
Transaction-level determinants of transfer-pricing policy: evidence from the high-technology sector

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This paper uses transaction cost economics (TCE) as the basis for an empirical study of transfer pricing—pricing of intra-firm transactions—in a multi-divisional firm. The study finds the evidence to support predictions that transaction-specific investment and quality requirements increase the likelihood that headquarters will centrally administer the pricing of transactions between divisions. This article concludes that, just as transaction-cost economizing plays a role in organizing transactions between firms, it also affects organization of exchange within firms.

1. Introduction

Among Oliver Williamson's seminal contributions is the development of transaction cost reasoning into a positive theory of why firms internalize some transactions. But transaction cost economics (TCE) also offers a potentially valuable framework for examining the organization of economic activities within firms, for understanding how firms choose among alternative ways to govern transactions once they have been brought inside. This paper presents an example of how comparative institutional analysis can be applied to the organization of economic activity within an enterprise by using TCE as the basis for an empirical study of transfer pricing—the pricing of intra-firm transactions—in a large, multi-divisional firm.

There is consensus among researchers that transfer-pricing policies fall into two broad categories: (i) prices administered by headquarters and (ii) prices autonomously negotiated between divisions of a firm (Eccles, 1985; Kaplan and Atkinson, 1989; Edlin and Reichelstein, 1995). Far less agreement exists about how firms choose between those centralized and decentralized approaches when setting prices for intra-firm transactions. Firm culture, management strategy, accounting measurement and marginal efficiency, among other factors, have all been suggested as either theoretical or empirically-observed principles. Economizing principles have been prescribed in theory (Hirshleifer, 1956), but their empirical importance has been questioned (Eccles and White, 1988).

This paper examines how certain transaction costs of intra-firm exchange affect transfer pricing. This study differs from previous case studies of transfer pricing (Solomons, 1965; Tang, 1979; Eccles, 1985) and descriptive surveys of transfer pricing

practices (Vancil, 1978; Price Waterhouse, 1984) in that it focuses on pricing within a single firm and uses transaction-level data to examine the choice between administered and negotiated transfer pricing. Transaction cost economics provides the framework for identifying important transaction-level variables whose impact on a firm's choice between negotiated and administered transfer pricing can be analysed using qualitative-choice methods. The results provide evidence that transaction cost economizing is a significant determinant of transfer pricing policy. The findings of this study complement and support theoretical work by Holmstrom and Tirole (1991) but call into question certain conclusions of Eccles and White (1988).

2. An application of TCE to transfer pricing

The underlying premise of this paper is that, just as transaction-cost economizing plays a role in organizing transactions between firms, it also affects organization of exchange within firms. An important preliminary question is why factors—notably relationship-specific investment—that drive parties to internalize transactions would continue to cause coordination problems once integration has occurred. In theory, headquarters would intervene to thwart any attempted hold-up between division managers and otherwise to prevent inefficient responses by trading divisions to changed circumstances. Given the availability of such intervention, it is not obvious why the factors that exacerbate hold-up and adaptation problems for market transactions should continue to do so—and thereby affect organization—within hierarchies.

One answer lies in the fact that integration reduces but does not eliminate coordination problems. Whether and how headquarters intervenes in internal transactions is likely to depend on the nature and severity of those problems and the factors that affect them. To the extent, for instance, that intervention in divisional affairs incurs bureaucratic and information costs, central management will have an incentive to refrain from intervening except where the expected net benefits of doing so are large. Where coordination problems are expected to be small or infrequent, headquarters will thus tend to favor more decentralized decision structures *ex ante*, resorting to intervention *ex post* only in exceptional cases. Conversely, for transactions expected to require frequent *ex post* intervention, headquarters may find it less costly to plan from the outset to engage in more regular, systematic intervention. Once a transaction is already in trouble, it can be costly for headquarters to find out why or to distinguish opportunistic hold-up from legitimate responses to cost changes. Rather than wait to deal with such problems when they arise, central management may find it preferable in cases where coordination problems are predicted to be frequent and severe to try to forestall such problems ahead of time by actively setting the terms of internal transactions *ex ante*.

Relationship-specific investments may affect the structure of internal organization, even if integration prevents the most egregious forms of hold up between divisions, if specific investments affect how and at what cost firms are able to adapt to changed

circumstances. To the extent relationship-specific investments exacerbate the cost and frequency of coordination problems within the firm, a general preference for more systematic, centralized internal governance structures is likely to emerge for transactions where efficient production requires specific investment by one or both divisions.

Transfer pricing is one, potentially important component of how headquarters manages and organizes intra-firm transactions. Transfer pricing policies differ in the benefits and drawbacks they offer for mediating transactions. Negotiated, market-based transfer pricing decentralizes the pricing decision to the divisional level and can give division managers relatively strong profit-maximizing incentives. Administered transfer pricing, in contrast, involves headquarters in the transaction from the outset. The price set by headquarters may reflect actual production costs of the item or, more commonly, a standard cost measure that is updated at regular intervals. This policy has advantages for hierarchical coordination of exchange because central management has authority over the terms of trade and can use those terms to adapt to changes in the trading environment or to overcome bargaining difficulties.

A transaction cost analysis of transfer pricing predicts that transactions requiring specific investment are more efficiently governed by administered, cost-based transfer-pricing policies. In contrast, transactions in which neither party is exposed to serious loss in the event of break-down benefit more from high-powered performance incentives than from coordination and are therefore more efficiently managed under a negotiated, market-based transfer-pricing policy.¹

Other factors besides relationship-specific investments may also affect the choice of transfer-pricing mechanisms. Quality requirements, for instance, may increase monitoring costs and may also demand specially tooled equipment or advanced personnel training to assure that unusually high or consistent quality specifications are met. If those requirements increase the incidence of coordination problems and the need for central intervention, management may prefer to preempt some of those problems through administered transfer pricing.

The complexity of a component—characterized here by the number of sub-parts and design specifications going into a component (see Masten, 1984)—may also affect the choice of transfer-pricing method. On one hand, complexity is likely to increase the uncertainty of a transaction and hence increase the value of governance arrangements that facilitate adaptive, sequential decision making (Williamson, 1975). Consistent with this, previous studies have found complexity to increase the probability of hierarchical

¹Why such simple transactions are ever carried out internally is an important question. Scope economies may lead to integration of transactions otherwise better left to the market. Or, a specialized product may over time become a commodity as markets and technology change but the costs of shutting down internal production may, at least for a time, offset the gains from returning transactions to the market. Several explanations consistent with TCE are possible. On the other hand, widespread internalization of commodity-like transactions would contradict TCE. A more complete examination is beyond the scope of this paper.

organization of a transaction (e.g. Masten, 1984) On the other hand, the more complex a transaction the more costly it is for headquarters to obtain the information it needs to intervene efficiently. When information about design and assembly within a firm is concentrated at the divisional level, central management will be less able than the divisions to set effective terms of trade. In the context of comparing a market transaction with an integrated one—i.e. when making a make-or-buy decision—the governance demands of complexity may well weigh towards integration. But once a transaction has been internalized, comparatively decentralized internal organization of the transaction may be efficient: Management will have an incentive to avoid intervening in transactions where such involvement will be costly, as when complexity is present. Should serious problems arise, headquarters still has the possibility of *ex post* hierarchical intervention which it would not have for external transactions. Thus, within firms complexity may weigh towards decentralization and, hence, favor negotiated over administered transfer prices.²

Transaction cost analysis thus supports the predictions that asset specificity and quality requirements increase the likelihood that headquarters will set transfer prices and the prediction that complexity increases the likelihood that divisions will negotiate transfer pricing on a decentralized basis. Those TCE-based predictions differ from alternative theories of transfer pricing. Neoclassical economics, for example, prescribes transfer prices set at marginal cost. (Hirshleifer, 1956). Eccles disclaims economizing motivations for transfer pricing yet finds that '[b]asic transfer pricing policies are adjusted according to the circumstances of particular transactions' (Eccles, 1985: 57). He predicts that transfer prices will be mandated when divisions are linked by a 'strategy of vertical integration' (ibid.) but will be market-based when divisions are not linked by the firm's integration strategy (Eccles, 1985: 66).³ More similar to this study is that of Holmstrom and Tirole (1991). They identify four 'organizational forms' for a firm, which they link to different transfer-pricing policies. They predict that the greater the centralization of control in the firm, the more efficient the level of specific investment.⁴ The predictions of this study differ from all of the above in that they directly link transactional attributes to transfer-pricing policy.

²The complexity prediction also conforms to the rationale behind the M-form firm: headquarters devotes its efforts to long-term management while detailed operating decisions are decentralized to the divisional level where the necessary information and expertise is located (see Chandler, 1962).

³How Eccles' hypotheses relate to TCE is addressed below in Section 4.

⁴In Holmstrom and Tirole's model, as here, hierarchical coordination comes at the expense of performance incentives provided by decentralization. In their model, hierarchical coordination induces optimal asset specialization prior to trade, whereas in my analysis hierarchy plays a role after investments are sunk by more efficiently adapting the parties' reactions to changed circumstances than the parties would if left to renegotiate autonomously.

3. A case study

To see whether transfer-pricing arrangements vary with component characteristics as predicted by the theory, I collected data from a major high-technology company. The participating firm is divided by product line into 'groups', each of which consists of several divisions. The firm, whose products range from microchips and radars to sophisticated industrial machinery, has a reputation for being highly decentralized and for granting divisions a high degree of profit-center autonomy. The company used both centrally administered and divisionally negotiated transfer pricing. Centrally administered pricing usually was done with reference to cost or to discounted list price of the selling division. Negotiated transfer pricing was usually but not always done with reference to market benchmarks.⁵

The company provided access to personnel who make transfer-pricing decisions and to managers who could provide survey data on a sample of internal component transfers. For the survey, two managers randomly selected components from a product list.⁶ The managers then identified the transfer-pricing policy and, on a scale of 0 to 2, rated each component as to degree of asset specificity (physical and human), complexity and quality requirements. They completed questionnaires for 61 different components. The survey questions and distribution of responses appear in Table 1. For the physical asset specificity question (Q3), 'relatively standard' was defined as 'assets etc. that can be easily adapted for use by other industries or by other firms in the same business'; 'somewhat specific' as 'assets etc. that can be adapted to other uses elsewhere in this company, or perhaps be used by other firms in the same industry'; and 'very specific' as 'facilities, assets etc. used in production that cannot be easily adapted for other uses'.

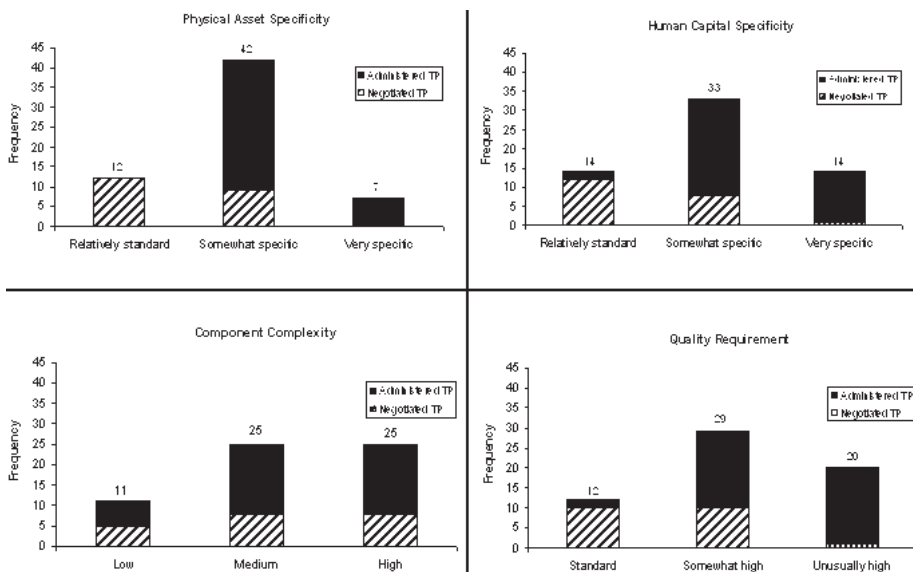
As seen in Table 1 (Q1), the sample contains 40 instances of administered transfer pricing and 21 instances of negotiated transfer pricing. Responses for the explanatory variables (Q2-Q5) show considerable variation among the categories for each question. Figure 1 portrays the frequency of administered and negotiated transfer prices by each of the explanatory factors. The four panels reveal an overall positive association between administered transfer pricing and higher values of physical and human asset specificity, quality requirements and complexity. For physical asset specificity, all seven of the components ranked 'very specific' use administered prices while all 12 of the 'relatively standard' components used negotiated transfer prices. For human capital specificity, all but one of the fourteen 'very specific' components used administered pricing whereas 12 out of the 14 'relatively standard' components used negotiated

⁵While there appears to be no theoretical necessity that the degree of centralization of transfer pricing correspond to a particular basis for setting prices, the correspondence mentioned above held as a descriptive matter at the company participating in this case study.

⁶I requested components that differed significantly to obtain a differentiated sample. It is nonetheless possible that some observations were not truly independent of each other. This problem has been reported by others using similar techniques (e.g. Masten *et al.*, 1991).

Table 1 Survey questions and responses

Q1. What transfer-pricing policy is used for the internal sale of this component?	Administered	40
	Negotiated	21
Q2. Component complexity: is component complexity (defined as the number of sub-parts required for assembly)	Low?	25
	Medium?	25
	High?	11
Q3. Physical asset specificity: to what extent are the tools, dies, machines and equipment used to produce this component determined by the buying division's requirements and unique to the production of this component?	Relatively standard	12
	Somewhat specific	42
	Very specific	7
Q4. Human capital specificity: to what extent are the skills, knowledge, or experience of workers specific to production of this component?	Relatively standard	14
	Somewhat specific	33
	Very specific	14
Q5: Quality: is above-standard quality for this component an important requirement for the buyer?	Standard requirements	12
	Somewhat high requirements	29
	Unusually high requirements	20

**Figure 1** Frequency of matching between component attributes and transfer-pricing policies.

transfer prices. Quality requirements show a similar pattern, with all but one of the 20 components having 'unusually high' quality requirements priced administratively and 10 out of 12 of the components having 'standard' quality requirements priced through

negotiation. For component complexity, the pattern is less dramatic but nevertheless shows a higher proportion of components administratively priced for medium and high complexity components than for those rated low complexity.

Unfortunately, as Figure 1 suggests and the correlation matrix in Table 2 confirms, a high degree of correlation exists between the explanatory variables, especially between physical and human asset specificity and quality requirements.⁷ The combination of multi-collinearity and small sample size is likely to make it difficult to separate the contributions of the individual explanatory variables. Nevertheless, to explore which factors are most important, I regressed several specifications of a logit model of the choice of transfer-pricing policy. Table 3 reports results for four specifications, where the dependent variable takes on a value of one for negotiated transfer pricing and zero otherwise and the component characteristic ratings for the explanatory variables have been converted to categorical variables with the middle or 'medium' values the excluded categories.

The high and low values of physical asset specificity perfectly predict administered and negotiated pricing, respectively (see the first panel of Figure 1), preventing estimation of the logit coefficients for this variable. Consequently, column 1 of Table 3 reports estimated coefficients only for the remaining three variables (six categories), human asset specificity, quality requirements and complexity. The human asset specificity and quality requirement coefficients all have the expected signs—positive for high values and negative for low values—but only one, on low human asset specificity, is significant at conventional levels, indicating that transfer prices for components involving relatively standard skills and knowledge are less likely to be set administratively than components involving more specific skills and knowledge. The

Table 2 Correlation matrix

	Transfer price	Physical asset specificity	Human asset specificity	Quality	Complexity
Transfer price	1.00				
Physical specificity	0.64	1.00			
Human specificity	0.56	0.74	1.00		
Quality	0.57	0.53	0.71	1.00	
Complexity	0.09	0.25	0.46	0.13	1.00

⁷Managers answering the surveys told me that production of high-quality components required workers to undergo a learning process specific to each product. This implies an overlap between the quality variable and the human capital specificity variable that is consistent with the correlations observed in the data.

Table 3 Logit administered transfer price estimates

	(1)	(2)	(3)	(4)
Low human asset specificity	-3.804 (-2.51)*	-2.931 (-3.39)**		
High human asset specificity	0.167 (0.09)	1.425 (1.28)		
Low quality	-0.850 (-0.75)		-2.251 (-2.60)**	
High quality	1.617 (0.85)		2.303 (2.10)*	
Low complex (0.27)	0.393 (-0.77)			-0.571
High complex	-1.812 (-1.48)			-0.001 (-0.00)
Constant	2.266 (1.89)	1.139 (2.81)**	0.642 (1.64)	0.754 (1.76)
Log likelihood	-23.188	-27.621	-28.058	-38.923
χ^2 (df)	32.17 (6)**	23.30 (2)**	22.43 (2)**	0.70 (2)
Pseudo- R^2	0.41	0.30	0.29	0.01

t-statistics in parentheses. *Significant at the 0.05 level; **significant at the 0.01 level.

signs of the coefficients on the component complexity dummies are consistent with the notion that central management avoids administering transfer prices for complex transactions but, again, neither coefficient is significant.

Because multicollinearity makes estimation of the model parameters imprecise, I re-estimated the model using each of the explanatory variables individually. As in the unrestricted model, the coefficients on human asset specificity in column 2 have the predicted sign, but only the coefficient on low human asset specificity (relatively standard) is significant (at the 0.01 level). The coefficients on the quality requirements dummies (column 3), however, are now both significant and have the expected signs. Neither the coefficients nor the equation itself are significant using component complexity alone (column 4). Finally, although only one of the coefficients in the full model is significant, the unrestricted model (column 1) significantly improves on the restricted specifications in both column 2 (at the 0.10 level in a likelihood ratio test) and column 3 (at the 0.05 level) (and, by default, column 4 as well, of course), suggesting that a larger data set that allowed more precise estimation of the parameters would reveal effects of, at least, the specificity and quality variables on transfer pricing policy.

Overall, although it is difficult to separate the individual effects statistically, the data

clearly show that transfer-pricing policy varies systematically with characteristics of transactions in the firm studied here. In particular, the survey evidence supports the prediction that as specific investment in physical and human capital increases for a transaction, the likelihood increases that the firm will choose centrally administered transfer pricing over divisionally negotiated transfer pricing. Although further studies and data will be necessary for more rigorous hypothesis testing of the predicted relationships, the evidence presented above provides one piece of compelling evidence that the TCE framework that Oliver Williamson has developed to explain the transition from markets to hierarchies may also be used to explain the internal organization of hierarchies themselves.

4. Transaction cost predictions compared with Eccles' results

It is useful to compare the transaction cost interpretation of transfer pricing to other explanations. Robert Eccles interviewed managers at several companies about transfer pricing (Eccles, 1985). He interprets the results of his case studies to refute economic theories of transfer pricing (Eccles, 1985) and in particular to contradict transaction cost predictions (Eccles and White, 1988).⁸ From his field studies Eccles concludes that vertical integration strategies and not economizing concerns, determine transfer-pricing methods and processes. Eccles found Vancil's (1978) data to show correlations that support his theory (Eccles, 1985: 109–110). Closer analysis, however, shows that Eccles' results may in fact be consistent with TCE predictions about transfer pricing.⁹

For example, Eccles finds that in the case of 'Alfarabi Chemicals', a highly centralized firm that primarily produces commodity chemicals, managers expressed no concern about how transfer pricing affected economic performance and decision-making (Eccles, 1985: 66–67). Their only concern was that morale would suffer if transfer prices were set so that divisional performance looked artificially poor. Yet the managers' statement does not mean that economizing concerns were irrelevant to Alfarabi's transfer pricing. The fact that transfer pricing did not apparently play an economic or organizational role at Alfarabi may well be a product of the company's structure. As Eccles notes, Alfarabi was a highly centralized company. TCE predicts that increased, centralized coordination comes at the expense of divisional performance incentives. The Alfarabi case therefore does not support a general conclusion that efficiency is not an important transfer pricing issue. It shows only that, given the particular transactions at Alfarabi, centralized coordination was preferable to decentralized incentives. Whether this challenges TCE depends on the attributes of the transactions themselves, which Eccles does not examine in his study.

⁸Robert Eccles (1985) is critical of economic theories of transfer pricing but does not mention TCE. Eccles and Harrison White (1988) argue that Eccles' results specifically contradict TCE.

⁹Holmstrom and Tirole (1991) similarly note that 'a transaction cost perspective is quite compatible with [Eccles'] line of research', but do not expand on the point.

Eccles uses the case of 'Rousseau Chemical Corporation' to illustrate mandated pricing. Rousseau was highly centralized due to the 'extremely high degree of interdependence' between units and because of the complexity of its product line (Eccles, 1985: 87). Eccles reports one manager as commenting that 'we do better when we try to operate as a single unit, as a coordinated system' (Eccles, 1985: 90). Eccles takes this emphasis on coordination to refute economic explanations of transfer pricing. Yet, when divisions are interdependent such that individual profit-maximizing behavior is not in the firm's best interests, TCE predicts increased centralization of transactions and, in turn, that transfer pricing will be mandated. The Rousseau case thus appears consistent with TCE reasoning. Without facts about the kinds of investments the Rousseau's divisions had to make to support internal trade, one cannot conclude that the company's mandated transfer pricing is not efficient.

In a contrasting case, Eccles describes 'Bacon and Bentham' as a diversified company with little interdependence among profit centers (Eccles, 1985: 99). The company gave division managers full freedom to choose among internal and external trading partners. While, again, there is no information about specific attributes of transactions within Bacon and Bentham, the low level of interdependence and the existence of external trading partners suggests that exchange involved commodity products. In such a case, TCE predicts negotiated transfer pricing. Eccles' finding that autonomous exchange was the prevailing policy within the company is therefore consistent with TCE. For Eccles' finding to contradict TCE, we would need to know that the transactions involved specific investments of the kind that theoretically lead to administered transfer pricing.

Interestingly, one manager at Bacon and Bentham noted that under decentralization the level of internal transactions was lower than it would be under a more integrated structure (Eccles, 1985: 101). Eccles concluded that 'increasing the level of internal transfers would have required that the two divisions work together so that the buying division could design products that would use products of the selling division and vice versa' (Eccles, 1985: 101)—i.e. make specific investments that would make the buyer and seller bilaterally dependent. Eccles found, however, that divisions did not make such investments when they were decentralized and had full authority to negotiate their own transactions. That result is what TCE predicts.¹⁰

Another example of the difficulty of internal transactions under exchange autonomy is Eccles' case of 'Hume Fabrication Company'. The Foundry Division purchased a major piece of equipment from the Manufacturing Division. When the machinery did not work properly, a dispute arose over the terms of the transaction and over whether the buyer or the seller would pay the repair costs. Managers told Eccles that they thought the internal customer was being treated worse than an external buyer would be because the sale was a one-time deal (Eccles, 1985: 130).

The Hume case demonstrates that, not surprisingly, internal transactions can be difficult. With respect to transaction cost economics, however, one can conclude

¹⁰The case also offers evidence that underinvestment is an important issue in the choice of transfer pricing process (see Holmstrom and Tirole, 1991; Edlin and Reichelstein, 1995).

nothing without further details of the transaction.¹¹ The case may in fact support TCE reasoning. The machinery at issue was major and, if the buyer would incur high switching costs *ex post*, then its decision to buy from the internal seller created reliance. Without sufficient safeguards in the *ex ante* agreement, the seller in such a case has incentive to behave opportunistically *ex post*, as may have been the case with the supplying division at Hume (see Klein *et al.*, 1978). TCE would predict such transfers to involve a centrally administered transfer-pricing agreement, not decentralized negotiation. The fact that the transaction occurred under a policy of exchange autonomy may therefore have been a mismatch between transaction and transfer-pricing process and the fact that it became costly *ex post* is predictable from a TCE perspective.

Eccles used Bacon and Bentham and Milton, Inc. as examples in his discussion of hierarchical encouragement of internal transactions occurring under negotiated transfer pricing. Both companies found that increased decentralization led to decreased internal sales volume (Eccles, 1985: 132). Managers reported that headquarters' 'attitude' towards coordination of internal trade had a critical effect on the level of that trade and the character of the goods being sold. One general manager told Eccles that to increase internal sales, Bacon and Bentham needed to take its technology and 'design it into products of other divisions' (Eccles, 1985: 133). The manager felt that if central management took more interest in internal semiconductor transactions, '[o]ther divisions could be more profitable and could command a higher price because their products would have unique features' (*ibid.*).

The manager's statements fit closely with TCE reasoning. The main benefit that he envisioned from increased hierarchical intervention was increased specialization of assets on both sides of semiconductor transactions: The seller would customize semiconductors for the buyer and the buyer would design unique final products incorporating the specialized semiconductors. The link between increasing bilateral dependency and centralized coordination is thus demonstrated in the case of Bacon and Bentham. The company's decision to decentralize transfer pricing led to the sacrifice, predicted by TCE, of mutual specialization by internal buyers and sellers.

Eccles used data reported by Vancil (1978) to measure additional correlations between transfer-pricing policy and vertical integration strategy (Eccles, 1985: 109–110). Eccles found that for divisions closely integrated to operate as a single business, 63.4% of firms used cost-based transfer-pricing methods, 22% used market-based methods, 12.2% used negotiation and none used variable cost. For trade between divisions integrated to work together but set up to operate as distinct businesses within the firm, 38.9% of firms used cost-based transfer prices, 35.7% used

¹¹Eccles and White (1988: s41) find the fact that managers often find internal transactions more difficult than external ones to refute the 'romantic view held by many institutional economists' of the benefits of hierarchical over market exchanges. TCE does not, however, glibly assert 'that the transaction costs of internal transactions are less than those of external ones owing to the assumed efficiency of hierarchy' (Eccles and White (1988: s24). To the contrary, hierarchy is the organizational form of last resort (Williamson, 1991), which pays off only under specified conditions.

market-based transfer prices, 16.7% used negotiation and 5.6% used variable cost. Finally, when buying and selling divisions were 'unrelated businesses' within the firm, 32.5% of firms used cost-based methods, 25% used market-based methods, 33.8% used negotiation and 5% used variable cost (Eccles, 1985: 110).

The correlations show an interesting spectrum. When divisions are highly integrated (e.g. as a 'single business'), mandated cost-based pricing dominates. When the divisions are less closely related (e.g. are 'distinct businesses'), market-based pricing pulls roughly even with cost-based pricing and negotiation increases. When the buyer and seller are 'unrelated businesses,' negotiation dominates mandated cost-based and market-based methods. In other words, as vertical integration increases, so does the centralization of transfer pricing and vice-versa.

Transaction cost reasoning predicts the same relative correlations found in Vancil's data. When component production requires the selling division to make investments specific to a particular buyer, TCE predicts that the parties will be closely integrated and that transactions will occur under administered transfer pricing. Eccles' finding that mandated, cost-based pricing—a centrally administered policy—corresponds to a high level of buyer–seller integration in Vancil's sample is therefore exactly what TCE predicts. Similarly, the lower the bilateral dependency between the parties, the less integrated TCE predicts them to be and the more decentralized the transfer pricing process will be. Eccles similarly finds that, when the relationship between buyer and seller is less interdependent, the less centralized transfer pricing becomes and the more likely that negotiation will be observed.

In the end, it is difficult to evaluate Eccles' examples rigorously in terms of TCE because they do not contain transaction-level data.¹² To the extent they can be assessed, however, Eccles' cases appear broadly consistent with TCE. The links between highly integrated firms and mandated transfer pricing (Rousseau) and between decentralized firms and exchange autonomy (Bacon and Bentham), are what TCE predicts. In addition, there is evidence that managers were aware that central administration of transactions would be needed to create potentially beneficial bilateral specialization (Bacon and Bentham) and that the benefits of coordination predicted by TCE in fact occurred (the 'Hobbes' case, Eccles, 1985: 135). A schematic representation of Eccles' findings in TCE terms is the following: Where asset specificity is low, exchange autonomy is used; where asset specificity is moderate, mandated market-based transfer pricing is used; and where asset specificity is high, mandated full-cost transfer pricing is

¹²If internal transactions involve greater interdependence than external ones, TCE predicts that internal trade will be more difficult. The key question is whether the internal transactions are more costly than similar transactions on the market. Eccles and White (1988: s16) do not make the above comparison but simply assert that 'the transaction costs for internal exchanges are, in fact, greater than the costs of external exchanges'. It may be, however, that the internal transactions in their sample involve more specific investment than the external ones do. Eccles' and White's (1988: s46) assertion is especially curious given their suggestion elsewhere that TCE escapes refutation only because transaction costs cannot be effectively measured.

implemented. These alignments are predicted by TCE. The difference between Eccles' hypotheses and the TCE hypotheses tested in this paper is partly that the latter focus on the attributes of specific transactions, whereas Eccles focuses on the strategic relationship between divisions. If, however, one does not start with vertical integration but instead looks at why integration occurs to begin with, the results are to a large extent consistent.

5. Conclusion

The purpose of this paper has been to present a focused case study of transfer pricing at one high-technology company through the lens of transaction cost economics. The study is an example of the broad scope of problems to which Oliver Williamson's methodological and substantive contributions to economic analysis can be fruitfully applied. Williamson's conceptualization of efficient governance as an organizational objective, his attention to comparative analysis and his careful identification of the economic variables that create governance consequences combine into a powerful framework for analyzing economic activity not only between firms, but within them as well. This study differs from previous studies of transfer pricing by following Williamson's model of focusing on microanalytic attributes of transactions—different forms of asset specificity in particular—and then assessing how those factors influence the choice between administered and negotiated transfer pricing. The results show that the variables which TCE predicts will raise bilateral dependency increase the probability of administered transfer pricing. This study thus provides evidence that transaction cost economizing plays a role in a firm's choice of transfer pricing process for a transaction. That evidence from previous studies is apparently consistent with findings of this case study is further evidence for the generality of the results reported here and for the new insights that the transaction cost approach can produce in our understanding of even long-standing and well-researched problems of economic organization.

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