

# Limits of transaction cost analysis

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Transaction cost economics (TCE) is one of the most influential approaches in the social sciences today. In reality, transaction costs exist. Yet they were neglected in economic theory until Ronald Coase (1937) and Oliver Williamson (1975) explored their implications.

Nevertheless, there are many unanswered questions of a conceptual, theoretical and empirical nature. Even the term ‘transaction cost’ awaits an adequately precise definition. As Williamson (1995, p. 33) himself notes: ‘There is nonetheless a grave problem with broad, elastic and plausible concepts – of which “transaction costs” is one and “power” is another – in that they lend themselves to ex post rationalization. Concepts that explain everything explain nothing.’

The critical literature on TCE is almost as large as the TCE literature itself. This short essay examines some of the issues requiring attention. The following section looks at claims concerning the empirical evidence. The two remaining sections look at some central theoretical problems. The argument is not that TCE has to be junked, but that it has to be significantly extended to deal with some of the major problems and omissions.

## **Evidence and alternatives**

Williamson has been hugely instrumental in the rise to prominence of TCE. His operationalisation of TCE avoids direct measurement of transaction costs themselves, to focus instead on other variables, such as uncertainty and asset specificity. Reviewing empirical work in the area, Williamson (1985, p. 130; 1999, p. 1092; 2000, pp. 605-607) upholds that the ‘cumulative evidence’ for TCE is ‘broadly corroborative’ and it is ‘an empirical success story’.

If valid, these important claims would suggest that transaction cost approaches have triumphed over rival explanations of the nature of the firm, particularly over competence-based approaches.<sup>1</sup> In fact, the evidence is more equivocal. A systematic evaluation by Robert David and Shin-Kap Han (2004) of 304 statistical tests of Williamson’s TCE framework found in 63 journal articles, reaches the conclusion that the results are ‘mixed’.<sup>2</sup>

Richard Carter and Geoffrey Hodgson (2006) adopt a different methodology and focus on a smaller number of the most influential and highly-cited studies. They considered prominent empirical studies of both vertical integration and hybrid relationships. Regarding vertical integration, they found no more than a partial and qualified consistency with Williamson's analysis. The hybrid relationship studies provide even less support, with the majority being inclusive in their tests of Williamson's TCE. This concurs with the 'mixed' verdict of David and Han. Carter and Hodgson further argue that the results of tests of the role of asset specificity, which seem to be among the more successful for TCE in empirical terms, are also consistent with the competence-based approach.

In dealing with the empirical evidence it is important to be clear about what is being tested, whether the broad and viable claim that transaction costs are important (Macher and Richman, 2008) or the more specific claims of particular approaches to TCE.

Williamson's (1979, p. 245) particular analytical approach focuses on '(1) uncertainty, (2) the frequency with which transactions recur, and (3) the degree to which durable transaction-specific investments are incurred.' His framework predicts that: (a) trilateral governance mechanisms (or 'neoclassical' contracting) will be efficient for transactions that are occasional, have intermediate levels of uncertainty and have either idiosyncratic or mixed investment characteristics, and (b) bilateral governance mechanisms (or obligational contracting) will be efficient for transactions that are recurrent, have intermediate levels of uncertainty and mixed investment characteristics.

In practice, testing this form of TCE has faced several major problems. As Scott Masten et al. (1991, p. 17) argue: 'Because of difficulties in observing and measuring transaction costs, analysts have had to rely on estimations of reduced-form relationships between observed characteristics and organizational forms.' But 'such indirect tests are unable to distinguish whether observed patterns of organization resulted from systematic, but as yet unexplored, variations in the costs incurred organizing production internally' (ibid.). More than one type of theoretical explanation could be consistent with the data. In particular, and especially in the absence of direct measures of transaction costs, a non-transaction cost explanation might be viable (Masten, 1996).

Kirk Monteverde reinterprets TCE empirical studies from a resource-based perspective, arguing that the human asset specificity construct should be reinterpreted as a set of firm-specific communication codes (or competences). Monteverde (1995) constructs his empirical

model to account for the openness of the human asset specificity concept to alternative interpretations and finds empirical support for his resource-based hypotheses. He argues that the findings of Monteverde and Teece (1982), Masten et al. (1991) and Anderson and Schmittlein (1984) can all be reinterpreted in this way. Of the twelve vertical integration studies assessed in Carter and Hodgson (2006), eleven employed Williamson's reduced form model and nine of those studies found support for a separate human asset specificity variable. Hence no less than nine of these twelve most highly cited studies could be reinterpreted as being consistent with a competence or resource-based perspective.

Masten (1996, pp. 51-52) noted that 'reduced-form estimates do not disclose the magnitude of transaction costs' and consequently that 'without additional information, the magnitude of transaction cost differentials and the effects of organizational form on performance cannot be inferred from standard empirical tests of transaction cost hypotheses.' In simple terms, even if empirical results are consistent with the predictions of Williamson's model, this does not in itself demonstrate that transaction costs are being minimized. This concern has been raised by a number of empirical researchers (Heide and John, 1990, 1992; Noordewier et al., 1990 and Osbourn and Baughn, 1990). Indeed Heide and John (1990) take the issue further by arguing that the observed governance form could have been chosen for strategic, as opposed to transaction cost economizing reasons.

Given the plausibility of alternative interpretations of even the positive results in favour of Williamson's TCE, there is an obvious need for tests that can discriminate between these rival (or possibly complementary) interpretations.

Although there are several hundred empirical studies of TCE, many of which claim to be corroborative, only four conjoint tests of competence-based and Williamsonian approaches have come to my notice. All four point to the viability of a hybrid explanation for the existence of the firm, involving both competences and transaction costs, and are broadly consistent with the argument here (Argyres, 1996; Poppo and Zenger, 1998; Combs and Ketchen, 1999; Jacobides and Hitt, 2005). Another empirical study compares the transaction cost approach with property rights theory, with inconclusive results (Whinston, 2003).

A prominent conclusion is that an integration of TCE and competence-based explanations represents perhaps the most productive area for development. Instead of premature declarations of scientific victory, innovative theoretical development and careful conceptual refinement, leading to more thorough joint testing, is the best approach for the future.

## **Back to basics**

While TCE has been criticised for inadequate definitions of key terms and ‘catch-all’ concepts, similar accusations can be made against rival theories. Throughout the TCE literature and that of its rivals there is still lacking a consensus on basic definitions such as the firm. When the defining features of this basic entity are beyond agreement, derivative issues such as the boundaries of the firm, the nature of ‘hybrids’ and the ‘make-or-buy’ decision become hopelessly clouded by terminological confusion. Further theoretical and conceptual work is required, as well as the more inclusive approach to empirical testing highlighted in the preceding paragraph.

In many ways it is useful to return to Ronald Coase’s (1937) seminal thought experiment. Following Coase it is useful to distinguish between just two governance forms, the firm and the market. This heuristic simplification precedes later complications of the picture.

The Coasean thought experiment compares the costs of using the price mechanism in a market-like relationship, with the costs of grouping together transactions under the single organisational umbrella of the firm. When costs of organisational arrangements within the firm are less than the cost of using the price mechanism in a market arrangement, then the existence of the firm is viable. The boundary of the firm is where the marginal costs of the firm or market mode are equivalent. This is an extremely powerful framework that has inspired TCE throughout its existence.

But the thought experiment involves some challengeable assumptions. First, in the comparison of the two modes, technology and production routines are assumed to be constant. This implies a separability of production and technology from governance structures or transaction costs. Paul Milgrom and John Roberts (1992, pp. 33-34) highlight some of the theoretical problems involved in trying to separate production and governance, and their corresponding costs. The transaction costs argument assumes that production costs are given and do not differ across governance or transaction modes. However, technologies are often linked to transaction modes and structures of governance.

Second, the methodology adopted by Coase, and likewise adopted and acknowledged by Williamson (1985, pp. 143-144), is one of comparative statics. As a number of authors have pointed out, this downplays the vital issues of learning, innovation and dynamic change (Langlois, 1992; Nooteboom, 1992, 2004, Pagano, 1992).

Third, the analysis assumes that individual productive capabilities and amenabilities of individuals are unchanged by any transition from one mode to another. As Mary Douglas (1990, p. 102) put it, Williamson 'believes firms vary, but not individuals. He has the same representative rational individual marching into one kind of contract or refusing to renew it and entering another kind for the same set of reasons, namely, the cost of transactions in a given economic environment.' This omission leads to a neglect of context-specific processes of individual transformation, development and learning, as well as an overly narrow focus on presumed invariant human attributes such as opportunism.<sup>3</sup>

All three of these limitations are highlighted in a simple heuristic model devised by Geoffrey Hodgson and Thorbjørn Knudsen (2007). Harold Demsetz (1988, p. 144) has pointed out that 'writings on the theory of the firm sometimes use transaction costs to refer indiscriminately to organizational costs and whether these arise from within the firm or across the market.' Accordingly, Hodgson and Knudsen (2007) separate two types of cost that have been gathered under the 'catch-all' transaction cost label. On the one hand, there are costs associated with the definition, negotiation, monitoring or enforcement of the employment contract. They include the costs involved in hiring, organising, monitoring or managing the human resources within the firm. On the other hand, there are costs of defining, negotiating, monitoring or enforcing contracts for other services and goods, in the sphere of markets or exchange.

Hodgson and Knudsen (2007) use the term 'transaction costs' to refer exclusively to the costs of defining, negotiating, monitoring or enforcing contracts for goods and services, in the sphere of markets or exchange. The costs of monitoring and managing workers within the firm are referred to as 'monitoring costs'.

What happens if 'transaction costs' are lower than 'monitoring costs'? A simple Coasean model would predict that the firm would not exist, because there would be no advantage in cost terms. But this argument overlooks another significant possibility.

The key point is that the firm can provide an organisational environment, consisting of routines, images, artefacts and information, which can enhance the capabilities of workers. Some routines, images and stored information depend on the existence of the organisation per se, and hence may not be found in a market context. The market has different attributes and benefits. Accordingly, even if knowledge is regarded as an individual phenomenon, existing solely in the memory traces of individuals, then the organisation provides a structured

environment consisting of interactions and routinised practices that can augment individual skills. The organisational whole is more than the sum of its individual parts. Consequently, through individual relations and interactions, the organisation can enhance overall productivity, more than the total productivity of workers performing in isolation.<sup>4</sup>

This point underlines that individual interactions and their outcomes are context specific. The average productivity of individuals can be enhanced in specific organisational and cultural environments (Hodgson, 1998). Some organisational environments can enhance individual productivity through learning, additional to the incentive effects and contracting economies that are at the centre of the transaction cost explanation.

It is possible (but neither universal nor inevitable) that interactions between one set of workers in one context will yield higher productivity than the interaction of the same set of workers in another. Pursuing this possibility, Hodgson and Knudsen (2007) demonstrate in their simple model that the firm can be more profitable than the 'market' mode of organisation, even if 'monitoring costs' are positive and 'transaction costs' are zero.

Hodgson and Knudsen (2007) develop their model and bring in the dynamic feature of learning. This strengthens the result. The firm can become viable in the future even if it is not so at present. The boundary of viability between the firm and the market shifts through time.

In some circumstances, markets have the capacity to create learning effects that may counterbalance the learning effects within firms. There are good reasons why markets exist. The Hodgson and Knudsen (2007) model depends on possible rather than universal effects. In reality, comparisons of the net benefits of firms and markets have to take into account the learning effects of both market and firm institutions, as well as transaction costs.

The model assumes firm-specific productivity effects. It is asserted that if such effects exist, then they may be sufficient to explain the existence of the firm. Admittedly, if such effects are small, then the burden of the explanation for the existence of the firm may shift back to transaction costs. The onus is on supporters of the argument that all firms are always explained by transaction costs alone to show that firm-specific effects are generally insignificant. No basis is evident for such a general statement.

Another response may be simply to deny the existence of any firm-specific productivity effects. Or it may be argued that if there were such productivity advantages, then they could be replicated in the 'market' mode, by the free bargaining of independent producers. But a

market is not a firm. Hence this is another way of saying that any such productivity advantages are not firm-specific, and thereby denying the assumption. This denial goes against immense evidence to the contrary in organisation studies and elsewhere.

Other critics might acknowledge the existence of these firm-specific effects but to insist that they are generally less important than transaction costs. This question cannot be decided on a priori grounds because it is an empirical issue. It requires a comparison between measures that directly capture learning effects and transaction costs. This is an important agenda for future research.

### **Context, evolution and causal explanation**

The preceding section considered a simple Coasean world with two ways of organising production – the firm and the ‘market’. It was pointed out that the Coasean thought experiment paid insufficient attention to the ways in which structured relations between individuals may affect their capabilities or dispositions. Context matters.

Williamson’s theoretical structure is more complex, with several alternative governance modes. He makes major advances in searching for explanations of different organisational forms, including different kinds of hierarchy and the viability of cooperative versus more hierarchical firms.

The issue of context is also important with Williamson’s theory. The literature on institutional complementarities is relevant here (Amable, 2000; Aoki, 2001; Boyer, 2005). This theoretical and empirical literature addresses the possibility that the performance of one institution may depend on the nature of other institutions to which they relate. Accordingly, Japanese firms may perform well in the context of Japanese-style state or financial institutions, but less well in other institutional contexts.

The performance of cooperative firms, for example, may be dependent on the type of banking system that prevails, thus helping to explain why cooperatives are more numerous in some countries rather than others. Consequently, and contrary to Williamson (1985), one cannot infer that cooperatives are a universally inferior form of organisation. Their efficiency may depend on their institutional context.

A further limitation of the Coase-Williamson approach is that comparative statics detract attention from the mechanisms that lead to different possible outcomes. If governance forms

tend to minimise transaction costs, it is not clear how this occurs. Are managers to some extent aware of these costs and consciously reduce them? Or are costs reduced through some process of competitive evolutionary selection of the costlier over the less costly firms? With his emphasis on information problems and bounded rationality, Williamson does not suggest that managers have sufficient information. Instead (Williamson, 1975) hints at an evolutionary process of selection, but never develops this argument. If he did, he would have to address the well-established theoretical limitations to an (near) optimal evolutionary process of selection, including frequency effects and other context-dependent outcomes (Winter, 1964; Hodgson, 1996). Also in evolution, context matters.

To make further progress we do not need to dispense with the achievements of TCE. Instead we have to overcome the limitations of the comparative statics approach and develop a more dynamic theory. Even in the statics case, contextual effects have been underappreciated. In a dynamic theory they also must play a major part. Prominent items on the theoretical agenda for TCE include the development of evolutionary approaches and the exploration of possible syntheses with competence-based theories.

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## Notes

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- <sup>1</sup> Including competence, capabilities, knowledge-based, resource-based and evolutionary approaches (Penrose, 1959; Nelson and Winter, 1982; Rumelt, 1984; Foss, 1993; Montgomery, 1995, Foss and Knudsen, 1996; Nooteboom, 2004).
- <sup>2</sup> Other TCE empirical review studies are cited and analysed in Carter and Hodgson (2005). For an extensive but unprobing review see Macher and Richman (2008), which covers several different forms of transaction cost analysis.
- <sup>3</sup> Opportunism is a central concept in Williamson's but not Coase's analysis. In a critique of Williamson, Hodgson (2004) does not deny the existence and importance of opportunism but argues that there are additional important reasons why contracts may not be fulfilled and monitoring may be required. Hence an explanatory emphasis on opportunism is both theoretically and strategically misleading.
- <sup>4</sup> Alchian (1991, p. 233) has argued that 'cooperative activity with a "firm" yields an output greater than could otherwise be achieved and ... the underlying factor in that source of gain in the firm is "teamwork"'. See also Argyris and Schön (1996) and other works on organisation theory.