existing in 1981 by an average of fourteen years. Though the evidence indicated that distortions in contract terms seriously diminished the attractiveness of long-term agreements, our data did not permit us to quantify the cost of those distortions and thus could not form the basis for normative prescriptions regarding contract length and design.

The inability to derive performance implications from positive analyses of behavior was also specifically noted in a recent article by Brickley, Dark, and Weisbach (1991). The authors' concern in this article was the effects of franchise termination laws on the relative efficiency of franchised versus company-owned retail outlets. Their positive analysis indicated that legislation restricting the ability of franchisors to terminate franchisees significantly reduced the probability of franchising. They noted, however, that "since optimizing decisions can be altered with small changes in the marginal costs or benefits (if the optimizer is close to the margin), cross-sectional analysis provides only limited insight into how the laws affect the wealth of either franchisors or franchisees" (p. 126). To quantify the importance of franchisor termination authority, Brickley et al. then analyzed the effects of the passage of franchise termination laws on franchise-company stock returns. Using event study analysis, they found that statutory restrictions on termination rights in franchise contracts led to an average loss to franchisors of 6.4%, or \$2 million for the median firm in their sample. Because companies in the sample both owned and franchised outlets, these estimates understate the cost of restricting termination for an individual franchise. Unfortunately, the absence of comparable data for franchisees prohibited Brickley et al. from estimating the effects of franchise termination laws on franchisees and thus prevented quantification of the joint benefits of termination clauses. Nevertheless, the estimates indicate a substantial cost to franchisors from the loss of this instrument.

Probably the grandest attempt to gauge the importance of organization by observing the disruptions caused by external constraints is George Bittlingmeyer's research (1990) on the effects of variations in the enforcement of antitrust laws on stock prices and industrial production. As Bittlingmeyer relates, the years 1897 to 1914 constituted a period of intense organizational innovation that saw the introduction of such new forms of economic organization as holding companies, vertical restrictions, trade associations, and department stores, as well as trusts and industrial cartels (p.2). Inhospitable antitrust policies stood to hamper such innovations and thereby reduce economic

efficiency. Bittlingmeyer's results indicate that variations in the aggressiveness of antitrust policy over the period had significant effects on both stock prices and industrial production. According to his estimates, the aggressive antitrust posture of the U.S. government during the period 1910 to 1913 resulted in stock price and production levels more than 4.5 percent lower than they would have been otherwise. Thus, Bittlingmeyer concludes, "Industrial organization matters" (p. 44).¹⁰

Again, the possibility of deriving conclusions about the importance of governance to performance in these studies arose because external constraints forced the adoption of inferior governance arrangements whose performance could then be used as a basis for comparison with the performance of unconstrained governance choices. A practical drawback of this approach is that we cannot rely on legislators, regulators, and courts to produce the types and scope of external interference that would allow us to assess the range of organizational arrangements we might be interested in. The alternative of controlling for selection in the estimation of performance relations offers the potential to assess the importance of governance under more general circumstances.

Because selection problems are common in economics, econometric techniques for dealing with them have become fairly routine. The standard approach is a two-stage estimation in which results from estimation of the selection decision are used to control for selection bias in the structural equations.¹¹ Following the notation adopted in the previous section, we can rewrite $E(\epsilon_1 | (\alpha_2 - \alpha_1)X)$ as $\sigma_{\eta_1} f[(\alpha_2 - \alpha_1)X] / F[(\alpha_1 - \alpha_2)X]$, where f and F are assumed to be standard normal density and

¹⁰Again, the reported effects on performance are the average effect across all producers. The cost of the restrictions to producers for whom the proscribed organizational forms were optimal would have been larger. In addition, the broad, macro perspective of this study does not permit us to identify which organizational innovations were important.

¹¹Descriptions of the techniques can be found in Heckman (1979) and Maddala (1983), among other places. The model can also be estimated using maximum likelihood procedures. Both techniques are included as standard procedures in econometric software packages such as LIMDEP (written by Bill Greene).

distribution functions and σ_{η_1} is the covariance between $\epsilon_1 - \epsilon_2$ and ϵ_1 . The effect of selection on the error term in equation (5) can be controlled for by estimating

$$(6) \quad P = \alpha_1 X + \sigma_{\eta_1} \lambda,$$

where λ equals $f[(\alpha_2 - \alpha_1)X]/F[(\alpha_1 - \alpha_2)X]$. In the present context, a governance choice model of the type used in transaction-cost studies would first be estimated and the results used to calculate λ , which would then be used to estimate parameters of the corresponding performance equation for each organizational alternative. From these parameters, estimated performance of each organizational alternative given attributes of the transaction could be calculated and compared.

An illustration of these techniques in a governance choice setting can be found in Masten, Meehan, and Snyder (1991). Using data from a sample of components and tasks involved in the construction of a ship, we first estimated a standard transaction-cost model of the choice between internal and market procurement. (Detailed variable definitions and descriptive statistics are reported in Masten, et al.) We then employed these results to estimate equation (6), where our performance measure was the cost of organizing individual transactions.¹² Our estimates indicated that the overall costs of organizing production were about 14% of total production costs. But of particular interest here is the fact that the results allowed us to estimate the costs of "mistaken" organization. Specifically, our estimates indicate that mistaken integration of the typical subcontracted component in our sample, that is, integrating a component that should have been subcontracted, would increase transaction costs by approximately 70%, or from 17% to 29% of the total value of the components. Meanwhile, mistaken subcontracting--contracting work that should have been integrated--would have

¹²Since only data on the organization costs associated with components governed internally was available, we employed a variant of the above model for censored regressions to derive estimates of the costs of subcontracting components.

raised the costs of governing a representative integrated activity by a factor of almost three, or from 13% to 38% of that component's value. Incorrect procurement choices thus appear to have a large influence on firm performance measured in this way.

A sense of the potential biases that can result from failure to correct for selection can be seen by comparing the corrected estimates (reproduced from Masten, et al, 1991) with uncorrected, OLS estimates of internal organization costs (see Table 1). With the exception of the temporal and physical asset specificity variables, all the coefficients and t-statistics are closer to zero in the OLS than in the corrected estimations. Furthermore, temporal specificity has a significant effect on the costs of internal organization in the OLS but not in the corrected equation, while the significance of the human asset specificity variable falls below conventional levels in the OLS estimation. Failure to control for selection would thus appear to bias conclusions about the significance of these two important variables.

Finally, Table 2 contains estimated costs of internal organization based on the results in Table 1. Compared to the corrected estimations, the OLS estimates are approximately 30% lower for the average make component and almost 50% lower for the typical buy component. Hence, the uncorrected model appears to underestimate both the costs of organizing and their gradient.

Collectively, the studies described above, though limited in number and scope, suggest that savings of 10 to 20% from choosing organizational arrangements discriminately are not unrealistic. Of course, the potential gains from choosing the correct organizational form will depend on the nature of the transaction; potential savings for "close calls" (transactions for which the costs of organizing under alternative arrangements are similar) will obviously be smaller. Nevertheless, managers stand to benefit from a framework that can help identify situations where the allocation of managerial attention and resources to refining organizational choices is warranted. More generally, the

approaches described above permit more systematic analysis of the importance of governance and provide a firmer basis for assessing the validity of proposed rules of choice.

CONCLUSION

Strategic management is a normative field; it exists solely to improve managerial decisions and enhance business performance. As a discipline rooted in the study of rational choice, economics should have much to contribute to that objective. Indeed, if normative economics is defined as the systematic application of logic to the achievement of desired ends, then strategic management is simply the branch of normative economics concerned with business practices and performance. The only alternative is to advocate *irrationality* in pursuit of firms' strategic objectives.

Nevertheless, economics is frequently disparaged, sometimes even by economists (e.g., Teece and Winter, 1984; Harris, 1984), for its irrelevance to managers. Such dissatisfaction, of course, is not with economic logic per se but with the way economists have chosen to apply that logic, specifically, with the problems economists have chosen to analyze and the assumptions and models they have chosen to employ. Rules of behavior prescribed by economic models, however logical, cannot be normative if managers are incapable of implementing them or the assumptions upon which the models are built do not apply (cf. Larrick et al. 1991). Normative rules, like descriptive theories, are subject to empirical validation.

My concern in this essay has been with how economists and their counterparts in strategic management evaluate normative rules and, particularly, with what we know about the relation between governance and performance. Reflecting economics overall positive orientation, transaction-cost economists have tended to focus on positive propositions about managerial behavior. Tests of such propositions, however, support the normative validity of a theory only if managerial perceptions and decisions are correct; if managerial decisions are random or systematically mistaken, positive

hypotheses based on optimizing assumptions will be rejected even if the associated behavioral prescriptions are sound. The irony, of course, is that if managers already behave in a way consistent with the normative rules, they have no need for advice from academics. Academics only have a role to play educating managers to the extent managerial decisions are susceptible to improvement, that is, if managers make mistakes.

At the same time, efforts to assess the performance implications of governance choices that ignore the endogeneity of governance arrangements will provide erroneous inferences about the relation of governance to performance if performance actually affects the choice and survival of organizational forms. A valid descriptive theory of organizational choice is thus a necessary, though not sufficient, condition for assessing the validity of proposed rules. Conscious attention to selection processes could generate a wave of more rigorous strategy research and, in the process, provide a firmer basis for guiding business decision makers.

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Figure 1

	G^1	G^2
X_h	P_h^*	P_h'
X_l	P_l'	P_l^*

$$P_l^* > P_l'$$

Figure 2

Estimated Internal Organizational Costs

	corrected	OLS
"typical make"	\$43,340	\$29,683
"typical buy"	\$95,030	\$48,689

Table 1

Internal Organization Cost Estimations
(t-statistics in parentheses)

	Corrected	OLS
Constant	10.362 (7.080)	9.373 (7.6707)
<u>Specificity:</u>		
temporal	0.124 (1.058)	0.204 (2.175)
human	-0.188 (-2.104)	-0.146 (-1.649)
asset	-0.0196 (-0.256)	-0.036 (-0.435)
<u>Complexity:</u>		
complex	0.913 (2.615)	0.703 (2.190)
complex ²	-0.086 (-2.874)	-0.070 (-2.385)
<u>Similarity:</u>		
engineering intensity	0.257 (3.592)	0.219 (3.281)
labor intensity	-0.406 (-2.652)	-0.308 (-2.279)
<u>Selection correction:</u>		
λ	-0.630 (-1.068)	