Asset-specific Relations as Inter-firm Transaction Structures: A Qualitative Study [1]

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Abstract

This article investigates the characteristics of the flow of continued transaction between a plastic manufacturing firm and its key supplier of injection moulds. Using qualitative data collection methods, it focuses on some of the risks and uncertainties perceived by the plastic producer firm in order to explore the effects of these perceptions on the firm's choice of transaction structure. The main finding of the investigation suggests that – despite the vulnerability of the firm stemming from the relatively high level of asset specificity that characterises the object of transaction – the firm is rather reluctant to integrate this flow and that instead prefers to organise it in form of a long-term, non-contractual, trust-based relation with the mould supplier. The rationale for this preference is that a backward integration is perceived by the firm as a source of uncertainty and vulnerability rather than providing shield against risks and hazards uncertainty, and that the already existing and well-functioning relation with the mould supplier performs the most important functions of vertical integration, and does so *without* the costs and uncertainties involved in such a move.

Keywords: supply chains, transaction costs, trust, uncertainty, vertical integration,

Introduction

Although long-term, inter-firm relations are not new their importance seems to have grown significantly in the last few decades. There indeed seems to be something of a trend today toward using long-term relations for structuring the flows of transaction among firms, and an ever-growing bulk of transactions in contemporary economy is canalised through this kind of linkages which are rapidly becoming a crucial vehicle of trade. As some observers have pointed out, a new era has dawned in which corporations increasingly shun the previous centralised-type of economic organisation, and instead build up a new, more disintegrated and flexible production apparatus, and organise the inflow of resources and their boundary transactions in form of diversified inter-firm linkages in order to boost the required flexibility and adaptability of the new market conditions (Barlett and Ghoshal 1989; Contractor and Lorange 1988; Piore and Sabel 1984; Porter and Fuller 1986). Boundary transactions characterised by high levels of asset specificity appear to be no exception. On the contrary, a growing body of literature proposes that there are various considerations that may counterbalance the favourable impact of asset specificity on integration decision and instead induce firms to choose to remain separated and prefer to structure their asset-specific transactions through various types of inter-firm co-operative agreements – such as long-term, hand-in-glove relations – rather than integrating these transactions into the organisation of a single firm. As a result, some scholars have recently questioned the validity of the well-known argument that the more specific the asset, the more likely is vertical integration to be optimal (Williamson 1985), suggesting instead that higher levels of asset specificity need not always lead to vertical integration (Carter and Hodgson 2006; David and Han 2004; Dietrich 1994; Gilson *et. al.* 2009; Heide and John 1990; von Hirschhausen and Neumann 2008; Holmström and Roberts 1998; Kvaløy 2007; Ruzzier 2009; da Silva and Saes 2007; Woodruff 2002).

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[1] This article is based on, and represents parts of a larger study focusing on the protective function of inter-firm relations among producer firms: Relational Habitat: Hedging Against Uncertainty.

For instance, Kvaløy (2007: 566) goes even further, and in a theoretical elaboration of the issue suggests that the increasing levels of asset specificity may "even favour non-integration" and that asset specificity can become "a blessing for ongoing relationships between firms."Against this background the present article investigates in detail the flow of repeated transaction between a plastic manufacturing firm and its key supplier of injection moulds. Paying special attention to the role of asset specificity, the article examines the properties of this flow, and explores some of the risks and uncertainties perceived by the plastic producer firm. The main purpose of the conducted study is to provide some first-hand evidence regarding the effects of these perceptions on the firm's choice of transaction structure. In what follows the results of this qualitative examination are presented first. The article continues then with a discussion of some the findings, and finally ends with highlighting some of the implications and potential leverages of these findings.

The Empirical Study

The section contains the results of a case study of the transaction between two firms – a manufacturing firm (the Firm) and its mould-maker (the Supplier) – both operative in the Dutch plastic industry. Semi-structured personal interviews with the founder-owners of the Firm and a few other people in the managerial position have been used as the main data collection method. The interviews have been conducted in three rounds between 2008 and 2009. The questions have covered different areas but, given the purpose of the study, the main aim of these interviews has been to explore the perceptions of the firm management concerning the uncertainties involved in the relatively durable flow of transaction with the Supplier and to pin down the effects of these perceptions on the non-integration decision of the Firm. The Firm is a private-owned, medium-sized enterprise that is quite established in its line of business. It has a more or less steady supply line upstream and a relatively stable customer structure as well as effective distributive channels downstream; and although due to the recent economic recession some decline can currently be seen in the rate of its growth it continues to hold a good market position. The Supplier is specialised in the construction of injection moulds required for the production of plastic items. With a rather long history of operating in its particular branch of industry, it enjoys the favourable reputation of being a quality mould-maker and a reliable business partner. Like the Firm, the Supplier too is private-owned but is of a smaller size compared to the former.Before presenting the results of the investigation however it seems appropriate to give a brief account of the technical aspects of the transaction flow that connects the two firms. Many plastic items are produced through a process in which the raw material – mainly polymer – is first subjected to high temperatures until it is melted and then poured or injected into pertinent moulds, left to cool and harden before ejected.

The manufacturing of any given plastic item requires a specific individual mould in which the shape of the item has been cut. Occasionally it is possible to modify and re-use a previously constructed one but often a new mould has to be designed from the scratch in order to meet the specific requirements of the customer's order. The design and construction of an injection mould – which is normally made of quality steel and which may consist of two or more parts – require a distinct kind of considerably high degree of skill and craftsmanship that lie outside the operational core of the Firm. Therefore, on the behalf of its customer, it has to employ the specialised services of the Supplier who in turn, has to develop the mould in collaboration with a third firm specialised in designing such moulds. Each single mould is thus the unique result of a process of interaction among all the four firms (the customer, the plastic manufacturing firm, the mould supplier and the mould designer) linked together in the project. Its final properties are the outcome of a complicated process where the diverse requirements (technical, engineering, economic, consumer utility, etc.) of the participating firms meet, and its construction involves the matching of several kinds of considerations regarding the construction of the mould and the subsequent production of the plastic item in question.

As a result, the mould manufacturing requires a great deal of operational co-ordination and consultative communication among the involved firms in order to work out the details and to resolve jointly the upcoming problems – making thus necessary frequent contacts and meetings between the Firm and the Supplier as well as between the latter and the mould designer, and at time even between all the three from the very beginning of the process until the mould is produced and tested before it can finally be used in the actual production of the plastic good it is intended for.The transaction between the Firm and the Supplier is of great importance to the former for several reasons. The manufacturing of a mould is in general a costly process, and usually makes up for the largest single investment with respect to the production of a particular plastic product. Moreover it is also a process which is relatively uncertain in outcome because a number of specifics of the mould cannot be defined entirely in advance but have to be worked out gradually in collaboration with the other involving parties as the process unfolds. A further reason for the importance of this transaction concerns the significance of the injection mould for the assortment and quality of the output of the Firm. As it lacks the necessary technical competence for designing and producing the mould inside its own organisation, the range and quality of the items it can produce depend on the capacities of its suppliers to design and construction the moulds it needs. A too limited area of competence on the part of its suppliers or an inferior quality of the mould will disable the Firm to deliver the relatively wide range of high quality products that make up its output menu. It will also constrain the possibilities of the Firm to maintain the reliable performance it is known for and thereby jeopardy its reputation and its relations with the customers, including its long-standing relation with a European car manufacturer for which the Firm produces specialised plastic items used in various components of automobiles. The inter-firm transaction is obviously characterised by a high level of specificity, as the object of transaction – the injection mould – is no standard good to be found ready-made on the market.

Contrariwise, as mentioned above, for any particular plastic item a pertinent mould has to be designed and produced from the scratch and, once manufactured, it can only rarely be modified to fit the production of any other item than the one it has originally been made for. Furthermore, whereas the adequate design and construction of every single injection mould is a costly and complex process which requires a considerable amount of specialised investments in time and in other expensive resources, its value is confined to the particular supply chain in which it is enmeshed and has relatively very little value to any other plastic producer firm than the one that has ordered it on the behalf of its customer. In other words, once the initial investments are made, the idiosyncratic and non-re-deployable character of the object of transaction excludes or at least narrows down substantially for both firms the possibility of external trade on the open market, and undercuts their freedom to exit from the transaction if dissatisfied. Seen from the vantage point of the Firm, the complexity of the required match among all the involved parties makes the allocation mechanism of the market unfit and unreliable. The precision of the design and construction of the mould is too important for the Firm to consider market transaction as a feasible alternative.

Furthermore, even if the open market transaction were used, the Firm would potentially be exposed to the risks of the opportunistic behaviour on the part of the potential suppliers who may not restrain from abusing the Firm's lack of the technical competence needed for the evaluation of the quality of the mould. The Firm thus would not only suffer on the deal and loose invested capital but could also risk to end up with a an inadequate and poor-quality mould that would in turn have considerable damage potentials on its own output. In addition, the particularity of the object of transaction and the subsequent absent of similar or comparable items on the market would turn market mechanism inadequate for the estimation of the price of the mould. Furthermore, the complexity of the transaction goes a long way to explain why the Firm it finds the writing of detailed verifiable formal contracts and their legal enforcement very cumbersome if not impossible as a satisfactory protection against the hazards involved in the open market exchange.

The particularity of the object of transaction gives thus rise to a hold-up situation in which the exit costs related to time and searching investments are so high that they in effect undermine the potential efficiency gains of competition and even eliminate the efficiency of price as an adequate measure of value as the Firm cannot be guided by a market price in its evaluation of the mould. Subsequently, the inter-changeability of the parties are curbed considerably; and as every single mould is the unique outcome of a complex process in which diverse requirements and considerations dovetail, the individual *identity* of the parties matters to each other in that the firms find themselves in the situation where neither party can be easily replaced by some other firm – a circumstance the Firm admits to by for instance underlining the difficulties and costs involved in finding another comparatively reliable and competent source of supply who can offer high-quality moulds at a reasonable price. With the market option excluded, the situation points potentially to vertical integration of the Supplier. That is, the complexities and risks that are inherent to the transaction with the Supplier provide a prime rationale for the Firm to organise the transaction internally and to seek to secure its control over this vital resource through ownership. Yet, the characteristics of the transaction have induced the latter to prefer instead to remedy its vulnerability by fostering a long-term, hand-in-glove non-contractual relation in order to canalise the flow of transaction with the Supplier. There are several reasons on the part of the Firm for its preferring this relation to any other arrangement. These can be clustered in two main, closely related categories. The first category concerns the relatively high transaction costs associated with the alternative mode of co-operation – vertical integration – which is the only option left since the high level of asset specificity of the transaction excludes market-mediated transaction as a feasible alternative mode of co-operation.

From a strictly technical vantage point, the capacities of the Supplier would be compatible with the core competence of the Firm and with its existing portfolio of resources; and from a purely financial point of view vertical integration is a fully conceivable option for the Firm although like any other investments the profitability of such an enterprise is uncertain and the acquisition would mean tying down a considerable amount of capital that could entail some constraints on future investments. It is rather the concern about some organisational issues – both inside the future integrated organisation and at its new boundaries – that causes vertical integration to appear to the Firm as a less attractive alternative in comparison to the existing non-contractual relation it has with the Supplier. Some of these issues are highlighted below, in accordance to the relative emphasis assigned to them by the firm management. For one thing vertical integration is obviously no cost-free alternative. In addition to the acquisition capital needed, the costs of running a larger organisation appear to be a source of concern to the Firm, in particular because many such costs are hard to assess or even identify in advance while the expected pay-offs of such an irreversible move appear uncertain. The Firm in other words cannot decide on the prons and cons of such a move in advance without any precision since there is no clear and reliable information available. Therefore it instead finds itself in a situation where it has to rely on guessing and speculating, trying to make the most of the ambiguous signals and indicators.

Another discouraging consideration regards the change of status of the current management of the Supplier and the alteration of the nature of its relation to the Firm, from a well-functioning trust-based business co-operation between two independent entrepreneurs to one between the employer and the employee based on formal organisational authority. As the management of the Firm perceives it, this would mean a fundamental change in the whole set of incentives and mutual expectations of the parties who would then interact in different roles and along different behavioural principles. More specifically, the management of the Firm appears to be concerned not only about its ability to mitigate the potential negative impact of the integration on motivation of the current management of the Supplier but also about its chances of success in retaining the key employees of the Supplier (see below).

Finally, among the factors on the negative side of the balance there are also the concerns of the Firm regarding the effects that a backward expansion of its current organisation would have on its boundary transactions. That is, the integration of the Supplier would push the boundaries of the Firm one step back in the supply chain and thereby cause the latter to engage in a new array of transactions with parties that for the present are less known or even totally anonymous to it. Taking lace in the specialised business fields distant from its core competence area, such transactions appear to the Firm as characterised by asymmetry of information and ensuing high risks and transaction costs. The firm management in other words is uncertain to what degree it will be able to retain after integration those employees of the Supplier who have the necessary hand-on-job expertise, the required familiarity with the environment and the crucial business contacts. If failed to provide these people with sufficiently strong incentives, the Firm would be left without access to the knowledge, competence and relations that these people have over the years accumulated.

Although there would be some sharing of this accumulated competence, the Firm is concerned that there still would be persisting uncertainties surrounding the entry in the new field of activity, and is uneasy about its own ability to manage the new competence, to operate and to compete in a new market. Therefore, as the management expresses its concern in this respect, a backward integration would cause the Firm to lose the buffer at its upstream interface that currently is provided by Supplier, and even if the integration would yield a more secure supply of injection mould, it would expose the Firm to new uncertainties that it is not adequately equipped to cope with.

The second category of reasons concerns the advantageous, transaction costs reducing effects of the existing relation that counter-weight the potential benefits of integration. This relation originates in an earlier personal, school-time acquaintance between a pair of manager-owners of the firms, and over a relatively long period of time has evolved into an inter-firm co-operation. Due to a large number of mould-making projects a substantial amount of mutual trust has been built on both sides so that each firm has sufficient confidence in trading with the other and has a genuine interest in maintaining the good health of the relation. As the result of the history of repeated transaction, the Firm is quite confident with respect to the continuity of transaction indefinitely, and experiences considerably low degree of vulnerability that stems from the importance of the transaction and from its dependence on the Supplier.On the one hand the trust in the performance of the Supplier and the confidence in its commitment mean for the Firm no less than a secured access to a critical resource of idiosyncratic nature with scarce supply. That is, the especially tailored and fine-tuned relation that the Firm has over the years developed and maintained with the Supplier provides the former with the high quality injection moulds that are hard to come by. By the same token the relation makes possible an important extension of the core competence of the Firm in that the reliable and creditable commitment of the Supplier to the relation enables the Firm to count on a complementary resource that although formally is outside the span of its organisational control and authority, is nonetheless made promptly available through the relation.

Furthermore, this trust-based relation functions as an efficient and reliable shield against the risks and uncertainties which are involved in the provision of such an important input and which cannot easily be protected against through formal contracting. The existence of the relation decreases thereby considerably the relatively high search costs and contracting costs that the Firm would have to incur otherwise. The intensive inter-firm communication that this relation makes possible during the construction of the mould offers the Firm a substantial and effective possibility of monitoring the process from the start, and eliminates or at least minimises the risks of ending up with a poor-quality mould. The failure testing of the mould at the end of the process is evidently useful in exposing unanticipated weaknesses of the mould before it is actually used in production, but the active participation of the Firm from the beginning and the ongoing communication and collaboration based on the reciprocal trust and the mutual understanding that characterise the inter-firm relation prevents to a high extent such defects from arising in the first place – reducing thus significantly the potential transaction costs for the Firm associated with the monitoring of the performance of its supplier and with the assurance of the quality of the mould. On each side of the relation there are fairly clear ideas and regarding the meaning of good performance of course, and expectations and mutual judgements of performance on the basis of such ideas are not absent from the co-operation. Yet the trust that underpins the relation allows for honest misunderstanding or good faith differences of opinion between the parties about the nature and quality of each side's involvement in the process as well as it provides an adjustable and flexible framework that offers good possibilities to get around difficulties collaboratively and to reach accommodations when unforeseen events occur. On the whole therefore it is hardly surprising that the Firm appreciates highly not only the technical competence of Supplier but also the reliability of its performance and the firmness of its commitment to the relation – an appreciation that is expressed in the frequent description of the relation by the Firm in terms of 'a valuable collaboration,' 'a long-term, trustful partnership,' 'a strategic co-operation,' an island of security in an uncertain world' and 'an irreplaceable competitive advantage.'

Discussion and Conclusion

The purpose of the reported study has been to investigate closely the characteristics of the flow of continued transaction between a plastic manufacturing firm (the Firm) and its key supplier of injection moulds (the Supplier) and to investigate the possible effects of these characteristics on the decision of the former regarding the particular structure of that flow. The main finding of the investigation suggests that – due to an array of reasons – the Firm is rather reluctant to integrate this flow and that instead prefers to organise it in form of a long-term, non-contractual, trust-based inter-firm relation, despite its vulnerability stemming from the relatively high level of asset specificity that characterises the inter-firm trade.

The finding *per se* is unsurprisingly consistent with the long-known fact that supply chains often involve long-term, hand-in-glove relations which not only secure the supply of highly specialised resources but can also be a source of competitive advantage vis-à-vis other comparable firms in the market by improving or enhancing one's own relative resource position (Asanuma 1989; Dore 1987 and 2001; Halldorsson *et. al.* 2003; Hamilton and Biggart 2001; Hite and Hesterly 2001; Lane and Bachmann 1998; Masten 1984; Sako 1992; Wernerfelt 1984). Furthermore, the result of the investigation is also in line with the vast body of earlier research demonstrating that such relations are often non-contractual or loosely specified since the complex nature of the transactions that they canalise normally nullifies the potential economic advantages of strictly specified contracts related to the monitoring abilities of the parties and the existence of market competition (Goldberg 1980; Klein 1996; Lorenz 1988 and 1999; Macaulay 2001; MacLeod and Malcomson 1989; Palay 1984; Reve 1990; Telser 1980; Uzzi 2001; Vincent 2005).

The finding however is interesting once it is related to Williamson's discussion regarding the factors – frequency of transaction, behavioural uncertainty and, above all, asset specificity – which determine the magnitude of the costs that are associated with inter-firm transactions and which in turn have a decisive bearing on the integration decision. According to his well-known account that has been elaborated in a long series of writings (1971, 1975, 1979, 1983, 1985, 1986, 1990 and 1994) whenever the transactions are straightforward and require no particular investment, they will be more likely to occur between independent firms who find market-mediated contracts a satisfactory mode of co-ordination. When on the other hand these transactions are characterised by high levels of asset specificity then the parties are more likely to withdraw them from the market and replace them instead with internal, authority-based transactions. Due to its transaction costs reducing effects vertical integration is thus the structure that is most likely to occur (Carlton 1979; Erkal, 2007; John and Weitz 1988; Joskow 1985 and 1988; Klein 1988; Klein *et. al.* 1978a and 1978b; McGuiness 1994; Macher and Richman 2008; Malone *et.al.* 1987; Masten and Saussier 2000; Shelanski and Klein 1995; Whyte 1994; Zaheer and Venkatraman 1994).

Yet, as Williamson (1985) himself underlines, such a choice is anything but straightforward because the transaction costs reducing advantages of vertical integration do not come without a cost. On the contrary, each side of the market-hierarchy dichotomy is beset by trade-offs that make it difficult to set up a conclusive comparative assessment and to distinguish among the feasible alternatives according to their attributes. Therefore, acknowledging that neither side of the dichotomy stands out clearly as the dominant optimal alternative and realising the actual richness of empirical reality of alternative modes of organising the inter-firm transaction, he underscores that in consideration of the trade-offs associated with these alternatives the parties to a transaction might instead find it plausible "to craft [some] intermediate structures, located between discrete market contracting at the one extreme and hierarchical organisation on the other" (Williamson 1985: 163). The crucial point – and the most pressing challenge that real-life business managers have to deal with – in other words is to device a transaction structure that by aligning the incentives of the parties and by prompting the continuity of the transaction can reduce the potential frictions between the parties and harmonise the flow of inter-firm exchange.

It is to this fundamental challenge that Williamson refers as a "central purpose of economic organisation" (1985: 6), and it is with this challenge in mind that he formulates his *organisational imperative* suggesting: "Organise transactions so as to economise on bounded rationality while simultaneously safeguard against the hazards of opportunism" (1985: 52). The result of the study that has been reported here gives some support to this fundamental insight in that the long-term, non-contractual, trust-based relation between the Firm and its supplier is a structure that meets the requirements that Williamson underlines in his formulation of the organisational imperative. More specifically, the relation that has been developed and fine-tuned over the years secures the continuos inflow of a crucial resource that due to its high specificity cannot easily be found on the market. Through the creditable commitment of the Supplier to the relation, the Firm also maintains a reliable access to the technical competence of its supplier, and thereby is enabled to include a vital complementary resource in its strategic core without having to integrate and bear the costs of the enlarged organisation. In this relation therefore the Firm finds a solid basis for meeting the performance requirements of its customers and for preserving its individual identity as producer of a certain quality (White 2002).
These benefits are made possible by the inter-firm relation while at the same time it also helps the Firm reduce the transaction costs associated with the acquisition of a vital resource characterised by a high level of specificity.That is, the mutual trust accumulated in the relation as well as the close contact and intensive communication occurring during the development of any mould compensate for the bounded rationality of the Firm caused by its lack of necessary technical competence.

The same properties of the relation also shield the Firm against the risk of opportunistic behaviour and moral hazard that it is potentially exposed to due to the poor protection available in formal contracting. The trust-based, long-term character of the relation in other words provides the Firm with the adequate and sufficient safeguard that – in the absence of suitable and satisfactory legal devices – it needs in order to remedy the vulnerability caused by its dependence on the Supplier and to hedge itself against the potential tendencies of the latter to capitalise on its bounded rationality and behave opportunistically or renege, as an anonymous supplier in a one-shot market exchange would be tempted and have opportunity to do.Yet, as the finding of the study indicates, whereas the characteristics of the transaction can potentially motivate the Firm to withdraw it from market and seek an alternative structure, the backward integration does not appear as the self-evident alternative to the Firm. Perception of uncertainties related to such a move loom large in this context. In making such a decision the firm faces, on the one hand, a rather large amount of uncertainty with respect to the costs of the management of the enlarged organisation as well as the expected benefits of the integration, as no clear and reliable information is available to the Firm prior to such a move.

Other perceived uncertainties that discourage the Firm to embark on such an enterprise regard its own ability to mitigate the potential negative impact of the integration on the motivation of the current management of the Supplier as well as its chances of success in retaining the key employees of the Supplier after the integration. In addition, the reluctance of the Firm to integrate also derives from the perception of the subsequent increased uncertainties, once the boundaries of the Firm are pushed one step back in the supply chain. On this point the decision of the Firm to integrate is counter-weighted by the persisting uncertainties surrounding the entry in a new field of activity and the loss of the protective buffer at its upstream interface that currently is provided by Supplier.n a nutshell, whereas a backward integration is perceived by the Firm as a leap into uncertainty and vulnerability rather than providing shield against risk and hazard, the already existing and well-functioning relation with the Supplier performs the most important functions of vertical integration, and does so *without* the costs and uncertainties involved in such a move. Put differently, whereas the discouraging perceptions regarding the integration induce relatively low incentives to integrate, the smooth functioning of the existing relation and its comparative advantages over integration provide the Firm with a sufficiently strong rationale of preferring the latter as the most adequate and satisfactory structure of the inter-firm transaction flow.

Some Final Words

The flow of continuos transaction between a producer firm and its suppliers can be structured in different ways; and economic efficiency is the general guiding principle, the choice among the existing alternatives is far from being straightforward. As asserted by Williamson (1994: 90), "informed choice among alternative forms of [such] organisation entails trade-offs. Identifying and explicating trade-offs is the key to the study of comparative economic organisations. [Therefore] social scientists … need to come to terms with that proposition." One of the central tasks in this regard regards the development of adequate analytical tools, including measurement procedures needed for precise assessment of transaction costs at firm-level (Hobbs 1996) – a necessary requirement for exact evaluation of the transaction costs associated with the alternative modes of organising the inter-firm transaction and for the precise measurement of the comparative advantages of business relations as such an alternative. Such matters are becoming increasingly urgent as vertical integration – the badge of large-scale industrialisation – appears to have somewhat lost its attraction and as diversified, durable inter-firm relations are instead rapidly becoming the nuts and bolts of the new, invertebrate and globally spread production apparatus of our time.

References

Asanuma, B. 1989 "Manufacturer-Supplier Relationships in Japan and the Concept of Relation-Specific Skills" *Journal of the Japanese and International Economies* 3: 1-30

Barlett, C. and Ghoshal, S. 1989 *Managing Across Borders: The Transnational Solution* Boston: Harvard Business School Press

Carlton, D. 1979 "Vertical Integration in Competitive Markets under Uncertainty*" Journal of Industrial Economics* 37: 189-209

Carter, R. and Hodgson, G. 2006 "The Impact of Empirical Test of Transaction Cost Economics on the Debate on the Nature of the Firm" *Strategic management Journal* 27: 461-76

Contractor, F. and Lorange, P. 1988 *Cooperative Strategies in International Business* Lexington: Lexington Books

David, R. and Han, S. 2004 "A Systematic Assessment of the Empirical Support for Transaction Cost Economics" *Strategic Management Journal* 25: 39-58

Dietrich, M. 1994 "The Economics of Quasi-Integration" *Review of Political Economy* 6: 1-18

Dore, R. 1987 *Taking Japan Seriously* Stanford: Stanford University Press

Dore, R. 2001 "Good Will and the Spirit of Market Capitalism" in M. Granovetter and R. Swedberg (eds.) *The Sociology of Economic Life* Boulder: Westview

Erkal, N. 2007 "Buyer-Supplier Interaction, Asset Specificity and Product Choice" *International Journal of Industrial Organization* 25: 988-1010

Gilson, R. and Sabel, C. and Scott, R. 2009 "Contracting for Innovation: Vertical Disintegration and Inter-firm Collaboration" Unpublished manuscript, Columbia University

Goldberg, V. 1980 "Relational Exchange: Economics and Complex Contracts" *American Behavioural Scientist* 23: 337-52

Halldorsson, A. and Kotzab, H. and Skjott-Larsen, T. 2003 “Inter-organizational Theories behind Supply Chain Management – Discussion and Applications” in S. Seuring *et al.* (eds.) *Strategy and Organization in Supply Chains* Physica Verlag

Hamilton, G. and Biggart, N. 2001 “Market, Culture and Authority: A Comparative Analysis of Management and Organization in the Far East” in M. Granovetter and R. Swedberg (eds.) *The Sociology of Economic Life* Boulder: Westview

Heide, B. and John, G. 1990 “Alliances in Buyer-Supplier Relationships” *Journal of Marketing Research* 27: 24-36

von Hirschhausen, C. and Neumann, A. 2008 “Long-Term Contracts and Asset Specificity Revisited: An Empirical Analysis of Producer-Importer Relations in Natural Gas Industry” *Review of Industrial Organization* 32: 131-43

Hite, J. and Hesterly, W. 2001 “The Evolution of Firm Networks, from Emergence to Early Growth of the Firm” *Strategic Management Journal* 22: 275-86

Hobbs, J. 1996 “A Transaction Cost Approach to Supply Chain Management” *Supply Chain Management: An International Journal* 1: 15-27

Holmström, B. and Roberts, J. 1998 “The Boundaries of the Firm Revisited” *The Journal of Economic Perspectives* 12: 73-94

John, G. and Weitz, B. 1988 “Forward Integration into Distribution: Empirical Test of Transaction Cost Analysis” *Journal of Law, Economics, and Organization* 4: 121-39

Joskow, P. 1985 “Vertical Integration and Long-term Contracts” *Journal of Law, Economics and Organization* 1: 33-80

Joskow, P. 1988 “Asset Specificity and the Structure of Vertical Relationships: Empirical Evidence” *Journal of Law, Economics and Organization* 4: 95-117.

Klein, B. 1988 “Vertical Integration as Organizational Ownership: The Fisher Body - General Motors Relationship Revisited” *The Journal of Law, Economics and Organization* 4: 199-213

Klein, B. 1996 “Why Hold-ups Occur: The Self-enforcing Range of Contractual Relationships” *Economic Inquiry* 34: 444-63

Klien, B. and Crawford, R. and Alchian, A. 1978a “Transfer Pricing and Organisational Form” *Journal of Law, Economics and Organisation* 7: 201-28

Klien, B. and Crawford, R. and Alchian, A. 1978b “Vertical Integration, Appropriable Rents, and the Competitive Contracting Process” *Journal of Law and Economics* 21: 297-326

Kvaløy, O. 2007 “Asset Specificity and Vertical Integration” *Scandinavian Journal of Economics* 109: 551-72

Lane, C. and Bachmann, R. 1998 *Trust within and between Organizations: Conceptual Issues and Empirical Applications* Oxford: Oxford University Press

Lorenz, E. 1988 “Neither Friends Nor Strangers: Informal Networks of Sub-contracting in French Industry” in D: Gambetta (ed.) *Trust, Making and Breaking Cooperative Relations* Oxford: Basil Blackwell

Lorenz, E. 1999 “Trust, Contract and Economic Cooperation” *Cambridge Journal of Economics* 23: 301-15

Macaulay, S. 2001 “Non-Contractual Relations in Business: A Preliminary Study” in M. Granovetter and R. Swedberg (eds.) *The Sociology of Economic Life* Boulder: Westview

McGuiness, T. 1994 “Markets and Managerial Hierarchies” in G. Thompson, et al. (???) (eds.) *Markets, Hierarchies and Networks* London: Sage

Macher, J. and Richman, B. 2008 “Transaction Cost Economics: An Assessment of Empirical Research in the Social Sciences” *Business and Politics* 10: 335-61

MacLeod, B. and Malcomson, J. 1989 “Implicit Contracts, Incentive Compatibility, and Involuntary Unemployment” *Econometrica* 57: 447-80

Malone, T. and Yates, J. and Benjamin, R. 1987 "Electronic Markets and Electronic Hierarchies" Communications of the ACM (30:6)

Masten, S. 1984 “The Organization of Production: Evidence from the Aerospace Industry” *Journal of Law and Economics* 27: 403-18

Masten, S. and Saussier, S. 2000 "Econometrics of Contracts: An Assessment of Developments in the Empirical Literature on Contracting" *Revue d'Economie Industrielle* 92: 215-36

Palay, T. 1984 "Comparative Institutional Economics: The Governance of Rail Freight Contracting" *Journal of Legal Studies* 13: 265-87

Piore, M. and Sabel, C. 1984 *The Second Industrial Divide* New York: Basic Books

Porter, M. and Fuller, M. 1986 "Coalitions and Global Strategy" in M. Porter (ed.) *Competition in Global Industries* Boston: Harvard Business School Press

Reve, T. 1990 "The Firm as a Nexus of Internal and External Contracts" in A. Masahiko and B. Gustavsson and O. Williamson (eds.) in *The Firm as a Nexus of Treaties* London: Sage

Ruzzier, C. 2009 "Asset Specificity and Vertical Integration: Williamson's Hypothesis Reconsidered" Working Paper 09-119 Harvard Business School

Sako, M. 1992 *Prices, Quality and Trust: Inter-firm Relations in Britain and Japan* Cambridge: Cambridge University Press

Telser, L. 1980 "A Theory of Self-Enforcing Agreements" *Journal of Business* 53: 27-44

Uzzi, B. 2001 "Social Structure and Competition in Inter-firm Networks: The Paradox of Embeddedness" in M. Granovetter and R. Swedberg (eds.) *The Sociology of Economic Life* Boulder: Westview

Vincent, S. 2005 "Really Dealing: A Critical Perspective on Inter-organizational Exchange Networks" *Human Relations* 19: 47-65

Wernerfeldt, B. 1984 "A Resource-Based View of Firm" *Strategic Management Journal* 5: 171-80

Williamson, O. 1971 "The Vertical Integration of Production: Market Failure Considerations" *American Economic Review* 61: 112-23

Williamson, O. 1975 *Markets and Hierarchies: Analysis and Antitrust Implications* New York: Free Press

Williamson, O. 1979 "Transaction Costs Economics: The Governance of Contractual Relations" *Journal of Law and Economics* 22: 233-61

Williamson, O. 1983 "Creditable Commitments: Using Hostage to Support Exchange" *American Economic Review* 73: 519-40

Williamson, O. 1985 *The Economic Institutions of Capitalism* New York: Free Press

Williamson, O. 1986 *Economic Organisation: Firms, Markets and Policy Control* New York: New York University Press

Williamson, O. 1990 "The Firm as a Nexus of Treaties: An Introduction" in A. Masahiko and B. Gustavsson and O. Williamson (eds.) in *The Firm as a Nexus of Treaties* London: Sage

Williamson, O. 1994 "Transaction Cost Economics and Organization Theory" in N. Smelser and R. Swedberg (eds.) *The Handbook of Economic Sociology* New York: Sage and Princeton: Princeton University Press

White, H. 2002 *Markets from Networks: Socio-economic Models of Production* Princeton: Princeton University Press

Woodruff, C. 2002 "Non-contractible Investments and Vertical Integration in the Mexican Footwear Industry" *International Journal of Industrial Organisation* 20: 1197-1224

Whyte, G. 1994 "The Role of Asset Specificity in the Vertical Integration Decision" *Journal of Economic Behavior and Organization* 23: 287-302

Zaheer, A. and Venkatraman, N. 1994 "Determinants of Electronic Integration in the Insurance Industry: An Empirical Test" *Management Science* 40: 549-66