

---

**“HOMO TRANSACTION COST ECONOMICUS”: A CRITICAL  
ANALYSIS OF THE BEHAVIORAL ASSUMPTIONS UNDERLYING THE  
CONTRACTUAL MAN**

**MARK WEVER**

Researcher (Programa Jovens Talentos para a Ciência – CAPES)  
Universidade Federal do Rio Grande do Sul

Mail address: Centro de Estudos e Pesquisas em Agronegócios  
Av. Bento Gonçalves 7712 - Prédio da Agronomia - 1.º Andar - Porto Alegre/RS - 91540-000  
E-mail: mwever.ufrgs@gmail.com

**Abstract**

Transaction Cost Economics (TCE) has had an enormous impact on the study of governance decisions across a wide range of disciplines. However, firms' governance decisions do not always match TCE's predictions. Various alternations to TCE have been proposed in order to improve the theory's predictive power and relevance to managerial decision making, but surprisingly few studies have considered modifying the theory's behavioral assumptions. Studies which have attempted to do this have tended to focus on opportunism, thereby ignoring the theory's other behavioral assumptions – bounded rationality and risk-neutrality. The present paper aims to address this gap in the literature, by critically evaluating all three of TCE's behavioral assumptions. The paper discusses the realism of these assumptions, their internal consistency and proposes various modifications to them. Especially, researchers should: (1), start threatening bounded rationality as endogenous to the TCE model in order to identify the cognitive constraints and procedures managers use to make governance decisions; (2), reconsider the link between contract complexity, asset specificity and transaction costs; (3), study the link between managerial risk-attitudes and their governance choices in a manner consistent with the theory's assumption of bounded rationality. Adopting this more complete conceptualization of the 'contractual man' should help researchers to explain various empirical findings that seemingly conflict with TCE's predictions. It should also help to make TCE more relevant for managers, as it allows researchers to better incorporate company-specific characteristics into the theory's implications.

**Key words:** *Transaction Cost Economics, Bounded Rationality, Opportunism, Risk-Attitudes, Behavioral Assumptions, Managerial Decision Making*

---

## “Homo Transaction Cost Economicus”: A Critical Analysis of the Behavioral Assumptions Underlying the Contractual Man

### 1. INTRODUCTION

Transaction costs Economics (TCE) is one of the most frequently used theories for studying the boundaries of firms (Leiblein, 2003). The theory attempts to explain these boundaries, by comparing the relative benefits of in- or outsourcing activities (Williamson, 2008). TCE's basic logic is straightforward. When there is a risk that a firm's supplier (or customer) will act opportunistically, it needs to make the inputs itself instead of procuring them in the market. The risk of opportunism is high when the inputs the firm requires are either highly specialized or easily counterfeited for inputs of lesser quality. When there is little risk of opportunism, such as when the firm requires commodity inputs, it is cheaper to buy inputs in the market. This is because the competition amongst suppliers gives them a strong incentive to reduce costs and this incentive structure is difficult to replicate within the bureaucratic structure of a firm (Williamson, 1985). The boundaries of firms are determined by their efforts to economize on both opportunism and bureaucratic costs (Williamson, 1991).

TCE relies on several behavioral assumptions concerning firms' decision-makers<sup>i</sup>. The most well-known of these are bounded rationality and opportunism. Bounded rationality refers to the informational and cognitive constraints which managers face in making decisions and writing contracts (Simon, 1957). Opportunism refers to the assumption that managers will strategically try to exploit the limitations of their trading partners for their own benefit (Williamson, 1979). In TCE, it is assumed that these conditions are interlinked; opportunism is only possible because managers are not farsighted enough to prevent such action by their trading partner. A third behavioral assumption, that managers are risk-neutral, has received far less attention (Chiles & McMackin, 1996; see Williamson, 1985, p. 388). However, the assumption of risk-neutrality is just as important for TCE's predictive power as the theory's other behavioral assumptions. None of TCE's three main behavioral assumptions are regularly threatened as endogenous variables. Opportunism is rarely empirically examined<sup>ii</sup> (Rindfleisch & Heide, 1997), the limits of managers' rationality have not been well-defined or investigated (Simon, 1991), while the risk-neutrality assumption is often not even mentioned.

Opportunism arises when transaction conditions – especially asset specificity<sup>iii</sup> and performance measurement difficulty<sup>iv</sup> – increase the risk that one of the parties to a transaction will fail to comply with trade provisions during contract execution (Williamson, 2008). TCE's notion of opportunism is strongly criticized (e.g., Ghoshal & Moran, 1996; Nooteboom, 2004). Many studies take exception with Williamson's (1993) characterization of humans as devious, calculative, self-interested beings. However, for TCE's assumptions to hold, it is not necessary that all individuals in a population are opportunistic. It is only required that some individuals are opportunistic and that firms have difficulty screening at the start of a transaction which individuals in a population are likely to act opportunistically (Williamson, 1985). While some criticism of opportunism maybe unjustified, TCE literature has failed to consistently distinguish between the different types of self-interested behaviors that are covered by the concept (Wathne & Heide, 2000). This is important, as different forms of opportunism maybe best addressed by different governance structures.

Bounded rationality is considered to be a necessary assumption for TCE (Williamson, 1985). Without bounded rationality, a manager could foresee all future attempts at opportunism by its trading partner and write perfect contracts which prevent such renegotiation. However, the limits or bounds of managers' rationality are not well-defined or empirically researched in TCE literature (Foss, 2003; Simon, 1991). It is unclear what exactly the limitations of managers are and how this

affects their choice of governance form. This hampers the validity of TCE research. Especially, it allows researchers to shift the ‘bounds’ on managers’ rationality as they see fit in order to explain their results based on TCE logic. For example, if a firm did not implement the governance form predicted by TCE, the assumption of the limitedly rational manager is convenient to bring the result back within the domain of TCE (i.e., the manager made a mistake because of his or her limitations) (e.g., see Williamson, 1985, p.111). Furthermore, TCE implicitly holds decision-making procedures and constraints constant across firms. This allows researchers to test TCE without studying the internal processes of firms. This limits TCE’s usefulness to managers, as firm-specific characteristics are often ignored in TCE research (Geyskens, Steenkamp, & Kumar, 2006).

‘Risk-neutrality’ is not well-defined within TCE literature. For example, it is unclear what Williamson (1985) interpretation of the concept is and how it relates to TCE’s assumption of bounded rationality. Chiles and McMackin (1996) interpret risk-neutrality to mean that managers are indifferent to the choice between a certain outcome (e.g., no risk of opportunism) and an uncertain outcome (e.g., fifty percent chance of opportunism), provided that the expected average returns of both outcomes is equal. If this is what Williamson (1985) intended, than it implies that managers make exhaustive computations of transaction costs and are well-aware of the odds of different transaction outcomes. This does not fit well with the assumption that managers are limitedly rational. Wever *et al.* (2012) have a different understanding of the meaning of risk-neutrality within TCE. They argue that Williamson (1988) assumes that transaction parties have homogenous risk-attitudes. For example, that both transaction parties want to limit their exposure to opportunism to the same degree. But, if this is what Williamson (1985) intended, than a major motive for transacting – a differential risk-attitude amongst parties – is ignored within TCE.

Some researchers might want to dismiss the importance of the issues raised above, by arguing that when firms behave as TCE predicts, it is not necessary to evaluate the theory’s behavioral assumptions. There are at least three problems with this line of thinking. *First*, TCE claims that it “characterizes human nature as we know it” (Williamson, 1985, p.44). Thus, whether or not its behavioral assumptions are an accurate reflection of how managers make decisions should matter to TCE scholars. *Second*, different types of decision making processes can lead to similar outcomes. Theories such as Property-Rights theory, Real Options theory and the Resource-Based-View of the firm, offer alternative explanations for firms’ governance decisions. While in some situations these theories predict different governance choices, in other instances they predict the same outcomes as TCE (Barney & Lee, 2000; Whinston, 2003). Thus, managers may operate according to the logic of rival theories and still choose the governance forms TCE predicts. *Third*, empirical results do not unequivocally support (all of) TCE’s assumptions (Moran & Ghoshal, 1996; Nooteboom, 2004). While the relation between medium asset specificity levels and the use of long-term contracts is well-established, doubts have been raised about whether the transaction costs of such contracts increase at higher levels of asset specificity (Dyer, 1997), as TCE predicts. High asset specificity levels may not be a sufficient motive for vertical integration. As Coase (1988, p.43) notes “vertical integration will not displace the long-term contract unless the cost of contracting become greater than the costs of vertical integration – and this may never happen for any value of quasi-rents actually found.” Furthermore, firms exposed to similar transaction conditions regularly use different types of governance structures (e.g., Leiblein & Miller, 2003). This sheds doubt about the discriminating function of ‘transaction cost economizing’ in explaining firm boundaries. Also, firms sometimes use multiple governance forms at the same time (Ménard, 2012). This is difficult to reconcile with TCE’s framing of the “governance decision as a choice between competing alternatives” (Rindfleisch & Heide, 1997, p.50). Doubts have also been raised about some studies (e.g., Klein et al., 1978), that have traditionally been cited in support of TCE

(Coase, 2000). Thus, while Williamson (2000) calls TCE an empirical success story, more neutral observers argue that it gives an incomplete picture of the factors determining firms' governance decisions (Leiblein, 2003).

In this paper we critically examine TCE's behavioral assumptions. We discuss the extent to which these assumptions are an accurate reflection of managerial behavior, internally consistent, consistently applied within TCE literature and what the implications are for TCE's predictions if the assumptions are modified or relaxed. With this, our immediate aim is to contribute to a more realistic conceptualization of the 'Homo Transaction Cost Economicus' – referred to in the remainder of the paper as the "contractual man" (Williamson, 1985, p.43). The more general aim is to contribute to the debate on how TCE's relevance to managerial decision making and predictive power can be improved. The remainder of the paper is organized as follows. Sections 2-4 discuss the three behavioral assumptions underlying the contractual man and give various suggestions for how they can be altered. Section 5 summarizes the differences between the behavioral assumptions used in the traditional TCE framework, and the changes proposed in this paper. Section 6 concludes the paper and discusses its implications.

## 2. DEFINING THE BOUNDS OF MANAGERS' RATIONALITY

This section argues that the interpretation by TCE researchers of 'bounded rationality' is much closer to strong-form conceptualizations of rationality than Simon (1991) was comfortable with. Although Williamson (1985) argues that the bounds of the rationality of economic actors need to be respected, he also perceives their behavior as strongly calculative in a manner similar to theories which assume that actors make rational choices (Williamson, 1993). Costs resulting from bounded rationality are then simply another type of cost that a profit-maximizing firm will have to take into account (Simon, 1972). We will argue that TCE's is better served by relying on an interpretation of bounded rationality that more closely follow Simon's (1957) original conceptualization.

**Different forms of rationality:** Rationality has been a heavily debated topic in economic literature. Amongst others, the debate has focus on the extent to which actors are rational (Arrow, 1986; Simon 1979), what the constraints are which lead to limitedly rational behavior (Simon, 1957; Tversky & Kahneman 1991), actors' procedures for dealing with these constraints (Simon, 1978) and the impact of (ir)rational behavior by individual economic agents on the functioning of the market as a whole (Becker, 1962; Demsetz, 1996). Williamson (1985) distinguishes between three conceptualizations of rationality: strong-form (maximizing), semi-strong form (bounded rationality) and weak-form (organic rationality).

In the strong-form conceptualization of rationality, firms aim to maximize profits, they have the required information about demand and cost functions to achieve their objectives as well the capabilities to make the required computations (Simon, 1972). In the weak-form conceptualization of rationality, firms' survival is dependent on their success in realizing a positive profit (Alchian, 1950; Demsetz, 1996). Positive profit, and thus the survival of the firm, is (partly) due to an accidental fit between the firm and its changing environment. This is because firms have imperfect foresight and learning abilities and thus difficulty to "link business decisions to outcomes" (Demsetz, 1996, p.486). In the semi-strong form conceptualization, actors face somewhat similar constraints to their rationality as in the weak-form conceptualization, but they deal with them in a more reflexive manner. Because they are more aware of their limitations, they develop adequate procedures for dealing with them.

**Different types of constraints on rationality:** TCE relies on the semi-strong form conceptualization of rationality; i.e., bounded rationality. However, the exact bounds or constraints on managers' rationality are not well-defined within TCE literature. This is important because the



literature on bounded rationality is not a unified approach. Simon (1972) distinguishes between three types of constraints on actors' rationality: (1) incomplete information about the available decision making options; (2) uncertainty about the consequences of selecting an option; (3) difficulties in processing the information and making the computations to link the alternatives to consequences. Simon (1972) argues that the third constraint is critical to the bounded rationality concept; e.g., even with complete access to information, cognitive limitations can prevent an individual from maximizing its preferences.

Which of these constraints are faced by the contractual man? With regard to the first type of constraint, imperfect access to information is considered within TCE, otherwise performance measurement difficulties would not arise. Imperfect access to information mainly becomes an issue within TCE if information is asymmetrically divided amongst trading partner; i.e., when one trading partners has information the other actor lacks.

With regard to the second constraint, uncertainty is an important transaction condition within TCE. This is mainly because opportunism becomes more likely when future states of the world are difficult to predict. Yet, the impact of uncertainty on the decision making process of managers is insufficiently considered within TCE. This is evident from TCE's terminology. Firms operating within the parameters of TCE are said to economize on transaction costs (Williamson, 1985), rather than, for example, manage risk. 'Cost economizing' conveys the meaning that transaction costs can be estimated by managers and relies on the logic that a comparative-best governance solution exists. This line of thinking draws attention away from the uncertainty and trade-offs which exist in many governance decision-making situations. For example, a firm that vertically integrates often swaps exposure to opportunism for increased exposure to demand uncertainty (Wever *et al.*, 2012). Because opportunism is by definition difficult to foresee, the costs resulting from it must also be difficult to estimate and to compare with the expected costs from demand uncertainty.

With regard to the third constraint, TCE explicitly assumes that managers have cognitive constraints; otherwise firms would be able to implement 'perfect' contracts which prevent opportunistic renegotiation by trading partners. Vertical integration – which is what TCE expects firms to do when the risk of opportunism is high – would then not be necessary. However, it is not clear from TCE literature what cognitive constraints managers have. Because of this, Simon (1991) argues that the principles of bounded rationality are incorporated within TCE in an ad-hoc manner. Basically, the theory assumes that managers are not rational enough to operate according to the logic of rival theories, but rational enough to follow TCE's prescriptions. However, if we assume that managers have difficulty in writing contracts, we might also assume that they have difficulty in assessing transaction conditions sufficiently well in order to operate according to TCE's logic. For example, companies may have difficulty in assessing the level of asset specificity that is present in a transaction (Ménard, 2012). Because cognitive constraints are largely treated as exogenous to the TCE model, they are also de facto held constant across the population of firms. From this perspective, a firm's lack of prior experience at take-overs, should not make it less likely to integrate a supplier into its operations than firms with abundant experience in this area.

**Procedures for dealing with bounded rationality:** When managers face cognitive constraints, it becomes important not only to consider whether the appropriate decision has been taken (substantive rationality), but also how the decision was reached (procedural rationality) (Simon, 1978, p.9). When "the scarce resource is computational capacity – the mind", also economizing on decision making costs becomes important (Simon, 1978, p.12). At present, TCE literature pays little attention to the procedures firms use and the cost they incur in deciding what types of governance forms to use. For example, while Williamson (1985) considers ex-ante and ex-post transaction costs, decision making costs do not easily fit into either category. While we might

presume that Williamson considers such costs as part of ex-ante costs, TCE literature focuses mainly on ex-post costs. Empirically, the governance decision making process is also insufficiently considered. For example, while managers are frequently asked whether asset specificity is present in a transaction, they are rarely asked about their decision to make specific investments in the first place (Masten, 1996).

Based on Simon's work (1972; 1978; 1979), we can distinguish at least four types of procedures actors can use to deal with their bounded rationality. *First*, actors can change their objective from maximizing to approximate-optimizing, where: "the description of a real-life situation is radically simplified until reduced to a degree of complication that the decision maker can handle" (Simon, 1972, p.170). Actors first simplify the decision making situation, and then will try to find and achieve the most optimal choice in this re-arranged context. *Second*, actors can look for satisfactory choices rather than (approximate) optimal ones (Simon, 1979). Compared to the previous strategy, this entails: "retaining more of the detail of the real-world situation, but settling for a satisfactory rather than an approximate-best situation" (Simon, 1972, p.170). *Third*, an actor can try to break-up a complex, abstract goal, into smaller sub-goals (Simon, 1979). *Fourth*, a complex task can be divided amongst specialist (Simon, 1979).

Which of these strategies can help the contractual man in its decision process? In this context, it is interesting to contrast an approximate-optimizing approach to governance decision making with a satisfying approach. The third and fourth strategy, use of sub-goals and specialist, are of less importance within a TCE world. The necessity to rely on multiple specialists for performing a task is not a sufficient reason to explain firm boundaries from a TCE perspective. This is because collaboration by specialists does not need to stop at firms' boundaries. In TCE, firm boundaries are determined by opportunism (Section 3) and not task-coordination difficulties.

How would an approximate-optimizer make a decision about what type of governance structure to use? Remember, actors using this strategy try to find the optimal choice within a simplified situation. Governance decision making situations can be simplified by, for example, comparing mainly generic governance forms (e.g., make or buy) rather than (also) specific trade terms (e.g., fix prices or not). Alternatively, managers can simplify by using a sequential-decision making process, as when an actor first decides about the generic governance form and only afterwards about what types of specific trade terms to use. Whichever, the approximate-optimizer has little tolerance for differential transaction costs; within the more simplified situation, he wants the optimal, generic governance form. Thus, he frequently re-assesses transaction conditions and transaction costs in order to compare whether his governance choice is still the most optimal.

With satisfying, the contract decision making situation retains more of its complexity (e.g., by including specific trade-terms more fully in the analysis), but the objective of managers is not to minimize their transaction costs; it is too cognitively demanding to determine the optimal strategy in the more complex decision making situation. Instead, the manager is content to not let transaction costs exceed a certain amount. To give an example, TCE assumes that long-term contracts are not sufficient to deal with situations involving highly specific investments. This is because of the impossibility of writing complete contracts that prevent opportunistic renegotiation. However, while it is impossible to write 'complete' contracts, actors can write 'satisfactory' contracts; i.e., contracts that sufficiently reduce the scope for opportunism to keep costs within acceptable bounds for the 'victim'. Transaction conditions are then not reassessed as long as transaction costs remain within these bounds.

Which of these two decision making procedures most accurately reflects how managers make governance decisions? TCE researchers need to examine firm's internal decision making procedures in more detail to determine this. However, we do not need to assume that all managers

use the same type of procedure. Each procedure has its benefits and disadvantages. A satisfying approach saves on the decision-making costs of selecting a governance form, while the approximate-optimizing approach saves on maladaptation costs.

**A limitedly rational governance decision:** To conclude this section, managers living in a TCE world do not have it easy. Their world is populated by opportunistic trading partners and they are endowed with only limited cognitive capabilities. Yet, they have a formidable task at their hand. They have to economize on transaction costs. This suggests that managers make a sophisticated numerical assessment of the expected benefits and disadvantages of using different types of governance forms (Buckley & Chapman, 1997). This entails estimating, computing or at least comparing different sets of transaction costs. This is more difficult than it sounds. It includes comparing the costs of transacting with different potential trading partners and using different types of contracts to govern those transactions. It includes estimating the direct costs of transacting, but also factoring in cost-savings made by the implementing of the contract. All these costs are expected costs, estimated before the manager enters into the transaction. However, estimation is difficult, as they depend on the manager's imperfect interpretation of its environment. They are also uncertain; otherwise firms would include conditions in their agreements that prevent their trading partner from renegotiating. Whether or not managers make such types of analyses is not supported by empirical research. The internal decision making processes of firms are not well studied within TCE literature.

In the traditional TCE model, the relationships between transaction conditions, costs and governance forms are assumed to be clear to managers. That is, they are supposed to know at what level of asset specificity or performance measurement difficulty one type of governance form should be preferred over another (e.g., a long-term contract instead of vertical integration). However, actors may have difficulty in assessing transaction conditions or the characteristics of the different governance forms. They may thus be unsure about which governance form is the least costly (Ménard, 2012). Furthermore, different managers can have different cognitive constraints, which will affect the accuracy of their assessment and the extent to which they have doubts about what type of governance form to select. Differences in assessment may also arise because different types of decision making procedures are used. For example, some managers will assess transaction conditions more frequently, and thus will most likely make more accurate assessments.

### 3. OPPORTUNISM: EXPLORING MANAGERS' DARK SIDE

Bounded rationality is an important reason why complex tasks have to be broken-up into sub-tasks and divided amongst specialist. But, from a TCE perspective, bounded rationality does not explain how the work of the specialists needs to be governed. To understand that, we need to look at the opportunism concept. The section first distinguishes between various forms of opportunism. We subsequently discuss one of these forms of opportunism in more detail, in order to illustrate how TCE's prescriptions on how to manage opportunism change when bounded rationality is more explicitly considered in the TCE model.

**Types of strategic self-interested behaviors:** Opportunism is defined by Williamson (1985, p. 47) as: "self-interest seeking with guile. This includes but is scarcely limited to more blatant forms, such as lying, stealing and cheating. Opportunism more often involves subtle forms of deceit...More generally, opportunism refers to the incomplete or distorted disclosure of information, especially to calculated efforts to mislead, distort, disguise, obfuscate, or otherwise confuse." This broad definition helps to explain why a range of different types of self-interested behaviors are all labeled as 'opportunism' within TCE literature (Wathne & Heide, 2000).

Operationally, opportunism could also be a better specified concept. Relatively few studies try to empirically examine it (Rindfleisch & Heide, 1997). However, it is important to distinguish between different forms of self-interested behaviors as they arise under different conditions and also require different types of governance solutions.

At least three different types of behaviors are covered by the term opportunism<sup>v</sup>. *First*, many TCE studies use opportunism to describe instances in which an actor attempts to hold-up its trading partner by ‘renegotiating’ previously established contract terms. This is arguably the most widely-used interpretation of the concept. For example, most of the models used by Williamson (1981; 1991) to illustrate governance problems involve such renegotiation attempts. Renegotiation problems arise when it is difficult for trading parties to write at the start of a transaction (ex-ante), agreements which can be enforced after one of the transaction parties has made specific investment (ex-post). In such instances, the bounds the trading partners had on their rationality ex-ante (their inability to write a comprehensive contract) becomes clear to them ex-post, when one or both tries to renegotiate.

*Second*, opportunism may also refer to attempts by actors to ‘cheat’, by falsely claiming compliance with trade conditions<sup>vi</sup>. For example, by trying to sell non-organic as organic food products. Unlike renegotiation, cheating occurs when a precisely defined contract term is broken, but this fact is unknown to the ‘victim’, as it is difficult to monitor compliance with contract terms. In such instances, the victim has an ex-post bound on its rationality, usually in the form of imperfect access to information (e.g., about product quality). In such instances, no overt attempt is made by the opportunistic party to discuss or renegotiate contract conditions; the actor pretends to be in compliance with those conditions.

*Third*, opportunism may also refer to instances in which an actor ‘shirks’ its contractual obligations, by failing to put in the effort that its trading partner (or employer) expects. Shirking arises from both ex-ante and ex-post constraints on the rationality of trading partners. Like renegotiation problems, shirking arises when it is difficult to write well-specified contract conditions at the start of a transaction. These difficulties are so severe however, for example because it is difficult to specify a task in advance, that the parties forego specific contract terms and use general best purpose clauses. Like cheating, shirking is cover behavior; ex-post it is difficult to establish whether the actor has put in sufficient effort. These difficulties are more severe however, as contract terms are only broadly defined.

What governance structures should the contractual man use to manage these transaction risks? Vertical integration is assumed within TCE to reduce severe renegotiation problems, by bringing two different production stages under one management (Williamson, 1991). To address cheating and associated measurement problems, a broad range of mechanisms exist: warranties, brand names, certification and revenue-sharing contracts (Barzel, 1982). Cheating problems can also be addressed by means of vertical integration, as firms are presumed to be better at monitoring internal than external production activities (Williamson, 1988). However, managing renegotiation and cheating problems is not without costs. A bureaucratic structure has to be put in place to coordinate the employee’s activities and resolve internal disputes. Monitoring costs are incurred to ensure that the employee does not shirk.

The governance solutions that are discussed in the previous paragraph are prescribed by a TCE model in which bounded rationality is not fully considered. Section 2 has introduced the notion that these prescriptions can change when bounded is more explicitly considered. This is discussed more in-depth in the next section. The section focuses on renegotiation problems, which is the most frequently discussed form of opportunism.



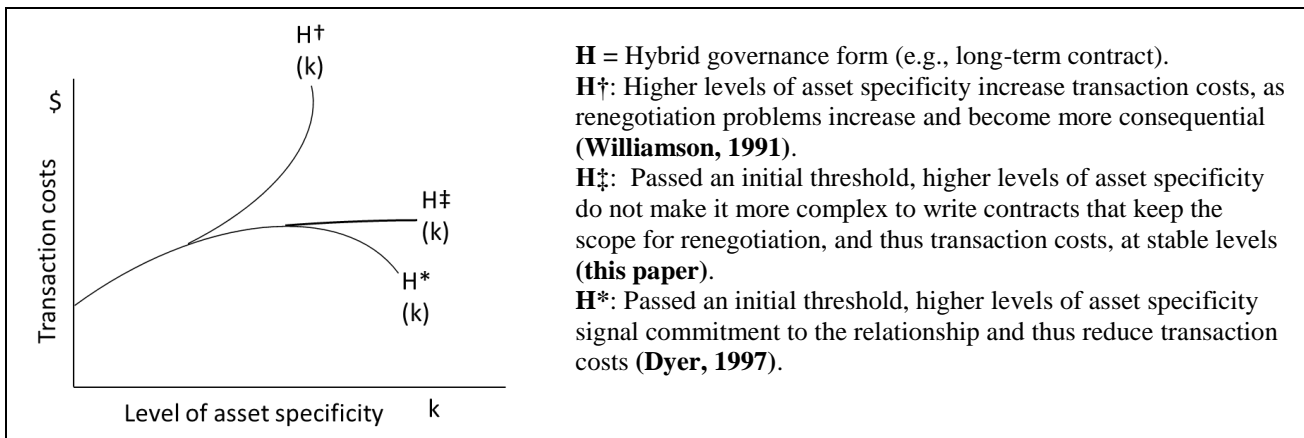
**Renegotiation:** TCE considers bounded rationality a necessary condition for renegotiation problems to arise. If actors were not limitedly rational, they would write ex-ante complete contracts that prevent ex-post renegotiation. One might expect that bounded rationality affect renegotiation risk under two conditions. *First*, when it becomes more cognitively demanding to write contracts; i.e., when contracts become more complex. *Second*, when uncertainty increases, and the link between contract terms and transaction outcomes becomes less predictable. In both cases renegotiation problems are more likely to occur because bounded rationality not only applies to the transaction parties, but also to third-party enforcers, such as courts. Imperfect enforcement by such institutions gives scope for renegotiation attempts. The more complex a contract becomes, or the less applicable it is to the current situation, the more difficult it becomes for third-parties to interpret the contract in the manner intended by the trading parties. Subsequently, the stronger the incentives to bring activities within the firm, which is “its own court of ultimate appeal” Williamson (2002, p. 178).

However, Williamson (1985) makes a slightly different cognitive leap in explaining the link between bounded rationality and renegotiation problems. While he considers uncertainty as one of the two conditions which leads to such problems, the other condition is not (directly) contract complexity but asset specificity. Uncertainty increases the risks that contract terms become misaligned with general market conditions. This increases the risk that one of the parties will attempt to renegotiate contract terms. But, what is the link between asset specificity and opportunism? Renegotiation is assumed to be more consequential if specific investments are involved as the ‘victim’ is locked-in to the transaction. But, this line of thinking also rests on the assumption that contracts become more complex as the level of asset specificity increases. While asset specificity provides the ‘motive’ for renegotiation, contract complexity provides the ‘opportunity’ (see Masten, 1999; Williamson, 1979).

Williamson (1991) argues that long-term contracts (hybrids) are sufficient to manage medium-levels of asset specificity. As the level of asset specificity increases, the motives for firms to internalize a transaction, and thus eliminate the risk of renegotiation, supposedly becomes stronger. However, while it makes sense that the presence of asset specificity requires contractual safeguards, it does not automatically follow that these safeguards become inadequate as asset specificity rises further. We argue that this is for two main reasons. *First*, while actors may not be able to know at the start of a transaction whether their trading partner is opportunistic or not, during the course of the transaction they become more knowledgeable (or less bounded) about this. For example, Dyer (1997) studied long-term contracts in the Japanese automobile industry. He found that after trading partners have made initial investments to support the transaction, any additional investments that raise the level of asset specificity above a certain minimum threshold, actually reduced transaction costs without the need for additional contractual safeguards. This is because the additional investments signal the parties’ commitment to continue the transaction-relationship.

*Second*, while the presence of asset specificity may make it more cognitively demanding to write satisfactory contracts compared to contracts in which no investments are involved, it does not automatically follow that higher levels of asset specificity increase the complexity of writing contracts even further. Changes in asset specificity levels can be caused by external factors which bear no relation to the ‘art of writing’ contracts. Consider the following example. Assume a farmer wants to switch from producing regular pigs to organic pigs. To achieve that, he or she needs to make investments to modify its stable. Assume further that the extent to which these investments are specific depends on the number of slaughterhouses that processes organic pigs in the proximity of the farmer. Thus, the fewer slaughterhouses that are located close to the farmer, the more specific the investments. The farmer is about to enter into a long-term contract with one of the three

organic slaughterhouses in the region, to reduce the risk of renegotiation. What happens if one of the other organic slaughterhouses goes bankrupt? Asset specificity rises, but it does not suddenly become more complicated to write a long-term contract that protects the farmer for the duration that it takes him or her to recoup the investments. The contract will not include additional omissions, thus the opportunities for the slaughterhouse to exploit the farmer remain limited. Then, the costs of using a long-term (hybrid) contract do not necessary rise as asset specificity increases, as Williamson (1991) argues (see Figure 1).



**Figure 1. Different relationships between asset specificity and transaction costs in the context of hybrids**

#### 4. SHIFTING MANAGERS' RISK-ATTITUDE

Two different interpretations of TCE's assumption of risk-neutrality can be distinguished. The section examines which of these interpretations is most consistent with TCE's assumption of bounded rationality. The section concludes by discussing how TCE should incorporate managerial risk-attitudes more fully within its framework.

**Managerial indifference to risk:** Chiles and McMackin (1996) interpret TCE's risk-neutrality assumption to mean that managers are indifferent to risk<sup>vii</sup>. To explain, the authors distinguish between three different types of risk-attitudes of managers: risk-averse, risk-neutral and risk-seeking. Managers are risk-averse when they prefer a (more) certain outcome over a (more) uncertain outcome. For example, when an actor prefers depositing its money into a savings account over stock market investments, even if both alternatives offer the same average expected return. Managers are risk-neutral when they are indifferent to the choice between a certain outcome (deposit) over the uncertain outcome (stock) given equal expected returns. A risk-seeker prefers the uncertain outcome over the certain outcome (deposit), provided that the average expected return of the former is higher than the latter.

Chiles and McMackin (1996) attempt to relax their assumption of risk-neutrality, by arguing that managers have different risk-attitudes. That is, some managers are risk-averse, while others are risk-neutral. Risk-averse managers are supposed to be less tolerant to the risks associated with making specific investments than risk-neutral managers, while risk-neutral managers themselves are less tolerant than risk-seeking managers. Managers with different risk-attitudes would then vertically integrate at different levels of asset specificity. For example, risk-averse managers are supposed to vertically integrate at lower levels of asset specificity than risk-neutral managers.

However, there is no reason to assume that managers with differential risk-attitudes are likely to respond in this manner. *First*, a risk-averse manager may forego transactions which require specific investments altogether rather than vertically integrating. *Second*, the authors focus on only

one type of risk, while risk-management involves making trade-offs. For example, reducing asset specificity related risks through vertical integration can increase the risk that a company mal-adapts to demand changes. A risk-averse manager may be more concerned about the latter than the former. *Third*, this interpretation of risk-neutrality assumes a managerial decision making process that does not fit well with that of a limitedly rational manager. A risk-neutral manager in this interpretation would be indifferent to the choice between either continued exposure to opportunism or to eliminating the risk as long as the expected costs of implementing contractual safeguards are equal to the expected cost of opportunistic behavior. However, how would a limitedly rational manager know that these expected costs are equal? Opportunism exists because actors do not have sufficient foresight to predict how and when such behavior occurs. A limitedly rational manager would have difficulty in estimating the transaction costs resulting from opportunistic behavior.

**Differential risk-attitudes of managers:** Wever *et al.* (2012) interpret TCE's assumption of risk-neutrality to mean that managers have homogenous risk-attitudes; i.e., transaction parties have the same risk-management preferences when entering into a transaction. For example, at a given level of asset specificity, both parties want to reduce their exposure to asset specificity related risks to the same degree. It is furthermore assumed in this interpretation that all actors are risk-averse (to the same degree). This is because transaction problems are difficult to predict in advance and their occurrence leads to negative pay-offs.

Wever *et al.* (2012) furthermore attempt to relax TCE's assumption of homogenous risk-preferences. The authors argue that heterogeneous or differential risk-attitude amongst trading partners can facilitate trade. This is because it helps them deal with the trade-offs they face in managing their risk exposure. For example, a buyer may implement a long-term fixed price with its supplier in order to reduce the risk of renegotiation problems. However, this can increase the risk of maladaptation to changing prices if actors operate in an uncertain environment. Under such conditions, if both parties are strongly averse to price uncertainty, then the transaction may not happen. However, if the buyer is less averse to this risk than the seller, then it makes sense for the buyer to absorb this risk as a fixed-price payer.

This interpretation of risk-neutrality seems, at first glance, to be more in line with TCE's assumption of bounded rationality. This is for various reasons. *First*, Wever *et al.* (2012) make fewer assumptions about the computations managers are supposed to make when they make governance decisions, as they assume that managers think in terms of trade-offs. This not only better fits with TCE's conceptualization of a limitedly rational manager, it arguably also more closely resembles the way in which managers actually make decisions (Buckley & Chapman, 1997). *Second*, a limitedly rational manager can easily be conceived of as being naturally risk-averse; i.e., when actors have imperfect information, they become risk-averse. Risk-aversion is then a strategy managers use to economize on their decision making costs.

However, there are three problems with the conceptualization of Wever *et al.* (2012). *First*, a limitedly rational actor also attempts to deal with his or her constraints. As is explained, in Section 2, managers use various strategies, such as satisfying, to simplify their decision making process. Managers may not make accurate or sophisticated estimates related to uncertain outcomes, but they may still attempt to make some estimates. Risk-aversion may not be the only response actors undertake when faced with an uncertain situation. The cognitive biases actors have can also lead them to seek more risky solutions. For example, a manager may overestimate its ability to prevent its trading partner from conducting opportunistic behavior. *Second*, while some transaction problems have a negative pay-off for both parties, in other instances the opportunistic party will receive a positive pay-off. An opportunistic party may therefore deliberately seek out situations in which there is sufficient scope for opportunism. Such a party is best described as a risk-seeker,

rather than as risk-averse. *Third*, differential risk-attitudes do not always facilitate trade. Risk-averse parties sometimes withdraw prematurely from projects when market conditions change.

**Incorporating risk more fully in the TCE framework:** Limitedly rational managers do not have perfect estimates of transaction conditions or of transaction outcomes. Because of this, bounded rationality affects managers' risk-attitudes. This can happen in at least three ways. *First*, self-aware actors may become more risk-averse as a result of the bounds on their rationality. More risk-averse in this sense does not necessarily mean that a company will vertically integrate at lower levels of asset specificity as Chiles and McMackin (1996) suggest. This is because the costs resulting from vertical integration are difficult to estimate, especially in an environment in which the firm is also exposed to other risks. Rather, a risk-averse manager may forego transactions which require highly specific investments altogether.

*Second*, actors are also limitedly rational about themselves. That is, they are not fully aware of the constraints on their own rationality. For example, actors may overestimate their ability to respond to opportunistic behavior or overestimate their ability to predict future prices. This leads actors to take more risk than they would, if they had a better understanding of the situation. The opposite is also true, as when actors display various cognitive biases which leads them to take less risk than they would if they had a better understanding of the situation.

*Third*, actors may make an imperfect assessment of the risk-attitude of their trading partner at the start of a transaction. For example, two firms may work jointly on some project, and one of the companies assumes that its new partner is much less risk-averse than it really is. Subsequently, when the circumstances surrounding the transaction change, the risk-attitude of the trading partners may become misaligned. For example, when demand uncertainty is much more variable than either of the trading partners has expected, one actor wants to put the project on hold, while the other actor wants to continue making investments.

To conclude, Williamson (1985, p.388) himself notes that the assumption of risk-neutrality is 'patently counterfactual'. No good reason exists why this assumption cannot be modified. But, this should not be done on an ad-hoc basis; researchers need to consider whether the modifications they make are consistent with the theory's other behavioral assumptions. Principles from existing risk-management literature that assume fully rational actors are difficult to integrate within TCE. Principles from other theoretical perspectives, especially Prospect Theory (Tversky & Kahneman, 1991), that also assume bounded rationality, are easier to integrate within TCE. Besides existing literature, a good starting point for integrating risk (management) principles more fully within TCE is to conceptualize firms' decision-makers as 'risk managers' rather than as 'cost economizers'. That is, managers do not attempt to minimize their risk-exposure (cost economizing), as there is no return without taking risk, but to achieve a satisfactory risk-profile. This also better reflects the inherent uncertainty and trade-offs which exist in many governance decision-making situations.

## 5. CONTRASTING THE TRADITIONAL CONTRACTUAL MAN WITH THE RECONCEPTUALIZED CONTRACTUAL MAN

Figure 2 (see below) summarizes the differences between the behavioral assumptions used in the traditional TCE framework, and the changes proposed in this paper.



	Traditional contractual man	Re-conceptualized contractual man
<b>Bounds on rationality (cognitive constraints)</b>	<ul style="list-style-type: none"> <li>- Mostly exogenous to the TCE framework.</li> <li>- Held constant across the population of firms.</li> <li>- Assumes away the costs managers incur in computing or estimating transaction costs.</li> <li>- Not required for researchers to study firms' internal governance decision making process.</li> </ul>	<ul style="list-style-type: none"> <li>- Imperfect assessment of transaction conditions explicitly considered (e.g., estimates of level of asset specificity).</li> <li>- Differential constraints across the population of firm (e.g., some firms have no prior experience at take-overs).</li> <li>- Researchers should study firms' governance decision making process to identify how managers estimate transaction costs</li> </ul>
<b>Strategies for dealing with constraints</b>	<ul style="list-style-type: none"> <li>- Because of bounded rationality, it is not possible for managers to write complete contracts.</li> </ul>	<ul style="list-style-type: none"> <li>- Managers can write 'satisfactory' contracts that keep transaction costs at tolerable levels.</li> </ul>
<b>Forms of self-interested behavior</b>	<ul style="list-style-type: none"> <li>- The term "opportunism" covers all forms of self-interested behavior, as long as it is done with 'guile'.</li> <li>- Distinguishes between ex-ante opportunism (failure to disclose all information) and ex-post opportunism (contract execution problems which occur as a result) (Williamson, 1985).</li> </ul>	<ul style="list-style-type: none"> <li>- Renegotiation (overt): insufficiently specified contract terms (ex-ante) leads to interpretation problems (ex-post).</li> <li>- Cheating (covert): an actor falsely claims compliance (ex-post) to well-specified contract terms (ex-ante).</li> <li>- Shirking (covert): an actor puts in insufficient effort (ex-post) in response to insufficiently specified contract terms (ex-ante).</li> </ul>
<b>Strategies for dealing with renegotiation problems</b>	<ul style="list-style-type: none"> <li>- Assumes a positive relationship between level of asset specificity and transaction costs.</li> <li>- Vertical integration is needed when highly specific investments are required to reduce the risk of renegotiation problems.</li> </ul>	<ul style="list-style-type: none"> <li>- Passed an initial threshold, more specific investments do not make it more difficult to write contracts that keeps the scope for renegotiation, and thus transaction costs, at stable levels</li> <li>- Long-term contracts can be a satisfactory solution to renegotiation problems even at high levels of asset specificity.</li> </ul>
<b>Risk-attitude</b>	<ul style="list-style-type: none"> <li>- Managerial risk-attitudes are held constant across the population of firms.</li> <li>- Researchers can therefore ignore managerial risk-attitudes.</li> </ul>	<ul style="list-style-type: none"> <li>- Differential managerial risk-attitudes are presumed to exist.</li> <li>- Researchers cannot ignore managerial risk-attitudes and need to consider what types of risk exposure manager prefers.</li> </ul>
<b>Impact of managerial risk-attitude on transaction</b>	<ul style="list-style-type: none"> <li>- Not explicitly considered.</li> </ul>	<ul style="list-style-type: none"> <li>- Actors can be too risk-averse to make specific investments</li> <li>- Ex-ante homogenous risk-attitudes of trading partners can become misaligned over time.</li> <li>- Ex-ante differential risk-attitudes can facilitate trade, especially if multiple risks are present in a transaction.</li> </ul>

Figure 2. Contrasting the traditional with the re-conceptualized contractual man

## 6. DISCUSSION AND CONCLUSION

The paper has critically examined the three main behavioral assumptions of TCE – bounded rationality, opportunism, risk-neutrality – which guide the governance decision making process of the 'contractual man'. We have discussed the extent to which these assumptions are an accurate reflection of managerial behavior, internally consistent and consistently applied within TCE. An alternative conceptualization was proposed in which these assumptions were modified or relaxed.

**Implications for TCE:** *First*, when bounded rationality is no longer treated as exogenous to the TCE model, it is no longer sufficient to merely study the governance mechanisms chosen by managers. It also becomes necessary to examine how managers assess transaction conditions and make governance decisions. This is for two reasons: (1) Different types of decision making procedures (e.g., approximate optimizing or satisfying) may work best under certain conditions. Identifying what types of procedures work best under different conditions will help to improve the managerial relevance of TCE. Currently, TCE gives little guidance to managers on how they should estimate or assess transaction conditions and make governance decisions; (2) Different management teams have different constraints, which affect their governance decisions. For example, firms which lack prior experience at take-overs may be reluctant to vertically integrate even at high levels of asset specificity. The existence of differential decision procedures and constraints on managers' rationality offers an explanation of why firms faced with similar

transaction conditions sometimes make different governance choices. Taking these differences into account should help to improve TCE's predictive power.

*Second*, TCE needs to more explicitly distinguish between different forms of strategic, self-interested behaviors and how they are best dealt with by different types of governance forms. This study argues that what is often discussed under the general heading of opportunism, are in fact three types of behaviors: renegotiating, cheating and shirking. In contrast with the traditional TCE model, the study proposes that renegotiation problems may also be dealt with by means of contracts rather than vertical integration. While it is not possible for a limitedly rational manager to write complete contracts that eliminate the risk of renegotiation, it can be possible to write satisfactory contracts that keep the costs of such renegotiation within acceptable bounds. This is because contractual safeguards do not always become inadequate as asset specificity rises, especially when changes in the level of asset specificity are caused by factors exogenous to the transaction. Under such circumstances, changes in asset specificity levels do not make it more difficult to write contracts that keeps the scope for renegotiation, and thus transaction costs, at stable levels.

*Third*, TCE should incorporate risk (management) principles more fully in its framework. A first step towards achieving this is to consider the impact of managerial risk-attitude on firms' governance decisions. This will help to improve TCE's predictive power, as differential risk-attitude amongst managers offer an explanation about why firms faced with similar transaction conditions sometimes choose different governance forms. But, managerial risk-attitudes cannot be incorporated within the TCE model without considering their relation to TCE's other behavioral assumptions, especially that of bounded rationality. Traditional conceptualizations of managerial risk-attitudes assume that managers know the expected returns or costs associated with different outcomes. This does not apply to the limitedly rational manager, who has difficulties making the required estimates and whose estimates maybe biased. For example, while a fully rational risk-averse manager may vertically integrate at lower levels of asset specificity than a risk-neutral manager, a limitedly rational risk-averse manager may prefer to forego transactions involving specific investments altogether (as it is difficult and uncertain to estimate the costs associated with opportunistic behavior). Further research is required to determine how managers' assessment of transaction conditions and governance decisions are affected by their risk-attitudes.

**Relation to other theories:** TCE does not have to start from scratch in examining the cognitive constraints managers face. Especially Prospect Theory (e.g., Tverski & Kahneman, 1991; 1992) offers various ideas on how to proceed in this area. Researchers can examine to extent to which the cognitive biases identified by Prospect Theory also apply to TCE. For example, are managers quicker to integrate when asset specificity is high than they are to disintegrate when asset specificity decreases (endowment effect)? Do managers economize for each transaction separately (mental accounting) or do they attempt to economize on transaction costs for the firm as a whole? Furthermore, various authors have recently started to combine the Resource-Based-View (RBV) of the firm and TCE (e.g., Leiblein, 2003). The alternative conceptualization of the contractual man offers a unifying perspective, as it argues that besides transaction conditions also firm-specific characteristics need to be considered when studying firms' governance decisions.

**Further work:** Arguably the best method for studying how firms make decisions is a longitudinal case study approach, in which top-management as well as board members are interviewed. But, the fact that most TCE research is done by surveying middle-level managers suggests that it is difficult to get access to this type of data (Rindfleisch & Heide, 1997). If only surveys are possible, than researchers should at least identify managerial risk-attitudes and decision procedures (e.g., how are costs estimated, how frequently are transaction conditions reassessed). Besides further empirical

work, also further conceptual work on this topic is required. Only a limited number of dimensions of human behavior are considered in TCE. For example, bounded rationality refers only to the interpretative capabilities of actors and these capabilities are only considered in relation to their attempts to satisfy economic needs. Other needs, like emotional needs, are not considered. However, emotions can alter the priorities of trading partners. An actor may try to reduce the emotional stress it experiences during a transaction, even if it means a reduction in economic benefits. For example, a farmer may not go to court because of the stress this involves. A formal contract will not be very helpful to such an actor. Furthermore, the re-conceptualized contractual man described in this paper is as ‘under-socialized’ as the traditional contractual man (Granovetter, 1985). While there is existing research that tries to ‘socialize’ the contractual man (e.g., Nooteboom, Berger, & Noorderhaven, 1997; Rooks, Raub, Selten, & Tazelaar, 2000), further research is necessary to obtain a more complete picture of how the social context of managers affects their cognitive constraints, propensity to act opportunistically and their risk-attitudes.

<sup>i</sup> In the remainder of the paper, we refer to these decision-makers as managers. When it becomes important to distinguish between different types of actors within a firm, we will explain to whom we refer.

<sup>ii</sup> Most TCE studies measure the sources of opportunism (e.g., asset specificity), rather than the concept directly.

<sup>iii</sup> ‘Asset specificity’ refers to the extent to which an actor is locked-in to a transaction, usually as a result from investments which have less value outside the transaction (Klein, Crawford, & Alchian, 1978).

<sup>iv</sup> ‘Performance measurement difficulty’ refers to the extent to which the benefits and costs each party brings to the transaction can be accurately determined (Ghosh & John, 1999).

<sup>v</sup> The categorization of opportunism presented here differs from the categorization made by Wathne & Heide (2000). In their categorization it is subjective which actor is the opportunistic party and which is the victim. They also do not consider temporal factors. This makes it difficult to link their categorization to extant TCE literature.

<sup>vi</sup> This type of behavior is also sometimes associated with the term ‘behavioral uncertainty’. However, also behavioral uncertainty is not consistently used within TCE.

<sup>vii</sup> TCE’s understanding of uncertainty and risk differs from that of Knight (1921). Uncertainty is considered as a source of risk – when future states of the work are difficult to predict, renegotiation risks increase.

## REFERENCES

- Alchian, A.A. (1950) Uncertainty, evolution, and economic theory. *The Journal of Political Economy*, 58(3), 211-221.
- Arrow, K.J. (1986) Rationality of self and others in an economic system. *The Journal of Business*, 59(4), 385-399.
- Barney, J.B., & Lee, W. (2000) Multiple considerations in making governance choices: implications of transaction cost economics, real options theory and knowledge-based theories of the firm. In N. Foss & V. Mahnke (Eds.), *Competence, governance and entrepreneurship*, New York: Oxford University Press.
- Barzel, Y. (1982) Measurement cost and the organization of markets. *Journal of Law and Economics*, 25, 27-48.
- Becker, G.S. (1962) Irrational behavior and economic theory. *Journal of Political Economy*, 70(1), 1-13.
- Buckley, P.J., & Chapman, M. (1997) The perception and measurement of transaction costs. *Cambridge Journal of Economics*, 21, 127-145
- Chiles, T.H., & McMackin, J. F. (1996) Integrating variable risk preferences, trust, and transaction cost economics. *Academy of Management Review*, 21(1), 73-99.
- Coase, R.H. (1988) The nature of the firm: influence. *Journal of Law, Economics and Organization*, 4(1), 33-47.
- Coase, R.H. (2000) The acquisition of fisher body by general motors. *Journal of Law and Economics*, 43(1), 15-31.
- Demsetz, H. (1996) Rationality, evolution, and acquisitiveness. *Economic Inquiry*, 34, 484-495.
- Dyer, J.H. (1997) Effective interfirm collaboration: how firms minimize transaction costs and maximize transaction value. *Strategic Management Journal*, 18(7), 535-556.
- Foss, N.J. (2003) Bounded rationality in the economics of organization: much cited and little used. *Journal of Economic Psychology*, 24, 245-264.
- Geyskens, I., Steenkamp, J.B.M., & Kumar, N. (2006) Make, buy, or ally: a transaction cost theory meta-analysis. *Academy of Management Journal*, 49(3), 519-543.
- Ghosh, M., & John, G. (1999) Governance value analysis and marketing strategy. *The J. Marketing.*, 63, 131-145.
- Ghoshal, S. & Moran, P. (1996) Bad for practice: a critique of transaction cost theory. *Acad. Manage. Rev.*, 21, 13-47.
- Granovetter, M. (1985) Economic action and social structure: the problem of embeddedness. *American Journal of Sociology*, 91(3), 481-510.

- Holmstrom, B., & Milgrom, P. (1995) The firm as an incentive system. *The American Economic Review*, 84, 972-991.
- Klein, B., Crawford, R.G., & Alchian, A.A. (1978) Vertical integration, appropriable rents, and the competitive contracting process. *Journal of Law and Economics*, 21(2), 297-326.
- Knight, F. (1921) *Risk, uncertainty and profit*. Boston: The Riverside Press.
- Leiblein, M.J. (2003) The choice of organizational governance form and performance: predictions from transaction cost, resource-based, and real options theories. *Journal of Management*, 29(6), 937-961.
- Leiblein, M.J., & Miller, D. (2003) An empirical examination of transaction and firm-level influences on the vertical boundaries of the firm. *Strategic Management Journal*, 24, 839-859
- Masten, S.E. (1996) Empirical research in transaction cost economics: challenges, progress, directions. In J. Groenewegen (Ed.), *Transaction cost economics and beyond*. (pp.43-64) Netherlands: Springer.
- Masten, S.E. (1999) Contractual choice. In B. Boukaert & G. De Geest (Eds.), *Encyclopedia of law and economics*. Ghent: Edward Elgar Publishing and University of Ghent.
- Ménard, C. (2012) Plural forms of organization: where do we stand. *Working Paper*. Centre d'Economie de la Sorbonne (CES), University of Paris (Pantheon-Sorbonne).
- Moran, P. & Ghoshal, S. (1996) Theories of economic organization: the case for realism and balance. *The Academy of Management Review*, 21(1), 58-72.
- Nooteboom, B. (2004) Governance and competence: how can they be combined?. *Cambridge J. Econ.*, 28, 505-525.
- Nooteboom, B., Berger, H., & Noorderhaven, N.G. (1997) Effect of trust and governance on relational risk. *The Academy of Management Journal*, 40(2), 308-338.
- Rindfleisch, A., & Heide, J.B. (1997) Transaction cost analysis: past, present, and future applications. *The Journal of Marketing*, 61(4), 30-54.
- Rooks, G., Raub, W., Selten, R., & Tazelaar, F. (2000) How inter-firm co-operation depends on social embeddedness: a vignette study. *Acta Sociologica*, 43, 123-137.
- Simon, H.A. (1957) *Models of man: social and rational*. New York: John Wiley & Sons.
- Simon, H.A. (1972) Theories of bounded rationality. In C. B. McGuire, & R. Radner (Eds.) *Decision and organization* (pp. 161-176). North-Holland Publishing Company.
- Simon, H.A. (1978) Rationality as process and as product of thought. *The American Economic Review*, 68(2), 1-16.
- Simon, H.A. (1979) Rational decision making in business organizations. *The American Economic Review*, 69, 493-513.
- Simon, H.A. (1991) Organizations and markets. *The Journal of Economic Perspectives*, 5(2), 25-44.
- Tversky, A., & Kahneman, D., (1991) Loss Aversion in Riskless Choice: A Reference-Dependent Model. *The Quarterly Journal of Economics*, 106(4), 1039-1061.
- Tversky, A., & Kahneman D. (1992) Advances in Prospect Theory: Cumulative Representation of Uncertainty. *Journal of Risk and Uncertainty*, 5, 297-323.
- Wathne, K.H., & Heide, J.B. (2000) Opportunism in interfirm relationships: forms, outcomes, and solutions. *Journal of Marketing*, 64, 36-51.
- Wever, M., Wognum, N., Trienekens, J., & Omta, O. (2012) Managing transaction risks in interdependent supply chains: an extended transaction cost economics perspective. *Journal on Chain and Network Science*, 12(3), 243-260.
- Whinston, M.D. (2003) On the transaction cost determinants of vertical integration. *J. Law Econ. Organ.*, 19(1), 1-23.
- Williamson, O.E. (1979) Transaction-cost economics: the governance of contractual relations. *J. Law Econ.*, 22(2), 233-261.
- Williamson, O.E. (1981) The economics of organization: the transaction cost approach. *Am. J. Sociol.*, 87(3), 548-577.
- Williamson, O.E. (1985) *The economic institutions of capitalism*. NY: The Free Press.
- Williamson, O.E. (1988) The logic of economic organization. *Journal of Law, Economics and Organization*, 4, 65-93.
- Williamson, O.E. (1991) Comparative economic organization: the analysis of discrete structural alternatives. *Administrative Science Quarterly*, 36(2), 269-296.
- Williamson, O.E. (1993) Calculativeness, trust, and economic organization. *Journal of Law and Econ.*, 36, 453-486.
- Williamson, O.E. (2000) Strategy research: competence and governance perspectives. In N. Foss, & V. Mahnke (Eds.), *Competence, governance and entrepreneurship*. New York: Oxford University Press.
- Williamson, O.E. (2002) The theory of the firm as governance structure: from choice to contract. *J. Econ. Perspect.*, 16(3), 171-195.
- Williamson, O.E. (2008) Outsourcing: transaction cost economics and supply chain management. *Journal of Supply Chain Management*, 44(2), 5-16.