The Firm vs. the Market
Dehomogenizing the Transaction Cost Theories of Coase and Williamson

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Abstract
It has become commonplace in management research to refer to "transaction cost theory," a joint Coase-Williamson approach to economic organizing. This off-the-cuff usage overlooks their differences by treating Coase as a pre-Williamsonian. I argue that their theoretical frameworks are different, and that they use different theoretical assumptions leading to different views of transaction costs, markets, and the firm. These differences are wide enough that they should be considered two distinct theoretical approaches to the firm. I outline their differences and elaborate on the implications of reconsidering Coase's distinct theory for management and strategy research.

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INTRODUCTION

The transaction cost approach to organizing holds that market-coordinated production can be costly, and that it therefore can be cheaper to integrate transactions in formal hierarchies that supersede the price mechanism (Coase, 1937; Williamson, 1979, 1989, 1993c, 1998, 2010). This fundamental insight, formulated by Ronald H. Coase (1937) and decades later expanded and operationalized by Oliver E. Williamson (1967, 1975, 1996b, 1985) in Transaction Cost Economics (TCE) (Williamson, 1979, 2005), makes the core of a powerful theoretical framework for the study of organizations and organizational forms. Described as an "empirical success story" (Williamson, 1996a: 55), Williamson's formalized approach to transaction cost analysis has attracted a very large number of scholars and has become a dominant perspective in organizational economics.

Most articles using a transaction cost analysis apply TCE and thus disregard Coase's contribution altogether. Others conflate Coase's and Williamson's distinct approaches by treating Coase as but a precursor of Williamson or referring to their works as a "transaction cost theory" that is often still, in essence, TCE. In a typical statement overlooking Coase's distinct theory of the firm, Crook *et al.* (2013: 63) note that "Williamson (1975, 1979, 1985) built on Coase's insights to describe the main attributes that give rise to transaction costs; in doing so, he formalized transaction cost economics (TCE)." The theoretical differences between Coase's and Williamson's respective approaches are thereby wholly overlooked (e.g., Chen, Peng, & Saparito, 2002; Lepak & Snell, 1999; Mahoney & Pandian, 1992; Wiersema & Bowen, 2008; Winter, 1988). Many scholars indeed appear to assume that, as Madhok (2002: 536; emphasis added) puts it, "in spite of their differences *in emphasis*, both Coase and Williamson saw firms and markets as alternate means of coordination, the firm being characterized by coordination through authority relations and the market being characterized by coordination through the price mechanism." It is true that they both assume the firm-market (make-or-buy) dichotomy, without which there would be no theory of the firm, and that the *structure* of

their arguments is the same, as Madhok notes.[1] But the differences between Coase's analysis and TCE amount to much more than differences in degree or emphasis. They are, as I here argue, different theories with different implications and predictions, and should accordingly be applied separately and not conflated.

In this article I argue that Coase and Williamson rely on different assumptions and employ different definitions of core terms: they diverge on what constitutes the market, what a firm is, and thus how to distinguish between the two. Their contributions therefore cannot be reduced to a common transaction cost theory of organization; they are better understood as alternative—even incommensurable—explanations for the firm. Coase and Williamson also diverge on what are the definitions and causes of transaction costs. In brief, Coase sees transaction costs as the *ex ante* cost of discovering prices in the open market and he holds resource allocation in the market and firm constant, such that there can be no allocative efficiency gains created within the firm, to provide a *cost* rationale for the firm and explain its boundaries; Williamson, in contrast, thinks of transaction costs primarily as the *ex post* maladaptation of a transaction as a result of the inability of decentralized (uncoordinated) decision-making to overcome opportunism, and argues that hierarchical governance is a response to a transaction's structural distinctiveness, which makes firms internally *unlike* the market—firms carry out transactions that, due to the transactional attributes, cannot be coordinated in markets (Bylund, 2015c). So while the theoretical approaches of Coase and Williamson rely on similar terminology and purport to solve the same problem, their theories are, in fact, not the same: there are significant theoretical differences between their respective approaches. It is, as a result, problematic to adopt a "Coase/Williamson transaction cost economics" (as in Conner, 1991) and inadequate to say that "Coase (1937, 1988) emphasized the 'frictional' costs, such as those of identifying a potential supplier, negotiating, drafting a contract and monitoring it, etc. [whereas]

[1] Williamson has himself has contributed to the conflation of their respective theories by insisting that TCE is built on Coase's insights (e.g., Williamson, 1981, 1998, 2002, 2005).

Williamson (1975, 1985) transformed the subject by shifting attention to the costs of transactional hazards and of governance arrangements to limit such hazards" (Jacobides & Winter, 2005: 38, fn 34). It is misleading if not false to claim that "Williamson's (1975, 1985) major contribution was to make [Coase's] theory more predictive" (Madhok, 1996: 535). Instead, the aforementioned differences with respect to assumptions and definitions, of both firm, market, and transaction costs, make Coase's and Williamson's respective approaches *incommensurable*.

These differences between Coase's transaction cost analysis of the firm and Williamson's TCE are not simply a theoretical curiosity. I argue that strategic management research, routinely conflating the two analyses *by overlooking and therefore excluding Coase's distinct analysis*, would have much to gain from, first, recognizing the theoretic differences, and, second, apply the rediscovered and distinct Coasean perspective. Where Williamson's TCE emphasizes governance choice for transactions, Coase's approach lends much support for analysis of heterogeneity, firm boundaries, and the institutional structure of production across firms and markets. The Coasean perspective, I argue, allows strategic management scholars to answer a different set of questions, relating, for example, to managerial ability, internal capabilities, firm size, and location of production.

Importantly, Coase's theory, but not Williamson's TCE, places managerial *ability* at the core of what makes a firm and is thus in this sense a precursor of the behavioral theory of the firm (Cyert & March, 1963; Machlup, 1967) and behavioral strategy (Das, 2014; Powell, Lovallo, & Fox, 2011). It is to Coase (1937) the manager's ability to coordinate transactions that decides the firm's boundaries and thus its size (e.g., Penrose, 1959; Wright & Thompson, 1986), that determines internal organization and thus its capabilities (e.g., Coen & Maritan, 2011; Eisenhardt & Martin, 2000; Teece, Pisano, & Shuen, 1997), and therefore is the premier cause of firm heterogeneity (e.g., Lippman & Rumelt, 1982; Nelson, 1991). In contrast, Williamson explains the firm based on the nature of the transaction, especially its critical dimensions uncertainty, frequency, and asset specificity (e.g., Williamson, 1979, 1991a). Because the Coasean firm is ultimately a means to avoid costly price

discovery in the market (cf. Hayek, 1945), firm performance can be closely linked with strategic positioning on the market landscape with respect to these costs which change over time (e.g., Porter, 1991). In other words, from the Coasean perspective the task of management is both introspective, by "directing production" to create value (e.g., Adner & Helfat, 2003; Helfat *et al.*, 2007), and responsive to exogenous factors, by positioning the organized firm with respect to for example industry structure (e.g., Porter, 1980) or leveraging organizational design (e.g., Larsen, Manning, & Pedersen, 2013), and thereby capture market value (Gans & Ryall, 2017; James, Leiblein, & Lu, 2013).

In this article, I review Coase's and Williamson's original writings to substantiate that and how their theories are different. I explain Coase's approach in greater detail, as it has not been recognized as a theory of its own in the literature but has rather been assumed to be fully, or at least sufficiently, represented within Williamson's TCE. I then elaborate on implications for strategy research of conflating their respective theoretical frameworks, and what it would mean to acknowledge and use Coase's distinct theory contribution. In the next section, I argue that the (in)famous and lengthy academic controversy about General Motors' 1926 acquisition of Fisher Body, between scholars elaborating on TCE (primarily Benjamin Klein) and Coase, is more than a disagreement on the application of a theory: it is a *symptom* of the more fundamental theoretic differences, which also explain why Coase persisted in his critical commentary on the TCE explanation of the GM-Fisher Body merger. The following section shows how this claim is supported in the original writings of Coase, which have not properly been applied or understood. I thereafter summarize Williamson's original formulation of the voluminously applied TCE (for reviews of this literature, see e.g., Joskow, 1988; Shelanski & Klein, 1995; David & Han, 2004; Macher & Richman, 2008; Crook *et al.*, 2013), which has rather universally been assumed, as per Williamson's own claims (e.g., 1981, 1998, 2002, 2005), to operationalize and elaborate on, and therefore subsuming, Coase (1937; see also 1960). In the following section, I compare their transaction cost theories and summarize how their assumptions

are different, which underscores that Coase's transaction cost theory has been largely overlooked in organizational economics. Thereafter, I elaborate on how Coase's distinct theory of the firm, as opposed to Williamson's TCE, supports analysis of central issues in strategic management research and practice. As it has been all but overlooked in the literature, Coase's important and interesting insights remain to contribute to our understanding of strategy. I consequently conclude that it should be reconsidered and applied as a separate framework for study and action.

TRANSACTION COSTS, SPECIFICITY, AND SPECIALIZATION

A well-known disagreement of theoretical import between Coase and proponents of TCE relates to the latter's reliance on asset specificity as the "most critical" (Williamson, 1985: 30) transactional dimension (Klein, 2010). Due to asset specificity, in the strategy literature often referred to as resource co-specialization (e.g., Santoro & McGill, 2005), transaction-specific investments create bilateral monopolies that can—and, following Williamson's assumption about expectedly guileful behavior, *will*—be exploited through opportunistic behavior (Williamson, 1993b). The TCE story of vertical integration hinges on the threat of hold-up, which leads to transactors adjusting their behavior *ex ante* to avoid this risk of maladaptation and realignment costs *ex post*. These costs are a major motivation for transactional parties to choose vertical integration over market exchange. Coase's theory, in contrast, does not rely on co-specialization but, at the core, recognizes that there are *ex ante* costs of discovering and using market prices—originally called *marketing costs*—and that the authority relation within firms provides a means to avoid such costs by superseding the price mechanism. This difference is at the core of the long-lasting General Motors-Fisher Body controversy.

The General Motors-Fisher Body controversy

Klein, Crawford, and Alchian (1978) used the 1926 vertical merger between General Motors (GM) and their supplier of automobile bodies, Fisher Body, to illustrate the hold-up problem attributable to asset specificity. Klein (1984) followed up on the case and noted how "contractual difficulties led …

to their merger" (Klein, 1984: 336). The GM-Fisher Body example gave rise to a lengthy debate about the real causes of GM's acquisition of Fisher Body. This debate produced evidence for both of the explanations, which indicates the fundamental conceptual discrepancy between Coase's approach and that of TCE: different lenses were applied to understand and analyze the collected data.

That there in fact was a discrepancy came as a surprise to TCE scholars, who, as Williamson, had assumed that they simply expanded on and operationalized the Coasean system. Klein (1988: 199) states:

> By focusing on the "hold-up" potential that is created when firm-specific investments are made by transactors, or what we (Klein *et al.*, 1978) called the appropriation of quasi-rents, I believed we had elucidated one aspect of the Coasian concept of transaction costs associated with market exchange. … [However,] It is clear from Coase's lectures (Coase, 1988a) that he considers our analysis not to represent an extension of his earlier work, but rather to be an alternative, incorrect explanation for vertical integration.

Klein's comment accurately reproduces Coase's view that their attempted extension was in fact an "incorrect explanation." But Coase did not only critique Klein *et al*. In his lectures (Coase, 1988a, 1988b, 1988c), Coase "takes issue with much of the work that followed from his initial paper" (Bolton & Scharfstein, 1998: 96 fn.91). The reason for Coase's position may explain why the GM-Fisher Body debate continued for over two decades, with Coase on one side (e.g., 2000; 2006; also: Casadesus-Masanell & Spulber, 2000) and Klein on the other (e.g., 1984; 1996, 2007, 2000, 2010; Klein & Murphy, 1997; also: Freeland, 2000). While the explicit matter in dispute was asset specificity's supposed explanatory power in the GM-Fisher Body case, there is more to it than TCE's explicit reliance on asset specificity. Coase had, according to himself, already considered the risk of opportunistic behavior but, after consulting with business men, concluded that "opportunism in connection with asset specificity did not normally pose any problem and certainly not one that would call for vertical integration" (2006: 259). He therefore rejected the idea that became core to TCE and instead developed other explanations. This may seem like a minor if not superficial point, but has

implications of great theoretical importance. To Coase, the supposed operationalization of his theory in TCE had resulted in something far different than what he had originally formulated.

The addition of asset specificity not only extends Coase's framework, but, as we will see, alters its assumptions and undermines the conclusions—it flips Coase's theory on its head. Table 1 summarizes the differences, which will be further explained below. Asset specificity also undoes Coase's intended contribution: Bylund (2015c: 165) argues that TCE, through emphasizing asset specificity, "reintroduce[s] the concept Coase sought to remove from the theory of the firm: specialization."

[Table 1 about here]

Transaction costs and specialization

The relationship between transaction costs and specialization has not been analyzed extensively in the literature. It is nevertheless a core insight in Coase's framework. Bylund (2014) argues that Coase attempted to explicitly break with specialization-based theories of the firm. He further finds that Coase may have gone too far, and that Williamson's contribution is the partial reintroduction of specialization through asset specificity (Bylund, 2015c; cf. Bylund, 2015a). Yet whereas Coase explicitly sought to develop a theory from "linking up organization with cost" (Coase, 1988c: 4)—that is, a cost-based explanation for the firm—he was not impervious to the economic significance of specialization. Transaction costs are to Coase specifically a cost of market exchange, to which specialization is a prerequisite. Indeed, Coase (1998: 73) writes that "specialization is only possible if there is exchange—and the lower the costs of exchange (transaction costs if you will), the more specialization there will be and the greater the productivity of the system." A similar point is maintained by Jacobides *et al.* (2005).

To Coase, therefore, marketing costs (his original term, which I will use henceforth to distinguish Coase's concept from Williamson's) and specialization are not independent aspects of the market but build on and react with each other. Productivity is increased through adopting more intensive

specialization (Young, 1928), which gives rise to higher marketing costs, and this makes exchange more costly and therefore limits further specialization[2]. Marketing costs are in this sense the "dark side" of market-based production, and the firm is a means to come to grips with this cost by reproducing the market's resource allocation by other means (that is, managerial fiat).

The reason specialization is problematic is that it implies overall and intensified resource heterogeneity as new uses are discovered and existing resources are altered or (re)combined. Coase is here, by placing resource heterogeneity at the center of his analysis of the firm, a precursor of the resource-based view (Barney, 1986, 1991; Peteraf, 1993; Wernerfelt, 1984). Resource heterogeneity implies different, and perhaps multiple, specificities and alternative uses that are limited due to resources' non-homogeneity and limited combinability. Resources have different attributes, that is, "characteristics, functions, or possible uses" (Foss & Klein, 2012: 112; cf. Barzel, 1997) that are of value in particular contexts, which suggests that resources in complex environments must be used *together* to achieve the wanted outcomes. Some may be rare yet necessary for a production process to be established and effective, whereas others may be neither. Heterogeneity then "implies complementarity in use" (Lachmann, 1978: 35) and suggests "less substitutability and more complementarity" (Lachmann, 1977: 198-199) in each resource, which greatly increases the cost of finding the right resource combinations and the proper prices; and even more so as specialization increases and heterogeneity becomes more predominant.

Complementarity here refers to the opportunity for joint use with other resources, and thus the interdependent connectivity between resources and the possibility of aligning their individual functions with each other as well as with the production process. A highly complementary resource thus has limited combinability for whatever ends it is used or intended

[2] This limitation to actors' ability to intensify specialization through market exchange is further developed as a "specialization deadlock" in Bylund (2016; cf. 2015b, 2015a).

because it has highly specific uses. While complementarity has attracted some attention in the strategy literature, it is often used on a macro level between firms or in alliance formation (e.g., Chung, Singh, & Lee, 2000), to explain economies of scope or complementarity between capabilities (e.g., Helfat, 1997; Song *et al.*, 2005), or in terms of knowledge (e.g., Postrel, 2002). I will here use the term to describe the complementarity of productive assets (physical capital) that arises due to specialization or development of specific production structures, similar to Postrel (2009).

Substitutability is the overall availability of replacements (such as spare parts), which is an indication of how easy it is to use a factor in a specific production process. Together, complementarity and substitutability provide a framework for assessing resource heterogeneity in production structures and the practical limitations to economic decision-making they bring about. In other words, they constitute a lens through which the make-or-buy decision can be analyzed.

With more specific resources, it becomes necessary to coordinate the use and combinations of such resources to attain specific ends—that is, to produce goods and services effectively and efficiently. More elaborate or roundabout (and consequently more output-generating) production processes rely on specific combinations of specialized factors, which suggest a need for a coordinating mechanism. This coordinating mechanism, as Coase (1937) recognized, is in the market the price mechanism under the competitive profit-and-loss system and, within firms, the authority of the entrepreneur/manager. Whereas the former is efficient it also comes with costly frictions, which can be avoided by managerial direction. This observation is the starting point for Coase's and the modern theory of the firm (Coase, 1937).

COASE'S MARKET AND TRANSACTION COSTS

Coase identified that economic theory provides a "very incomplete picture" (1937: 387) of the

market by not explaining what drives organizing. If the market's price mechanism efficiently allocates resources, as economic theory assumes, then there should be no role for planning in the market; yet production takes place within firms, so planning "is typical of a large sphere in our modern economic system" (Coase, 1937: 388). Coase therefore formulated and attempted to answer questions relating to the rationale for firms, their boundaries, and internal organization.

His pioneering work can be seen as the high point of a period of ample research on organizations in the 1920s and 1930s (e.g., Robinson, 1931, 1934). Influenced by E.A.G. Robinson and others (Jacobsen, 2008), Coase adopts the Marshallian (1890) view that "firms are like markets" or a "mirror image" of market-based production (Loasby, 1990: 120).[3] What distinguishes a firm from market is then primarily the coordinating force: an "entrepreneur" who actively directs factors instead of the price mechanism, which only passively incentivizes atomistic actors to make self-interested maximizing decisions. Coase states that there are costs of "carrying out a market transaction" (1960: 15), especially to discover "what the relevant prices are" (1937: 390), which can make firm formation comparatively less costly. Due to this, a firm organizer (manager) "may get factors of production at a lower price than the market transactions" since "it is always possible to revert to the open market" if this were not the case and, therefore, there would be no cost rationale for the firm (1937: 392).

Heterogeneity and efficiency

The cost to discover prices in the Coasean theory depends on resource heterogeneity, which makes the market landscape more diverse and difficult to navigate. This cost is a burden on decentralized (price-based) market coordination, but does not constitute a market failure—it is only a cost disadvantage to market action. The price mechanism's resource allocation is still efficient even

[3] Robinson (1931) recognizes the value of division of labor (specialization) within firms, but holds that firm size is a function of the efficient division of labor intensity in production. It thus does not differ (much) between firms. See e.g. Bylund (2016) for an argument to the contrary.

though the costs of using it may be very high or even prohibitive. Therefore, resource coordination through managerial direction may avoid unnecessary overhead and thereby provide a cost advantage for that type of transaction. The firm provides a cheaper means to coordinate production processes that can also be coordinated using the price mechanism; its reliance on managerial direction greatly reduces the need for negotiations, the number of transactions needed, and improves measurement of product attributes as well as costs and value contributions.[4] The object of organization and the aim for the entrepreneur is "to reproduce distribution of factors under atomistic competition within the business unit" (Coase, 1988c: 4); consequently, the firm cannot outdo the market in terms of resource allocation—only in cost (by avoiding marketing costs).

Preceding Farrell (1957), Coase's argument assumes two types of efficiency: allocative (price) and technical. The former is maximized by price mechanism coordination as per economic theory and becomes the entrepreneur's problem of "choosing an optimal set of inputs" (Farrell, 1957: 259) under resource heterogeneity. A firm's allocative efficiency is as a result sensitive to errors in assessing factor prices and to uncertainty due to varying supply of substitutes and complements (Farrell, 1957: 260-261; cf. Coase, 1937: 390-391). Overall efficiency is maximized using both technical and price efficiencies, since gains can be made from improved management (technical efficiency), that is, by tweaking the effectiveness of a production process, and by varying input ratios (price efficiency). The efficiency in managerial direction of factors lies in "the extent of a firm's adaptation to a particular set of prices" (Farrell, 1957: 261)—the problem of reproducing the market's distribution of factors in a transaction.

[4] Coase (1960: 15) notes that the costs of market transactions arise because "it is necessary to discover who it is that one wishes to deal with, to inform people that one wishes to deal and on what terms, to conduct negotiations leading up to a bargain, to draw up the contract, to undertake the inspection needed to make sure that the terms of the contract are being observed, and so on." Cheung (1983), following Coase (1937), formulates four "general reasons" for cost savings in the firm: (1) production with a central agent requires significantly fewer transactions; (2) the information cost of knowing a product is greatly reduced; (3) easier measurement of characteristics and attributes; and (4) easier separation of value contributions in collaborative production.

The Coasean firm's reliance on managerial direction of resources—what Williamson (1975) refers to as *hierarchy*—suggests firms are planned "islands of conscious power" (Robertson, 1923: 85; quoted in Coase, 1937: 388). The firm is also subject to an upper limit of efficiency as it cannot outperform the market in terms of resource allocation (Coase, 1937: 394-395), but it benefits from superseding the price mechanism to thereby save on marketing costs. Managerial authority therefore suggests a shortcut for bringing about near-efficient allocation of resources to achieve profitability without going through costly market exchange. So the price system's efficient allocation of resources can, under ideal circumstances, be perfectly reproduced in the firm, while significantly reducing costs through avoiding the "cost of using the price mechanism" (marketing costs). But there are decreasing returns to the management function, a type of bounded rationality, that limit the firm's size. As transactions are added to the firm, the difficulty to allocate resources efficiently through managerial direction without explicit guidance of market prices increases and so does the risk of making errors, and the firm consequently suffers from inefficient resource allocation.

The Coasean firm is thus not very different from the market in terms of its resource structure for productive transactions. It should closely reproduce the market's allocative efficiency, since any deviation would suggest inefficient resource utilization. If the firm uses an allocation of resources internally that is very different from that which would have been produced by the price mechanism, this would also present a significant barrier for reverting to market organizing as relative costs change. Such revertability to market coordination of transactions is necessary, as the role of the manager in Coase's theory is to make decisions on integration or disintegration of marginal transactions in response to changing marketing costs. This, in turn, determines firm size by shifting the boundary for managerial coordination outward (integration) as marketing costs increase and inward (disintegration) as they decrease.

The firm's *raison d'être* lies in the manager's ability to avoid costs of the market while approaching efficient resource allocation. It is a straightforward argument: the price mechanism

produces efficient allocation, but when "every transaction involving the use of another's labour, materials or money [is] the subject of a market transaction" (Coase, 1988c: 4) it is costly to discover the relevant prices. Superseding this mechanism through direction, so that "resources are used dependent on administrative decisions and not directly on the operation of a market" (1992: 714), may be a cheaper solution. The same cost rationale for integrating one transaction, that is, to form a firm, applies to determine the boundaries of the firm, that is, how many transactions are coordinated internally by its management function. Both ultimately depend on the manager's ability to reproduce efficient resource allocation while only indirectly relying on market prices, and thus avoid marketing costs.

Yet Coase's concept of marketing cost suggests a contradiction: it fits poorly with our—and, indeed, Coase's own—understanding of economic costs and allocative efficiencies. Coase correctly holds that "[t]he cost of doing anything consists of the receipts which could have been obtained if that particular decision had not been taken" (1938: 560; cf. Coase, 1973), i.e. *opportunity cost*. Since marketing costs are innate to all market exchange, they should affect also the workings and resulting allocation of the price mechanism. In other words, the efficient allocation of resources in an economy *with* marketing costs should be different from that in an economy that is *not* burdened by such costs but in all other respects identical. But if this where the case, then firms, able to avoid marketing costs, should also be able to find more efficient resource allocations and so outdo the market. Yet this is not Coase's view. He assumes the price mechanism's allocation of resources is efficient irrespective of marketing costs (Demsetz, 2011)—marketing costs are a layer on top of the overall economy that, by imposing costly price discovery, inhibits the ability to reach its cost-efficient state. But marketing costs do not affect the structure of that otherwise attainable efficient allocation, which the manager attempts to reproduce within the firm.

To avoid contradictions we must understand Coase to hold that costs of coordinating production are "inevitably present" yet "differ both across coordination mechanisms and for each of these

mechanism[s] across circumstances" (Medema, 1996: 572). The magnitude of marketing costs depends on the transactor's relative market position, which suggests two dimensions to Coase's analysis. Marketing costs incurred by the general market structure affect all transactions, and the price mechanism therefore allocates resources to their most valued use. But specific marketing costs are also incurred for and affecting individual actors depending on their relative market positions.

A firm must, while aiming to reproduce efficient allocation, coordinate a transaction at lower cost than both (1) competing firms that may suffer from *different* marketing costs and (2) market (price-based) coordination where marketing costs may be low. The latter is the baseline criterium for the formation of firms, and the former is the marketing-cost structure for competitors based on their relative locations on the market landscape as well as their managerial ability. Coase writes (1937: 394) that "a point must be reached where the costs of organising an extra transaction within the firm are equal to the costs involved in carrying out the transaction in the open market, or, to the costs of organising by another entrepreneur [manager]." The maximizing firm will organize internally transactions until the marginal transaction's value equals its opportunity cost, that is, the value of market (price-based) coordination.

The firm's boundary is not noticeable as a "hard and fast line" (Coase, 1937: 392 fn 391; 1988b: 28), since it depends on the focal firm's marketing costs as well as its costs of organizing, the cost structures of competing firms, and the degree to which the firm and its competitors can reproduce the price mechanism's efficient allocation of resources through managerial direction. These costs change over time, which means the boundary is approximate and must be continuously adjusted to changing market data (and expectations of how the cost situation will change) to maintain profitability. There is also a natural limit to how many transactions can be organized within a firm, and this limit is reached sooner than simple cost comparisons predict, since a firm experiences decreasing returns to its management function while there is also an imminent, and likely increasing, risk of the manager failing to reproduce the market's efficient allocation of resources within the firm (Coase, 1937: 394-

395). To Coase, then, the size and performance of the firm are based on managerial ability.

The manager struggles with both attempting to reproduce market allocation of resources and to overcome the limits to his ability to manage transactions effectively. The former aim is facilitated using the market prices that coordinate transactions outside of the firm, which makes the firm indirectly dependent on the market's price system for its survival; it is always "related to an outside network of related prices and costs" (Robbins, 1932: 71; quoted in Coase, 1937, p. 389). The latter may include innate ability, such as intuition and reasoning (Kahneman, 2003)—if not judgment (Brown, Packard, & Bylund, 2018; Foss *et al.*, 2012; McMullen, 2015), but likely improves with experience and can potentially be further enhanced by engaging in training, education, and other types of learning.

Firms emerge within the "specialised exchange economy" (Coase, 1937: 390) so they are specialized to trade in this market. But this "need imply no [further] specialization *within* the business unit" (Coase, 1988c: 4; emphasis added), since firms can do no better than reproduce the price mechanism's efficient allocation of resources(however at lower cost). Any specialization beyond what already exists in the market within the business unit would contradict the assumption of market efficiency. Therefore

> a firm will tend to expand until the costs of organising an extra transaction within the firm become equal to the costs of carrying out the same transaction by means of an exchange in the open market or the costs of organising in another firm. But if the firm stops its expansion at a point below the costs of marketing in the open market and at a point equal to the costs of organising in another firm, in most cases (excluding the case of "combination"), this will imply that there is a market transaction between these two producers, each of whom could organise it at less than the actual marketing costs. (1937: 395)

Coase's theory of the firm revolves around the tradeoff between benefits and costs in the market *and* firms. In the market, there is efficient allocation of resources (+) but it is burdened by marketing costs, which are relatively high (–); in the firm, resource allocation through direction avoids

marketing costs (+) but suffers from organizing costs (due to the manager's bounded rationality), suboptimal resource allocation, and decreasing returns to management (–). The market is allocatively efficient but costly; the firm in contrast maintains technical efficiency (non-costly allocation) through management but struggles to perfectly reproduce efficient resource allocation. As direction is intended to save on marketing costs, the optimization problem then comprises two cost parameters of varying magnitudes: the net cost for using the price mechanism (marketing costs) and the costs of suboptimal allocation within the firm (inefficiency). Firm boundaries are set by the marginal transaction where these costs are of comparable magnitudes.

The calculus of the firm/market boundary

Coase's firm "consists of the system of relationships which comes into existence when the direction of resources is dependent on an entrepreneur [manager]" (1937: 393), who aims to reproduce market resource allocation. Since all firms integrating similar transactions aim to reproduce market allocation of resources, Coase's theory suggests that firms are different in structure due to managers' inability to perfectly reproduce market resource allocation. Thus we have that firm existence depends on the value of organization according to $MktgC - (A_e - A_s) \geq 0$, where *MktgC* is the marketing costs of price mechanism coordination that are avoided in the firm (that is, net cost benefit of integration), A_e is the value of efficient market allocation of the resources in the transaction, and A_s is its value when (suboptimally) coordinated within the firm. The term $(A_e - A_s)$ thus represents the relative inefficiency in the firm's resource allocation due to the manager's bounded rationality, and we assume with Coase that $A_e \geq A_s$ for all entrepreneurs.

To focus on the effects of integration on allocative efficiency, *MktgC* is the net cost of using the price mechanism (marketing costs minus organizing costs). This is justified by Coase's statement that "[a]t the margin, the costs of organising within the firm will be equal either to the costs of organising in another firm or to the costs involved in leaving the transaction to be 'organised' by the

price mechanism [and due to constant experimentation] equilibrium will be maintained" (1937: 404). It follows that the calculus for integrating a first (or marginal) transaction implies that marketing costs in the market and within a firm are held constant. As firms are technically efficient through maximizing efforts by directing authority, only the cost of allocative inefficiency (the difference between price mechanism allocation and managerial ability to reproduce it) is relevant. The manager reacts to changes in relative prices occurring in the market without delay, so there is no temporal aspect to ($A_e - A_s$). "Management proper," Coase (1937: 405) concludes, "merely reacts to price changes, rearranging the factors of production under its control."

The value of integrating an additional transaction, and thus allocating resources through entrepreneurial direction—the rationale for the firm—can be stated as $A_s \geq A_e - MktgC$. Hence, economic justification for firm organizing of any transaction depends on managerial ability to reproduce market allocation of resources and avoided net marketing costs. The condition assumes that marketing costs are positive (Coase, 1960); firm organizing requires that *MktgC* is greater than the inefficiency cost of suboptimal allocation. Firms could not normally equal the market's allocative efficiency, since $A_e = A_s$ implies that $TC = 0$ and thus marketing costs are zero or equal to the firm's organizing costs. (This, in fact, corroborates Coase's (1960) view that organization is irrelevant in a zero-transaction cost world.)

Competition between firms suggests that A_s for any individual manager i is at least the magnitude of that of other managers ($-i$) organizing the same transaction or the firm suffers losses. A firm's *position*, both in terms of physical location and relative other firms and resources (and thus its relative access to market prices), is an important limitation of how successful it can become. Therefore, *MktgC* is not constant across firms but varies with the manager's idiosyncratic abilities to organize transactions. The organizing costs of firms should thus be equal on the margin, but marketing costs may not be. The condition is therefore:

$$MktgC_i - (A_e - A_{s,i}) \geq \max\{MktgC_{-i} - (A_e - A_{s,-i})\} > 0 \quad (1)$$

and, by substitution,

$$MktgC_i + A_{s,i} \geq \max\{MktgC_{-i} + A_{s,-i}\} > A_e \quad (2)$$

To pass the market test, all firms must be of greater net value than market coordination (A_e – $MktgC_i$). Provided extraordinary managerial ability, that is, high levels of $A_{s,i}$ such that $A_{s,i} \rightarrow A_e$, sustained competitive advantage should be attainable as the firm's resource allocation is sufficiently similar to market efficiency and thus the avoided net marketing costs approximate profits. Where $A_{s,i} \rightarrow A_e$ competing firms are increasingly unlikely to outdo firm *i*'s resource allocation, suggesting a strong condition (>) between the focal firm and its competition.

As conditions change so do coordination costs. "Inventions which tend to bring factors of production nearer together, by lessening spatial distribution" (Coase, 1937: 397) affect "both the costs of organising and the costs of using the price mechanism" (1937: 397 fn. 393). Whereas Coase refers to changes that improve managerial technique and therefore allows for larger firms, it is not obvious how an invention affects market and firm coordination, respectively. Inventions that improve communication facilitate more effective coordination of production processes, and reduce the costs in both the market (*MktgC*) and the firm ($A_e – A_{s,i}$) through increasing the value of $A_{s,i}$; A_e is determined exogenously to the firm and remains constant. In order for firms to increase (decrease) the number of integrated transactions—that is, its size—as an effect of inventions and technological change we must have that, for firm *i*, $\Delta MktgC < \Delta A_s$ ($\Delta MktgC > \Delta A_s$) where the changes in *MktgC* and A_s are always of the same sign.

This provides an important clue to Coasean marketing costs. Exogenous shocks, such as inventions, can increase the density (closeness) of factors by overcoming or lessening the cost of distances, which in turn reduces marketing costs (cf. Durkheim, 1933). As resources are more readily available, frictions in the market subside and it therefore becomes easier to discover what the

relevant prices are. Density thus seems to be the reverse side of Coasean marketing costs, which decrease as the substitutability increases and vice versa. This makes price coordination more beneficial through increased efficiency and gains from trade, decreasing relative marketing costs. Substitutability thus decreases the cost advantage for allocatively inferior types of organizing, such as the firm.

Coase (1937) only analyzes inventions that decrease both marketing and organizing costs, and therefore make both firms and markets more cost effective. The outcome is therefore ambiguous, as Coase notes, where inventions bring factors closer together to increase market density. Correspondingly, inventions that increase specialization thus increase distance costs and make the limits of the market more significant (Bylund, 2016). The cost of discovering relevant prices for resources performing more narrowly defined (and therefore more complementary) tasks is higher *if we assume that these resources are dispersed across the market landscape*. Using such complementary yet not very substitutable resources suggests high marketing costs if widely distributed (scattered) and infrequently occurring. But where this is not so, marketing costs remain low, since knowledge of resources available in one's vicinity should be higher, *ceteris paribus*, than knowledge of resources at greater distances.

To summarize, Coasean marketing costs depend on the spatial and economic distance between resources and their relative position. Marketing costs inhibit the effectiveness of efficient market coordination through levying costs on transactions, which could make coordination by managerial fiat less costly. Marketing costs exist because resources are heterogeneous and therefore have a certain degree of complementarity combined with limited substitutability, which is the reason costly measures must be taken to (search for and) discover the relevant prices. Heterogeneity means there are limitations to the variability of input ratios since all inputs cannot fully substitute all other, which in turn suggests that allocative efficiency may be more important than technical efficiency. The viability of establishing and maintaining integrated transactions within a firm depends on high

marketing costs combined with the ability of the entrepreneur to reproduce the market's efficient (price-based) resource allocation. Where marketing costs are very high, this ability is consequently of lesser importance, *ceteris paribus*. Firms consequently compete primarily through their managerial function, which merely (but not perfectly) "reacts to price changes, rearranging the factors of production under its control" (Coase, 1937: 405).

WILLIAMSON'S MARKET AND TRANSACTION COSTS

Building on Coase's basic observation, Williamson's formalized analysis of transaction costs and their effect on economic organizing focuses on the "problem of contracting" (Williamson, 1985: 20). Rather than explaining why there are firms in the market (Coase's objective), Williamson explains *governance choice*—a means to "align transactions, which differ in their attributes, with governance structures, which differ in their costs and competencies, in a discriminating (mainly, transaction cost economizing) way" (Williamson, 1991c: 79). He thus starts with transaction costs, making TCE a framework for comparative institutional analysis where governance choice is how actors economize on those costs for a specific transaction.

Williamson assumes actors' behavior is "*intendedly* rational, but only *limitedly* so" (Simon, 1961: xxiv), and that actors are opportunistic in the sense "self-interest seeking with guile" (Williamson, 1985: 47). Thus, incomplete contracts may bring about relationships of which some actors are tempted to take advantage *ex post*. Specifically, where transactions require supporting up-front investments, such co-specialization make investing parties vulnerable to opportunistic behavior (Williamson, 1975: 7-10, 26-30; 1993b). Where the appropriable quasi-rents are large enough to incentivize opportunistic (mis)appropriation there is a risk that a contracting partner engages in "holdup" (Klein *et al.*, 1978; Klein, 2010). Transaction costs thus only matter if they are of significant magnitudes, because "if transaction costs are negligible, the organization of economic activity is irrelevant" (Williamson, 1979: 234; cf. Coase, 1960).

Market transactions provide high-powered incentives through the price system to respond to

changes in a fluctuating environment; the price mechanism is thus an efficient mechanism for bringing about adaptation to change. The organizational problem arises only where changes require *coordinated* responses, which is generally the case under resource heterogeneity. Self-interested parties may then engage in costly bargaining to maximize their share of any resulting gains unless such behavior is regulated through contracting (a hybrid solution, between market and hierarchy). Whereas the bargaining process is itself costly, "[t]he main costs," Williamson (1991a: 279) notes, "are that transactions are maladapted to the environment during the bargaining interval." Such maladaptation costs arise "[w]hen bilaterally dependent parties are unable to respond quickly and easily" to change, and these costs increase with co-specialized resources since "a condition of bilateral dependency builds up as asset specificity deepens" (Williamson, 1991a: 282). Asset specificity, or a resource's high complementarity and low substitutability regarding a transaction, is thus a predictor of maladjustment/transaction costs (and therefore vertical integration). The "economic relevance of specific [co-specialized] assets is that they create the potential for holdups" (Klein, 2010: 120) and therefore drive maladaptation of transactional relationships. This makes asset specificity the "most critical dimension" (Williamson, 1985: 30), which is why it has also received the most attention in empirical research (Klein, 2005: 438).

The economic problem of adaptation pertains to choosing the most cost-efficient governance structure for a particular transaction. A core hypothesis in TCE states that, in equilibrium, "transactions, which differ in their attributes, are aligned with governance structures, which differ in their costs and competencies, in a discriminating (mainly, transaction-cost-economizing) way" (Williamson, 1991a: 277). The rationale for integration in firms follows from this economizing since the firm is different from the market: it is "characterized by coordination through authority relations" (Madhok, 2002: 536; cf. Simon, 1957). Hierarchy reduces incentive intensity (Williamson, 1991a: 277; 1988) since actors within the firm who are not the residual claimants cannot legitimately claim coordinative gains. Thus, selective intervention is impossible (Williamson, 1985, ch. 6; see also e.g.,

Crémer, 2010; Garrouste, 2010; Saussier, 2010) and this means, in turn, that there is an upper limit to firm size. In contrast, the market's higher incentive intensity as all self-interested actors can directly respond to changing prices entails matchless autonomic adaptation to changes, but the downside is that it suffers from costly and sometimes impossible coordinating due to a lack of administrative controls (cf. Simon, 1957). Governance choice is therefore a transaction cost minimization problem taking into account the opportunism costs in the market and the costs of bureaucracy in formal organization (Williamson, 1985: 148-153).

In his work, Williamson focuses on how transactional attributes, primarily uncertainty, frequency, and asset specificity, affect governance cost, but not comparative allocative efficiency under different forms of governance. He even dismisses the concern of resource allocation that is so central to Coase's analysis, saying "economics was [earlier] too preoccupied with issues of allocative efficiency, in which marginal analysis was featured, to the neglect of organizational efficiency, in which discrete structural alternatives were brought under scrutiny" (Williamson, 1991a: 177). He thus assumes allocative optimality as transactions are aligned with their appropriate governance structures. Resources with very high relative productive value in a particular transaction will tend to be used in that maximizing transaction and the appropriate governance structure will be chosen as "such specialized assets lose productive value when redeployed to best alternative uses and by best alternative users" (Williamson, 1991a: 282). The issue, again, is one of choosing the maximizing (by which is meant, transaction cost minimizing) governance structure for the given transaction, not the allocation of resources in carrying out the transaction. To Williamson, therefore, the efficiency problem in the firm is primarily technical and not allocative, a clear departure from Coase.

The implication of Williamson's analysis is that, since allocative inefficiency is not a relevant concern (at least not a primary such), there must be significant *structural* differences between discrete governance alternatives. In other words, transactions that are of a certain kind are better organized using a particular governance structure because transactional attributes determine the

proper governance choice through transaction cost minimizing. Resources with comparatively high productive value in their alternative uses, that is, where the value difference between best and second-best uses is *small*, have low complementarity, high substitutability, or both. They are either easily (re)combinable with other resources and therefore have a high relative value in their second-best uses, or have many comparable replacements readily available in the market, making the value difference between uses relatively low. If resources are always used in their highest productive value, as they are in equilibrium, the relative productive value of the highest *alternative* uses, with the difference being the appropriable quasi-rents, predicts governance form: low complementarity or high substitutability suggests market coordination through the price mechanism, while high complementarity or low substitutability suggests the resources will be used in a hierarchy.

Transaction costs are then a function of asset specificity in the form of substitutability and complementarity: the higher the complementarity and lower the substitutability, the greater the specificity and therefore the higher the transaction costs. As the productivity of any resource is higher the greater is its specificity (Smith, 1976; Lachmann, 1978), an advanced, productive market—as Coase (1937) assumes—should employ highly specialized resources. These have high complementarity and must therefore be highly substitutable to be coordinated through market prices. If they are not highly substitutable, then there is high risk for opportunism and thus the transaction costs are high—which suggests hierarchy should be the preferred governance choice. We should then in markets (non-hierarchy governance) expect to see transactions that use or depend on resources that either (1) have low complementarity (which implies substitutability) or (2) have high complementarity combined with high substitutability (which makes them easily replaceable through exchange, but would imply a highly competitive market with standardized products—much like the perfect competition model). Following the logic of Williamson's argument, then, vertical integration is the economizing choice in equilibrium for transactions that depend on resources with *high complementarity combined with low substitutability*.

Williamson recognizes that the nature of a resource may change as it is being used. TCE thus allows the specificity of a resource to change over time so that it can be marketable and substitutable when acquired, whereas its use in production may radically increase its specificity. Under such "fundamental transformation" (Williamson, 1985: 61-63, 211-212) a bilateral trading relationship develops during the course of carrying out the transaction because parties make specialized investments specific to the transaction that have much lesser value in alternative uses. Resources that are substitutable *ex ante* may therefore be much less so *ex post*, for example when using standardized (highly substitutable) parts in assembling unique, integrated machinery. TCE predicts the equilibrium governance structure in the latter stage, when resources may have undergone a fundamental transformation, since this is where maladaptation costs arise: actors aim *ex ante* to minimize the risk *ex post* by choosing the transaction's appropriate governance structure.

Williamson's "discriminating alignment hypothesis" suggests that high asset specificity should be interpreted as high complementarity combined with low substitutability, as was done above. Consequently, different types of transactions, based on the transactional attributes, take place within markets and hierarchies, respectively, so resource allocation within firms *cannot* be the same as in markets. A transaction characterized by high substitutability will be carried out under market organizing, whereas low substitutability—even if this arises over time through resources undergoing a fundamental transformation—means the transaction will be organized in hierarchies instead. At least in equilibrium, transactions involving high asset specificity are integrated in firms while transactions that do not depend on specific assets are coordinated through markets. Thus, the structure of transactions that are organized within firms, because they depend on lowly substitutable resources, makes them impossible to organize in the market. The limitation lies with the market, since it cannot deliver high substitutability for the co-specialized resources that therefore *must* be used within hierarchies. If they are not within hierarchies, the risk of opportunistic behavior will cause transactions to become maladapted and they will thus not maintain profitability. If, on the other

hand, market-based exchange offered high substitutability, those transactions would not be organized in firms since transaction costs would be low. Consequently, there would then be no firms.

As a market becomes more specialized and so more productive (Smith, 1976; Young, 1928), resource heterogeneity and thus complementarity increases. While Williamson's analysis focuses on equilibrium conditions (but allows change in asset specificity over time and even as a result of use through the fundamental transformation) and predicts equilibrium responses to such changes, we would expect more overall integration in complex markets with greater resource heterogeneity to the degree increased complementarity is not counterbalanced by increased substitutability. Such increased substitutability could be the result of, for instance, intensified competition between firms producing equal or highly similar products; that is, perfect competition.

The evolution of market structure in terms of overall specialization provides an interesting basis for understanding Williamson's theory of integration in the market. It allows us to plot equilibrium responses to coordinating transactions depending on complementarity and substitutability levels of resources used. Figure 1 illustrates the equilibrium governance choice (hierarchy, hybrid, and market) for a given transaction in terms of the relationship between degrees of substitutability and complementarity: as substitutability increases (decreases) the need for controlled coordination decreases (increases), but with increasing (decreasing) complementarity this need increases (decreases).

In Figure 1, the present market level of supported complementarity is represented by the value *g* (dashed line), at which are all relevant combinations of substitutability and complementarity in the current production processes in the existing state of the market. As market complexity increases, which tends to be the case under economic growth (increased specialization), *g* shifts to the right. But within the current market equilibrium, the degree of complementarity remains constant as there is neither growth nor new innovation: only substitutability is thus a relevant dimension for Williamson's transaction cost analysis of governance structure. Asset specificity can be analyzed in

this simplified form assuming constant resource heterogeneity (as is the case in equilibrium). For any given market or transaction, however, complementarity and substitutability should increase in a sequential manner with time.

[Figure 1 about here]

Market coordination, as per TCE's predictions, depends on high resource substitutability, which prohibits high degrees of heterogeneity and uniqueness. This does not imply that all resources to be traded in the market must be homogenous, only that some non-trivial degree of substitutability is required for price mechanism coordination to be advantageous in terms of transaction cost economizing. As resources become overall more heterogeneous we should expect transactions to become more fully integrated. (Williamson's conjecture that "in the beginning there were markets" (1975: 20) supports the direction of this process away from rudimentary substitutability of resources in original markets.)

However, a minimum level of substitutability for market coordination is not applicable where a transaction is frequently occurring, which means it relies on non-specific or commonly available (that is, highly substitutable) resources. For infrequent transactions "[i]ncentives for trading weaken" (Williamson, 1979: 252) with idiosyncrasy (that is, rare resource combinations) and therefore a hierarchical governance structure would be economically superior. However, infrequent transactions that use resources commonly available in the market could still rely on market-based governance. But such transactions, if they use a new combination of readily available resources, may require hierarchical governance due to the idiosyncratic configuration, combination, or organization of the resources. Competitive pressures undermine the transaction's idiosyncrasy as other actors imitate for profit and thus compete with the original transaction (cf. Schumpeter, 1934; Hayek, 1978; Bylund, 2016). In other words, substitutability increases as competitors attempt to copy the transaction to gain a share of the profits, which undermines both the profitability of the incumbent firm and its transaction-cost rationale for hierarchical organizing of the transaction. So firms formed around

idiosyncratic transactions that rely on non-specific or fully substitutable resources should not be long-lasting, since they are comparatively easily emulated by would-be competitors.

This conclusion contradicts Coase's analysis except in cases where the transaction undergoes the fundamental transformation, which reintroduces asset specificity and therefore decreases substitutability and raises transaction cost levels. The latter is in line with TCE's predictions and, again, suggests that the firm's internal resource allocation is structurally different from the market's since firms and markets organize transactions with different attributes. This is not a matter of a given transaction simply being coordinated by a different means, as with Coase (1937). Instead, firms, to Williamson (1991a: 270), are "not merely extensions of markets, but employ different means" and indeed coordinate different types of transactions.

Akin to Coase's assertion about the distinctive nature of firms, in TCE the hierarchical mode of governing transactions means that "firms can and do exercise fiat that markets cannot" (Williamson, 1995: 43). A firm's authority relation is essential to governing transactions with idiosyncratic (and, especially, co-specialized) resources (low substitutability), since "[r]ecourse to fiat provides better assurance that adaptations […] will be performed in a coordinated way" (Williamson, 1991b: 164). The market, lacking a centralized authority to coordinate production structures, is then at a significant disadvantage due to the risk of costly opportunism.

COMPARING TRANSACTION COST ANALYSES

The previous sections summarize the individual approaches of Coase and Williamson, and suggest that there are greater differences than commonly recognized. This section elaborates on two aspects that signify the differences between their approaches and discusses their implications, as summarized in Table 1 above.

The firm, the market, and specialization

The Coasean view of the firm does not rely on differences in specialization intensity to explain or differentiate between types of governance (firm or market). In contrast, the entrepreneur-coordinator

(manager), the only "specific asset" in Coase's analysis of the firm, is able to switch—at low cost or instantaneously—between firm organizing and market contracting as marketing and organizing costs change. Resource structure is largely the same whether the transaction is organized through market contracts or within the firm, and transaction-specific (co-specialized) investments make no meaningful difference. Switching between firm and market only replaces one coordinating mechanism with another. The transaction's resource structure within the firm will differ from that of the market only because of the manager's bounded rationality: if the firm is at all different, it is suboptimal in terms of resource allocation. This means asset specificity *cannot* be a driver of integration: it is in fact "not an important factor influencing the structure of industry" (Coase, 2006: 259).

Whereas Coase holds that asset specificity does not explain the existence of firms, he does not reject that there are specific assets. Yet there is an implicit contradiction in seeing resources as both specific (complementary) for an end and yet easily substitutable (and thus traded in the market). With both high complementarity and high substitutability, resources and productive structures cannot be specific to certain ends; rather, they must be "like drops of water" (Lachmann, 1947: 114) or fully substitutable. But this, in turn, suggests that production is carried out in simple processes and not using roundabout and elaborate structures in the "specialised exchange economy" that Coase (1937: 390) assumes. In advanced economies with a high degree of specialization under the division of labor we typically find "complex, multistage process[es] unfolding through time and employing rounds of intermediate goods" (Foss & Ishikawa, 2007: 755). Complex production structures are organized toward specific ends, and therefore imply a comparatively high level of complementarity and, presumably, a low level of substitutability.

The Williamsonian firm, in contrast, integrates transactions that depend on co-specialized, transaction-specific resources that pose a risk for opportunistic behavior. As a result, the resource structure of transactions within firms must be different from that in transactions organized through

market contracts. If asset specificity, which implies both high complementarity and low substitutability, means a transaction cannot be organized through market contracting but requires integration in a firm, then this suggests that resources within firms are more specialized than those in transactions coordinated by market contracts. Williamson's firm, allocatively efficient but suffering technical suboptimality, is then structurally distinct from production coordinated through the price mechanism, whereas Coase's firm, as we have seen, is similar to and even strives to be structurally identical with market transactions.

It follows that the manager of a Williamsonian hierarchy *cannot,* as Coase (1937: 392) maintains, find it "always possible to revert to the open market." Disintegrating a Williamsonian, high-asset specificity (co-specialized) firm means abandoning the integrated transaction for another, which uses resources of lesser specificity. Asset specificity makes the transaction subject to opportunistic behavior, so it must be very difficult to coordinate the firm's transaction in the market using the price mechanism—unless or until the specific assets have become salable in a market, which makes them much less specific (increased substitutability). The appropriate governance structure follows directly from economizing on transaction costs, and therefore transactions within the firm cannot easily be switched to market coordination (or vice versa). This is the reason TCE predicts such transactions to be integrated in the first place. The choice of governance structure in TCE is thus not really a choice—rather, it is a given depending on the particular transaction type, especially if it uses co-specialized (low-substitutability) resources, following the discriminating alignment hypothesis. The cost of organizing such transactions without hierarchy is simply too high, and predictably so.

But predicting that firms are organized around co-specialized resources, as TCE does, raises the question of how specialized resources come to be in the first place. If they are in fact incompatible with, and therefore not traded in, the market, then they must be created somehow. There are two main ways in which such highly specialized resources can be created. First, the "fundamental transformation," in which market-traded resources are irreversibly (or reversible only at considerable

cost) employed as part of a unique or transaction-specific resource. Such transactions would, as per TCE's prediction, either take place within firms because transactors realize the risk of opportunistic behavior, or they would fail due to it. Second, specialized resources could be innovated, which means they are created (such as a new machine or even a material) with a certain transaction in mind and are therefore likely to be highly specific if not idiosyncratic. But since such specificity generates a transactional bilateral monopoly and therefore induces opportunistic behavior, fundamentally transformed assets and innovations cannot be the result of transacting in the market but must take place within a firm. The potential for opportunism in both cases means actors, realizing this risk, would either not engage in such trade (or, at least, not make such investments) or vertically integrate *in order to* make the investments that cause a fundamental transformation without risk for holdups.

Only when the substitutability of these resources reaches the point where markets can be supported, perhaps through a process of competitive discovery (Hayek, 1978; Bylund, 2016), can the assets be coordinated through market contracting. If this is the case, then the TCE prediction must be that new co-specialized resources are created *within* firms, and only at a later time may be extended to markets. In other words, firms precede markets rather than the other way around {Bylund, 2015 #2112}. This is the opposite of the process imagined by Coase, who sees that "specialization is only possible if there is exchange—and the lower the costs of exchange (transaction costs if you will), the more specialization there will be and the greater the productivity of the system" (Coase, 1998: 73). Coase's firm, in turn, attempts to reproduce this, meaning markets precede firms (as is also the order in Williamson's conjecture).

The implied order of events in Coase and Williamson are consequently exact opposites. Coase's firm attempts to reproduce the market's efficient resource allocation (and thereby save on the marketing costs burdening decentralized market exchange). Williamson's firm instead does what markets simply cannot: innovate or create new and more specialized productive resources (Bylund, 2015c, 2016).

Causes of transaction costs

Coase does not identify a particular cause of marketing costs that leads to organizing transactions in firms, but refers only to the costs of "discovering what the relevant prices are" (Coase, 1937: 390). Where a manager can organize transactions cheaper than in the market, a transaction is expected to be integrated in a firm. Williamson, in contrast, finds that asset specificity (low substitutability) is "the most critical dimension" of transactions because it gives rise to opportunistic behavior (and the maladaptation that springs from it), the prohibitive cost (risk) of which drives vertical integration. As we have seen, to Williamson (1985: 30), "[p]arties engaged in a trade that is supported by nontrivial investments in transaction-specific assets are effectively operating in a bilateral trading relation with one another," which gives reason for non-investing parties to the transaction to engage in opportunistic behavior. Thus, Williamson's thesis: the risk of opportunistic behavior induces actors to vertically integrate a transaction to economize on maladaptation costs that may arise *ex post*. In equilibrium, transactions, given their specific attributes, are perfectly aligned with governance structures to economize on transaction costs.

Put differently, the holdup problem due to asset specificity exists only in disequilibrium and where actors fail to realize this risk (or its magnitude) *ex ante*. Otherwise they would choose to first vertically integrate the transaction and then make the necessary investments. Even with the fundamental transformation, where perhaps many small investments create a bilateral trading relationship *over time*, actors should at some point realize the imminent risk for holdup as the transactional specificity of the resource increases—and then, as soon as this is expected, make the necessary arrangements (integrate the transaction or refrain from further investment). But this requires that actors are not only guileful and self-interested, but that they know they are—and that others are too. If there is a reasonable level of trust (cf. Williamson, 1993a) between transacting parties (that is, if we relax Williamson's behavioral assumption), the TCE story does not seem to hold (Lado, Dant, & Tekleab, 2008; Zaheer & Venkatraman, 1995).

This issue of trust is not a novel observation, but it suggests a peculiar issue of theoretical imprecision in a pre-equilibrium setting. If transacting parties are knowingly and guilefully self-interested, they would not make specific investments unless the transaction is first integrated. But then their choice is not actually for governance structure, which is a given for transactions requiring co-specialized investments. The actual choice is whether to make such investments in the existing firm because it would never be a reasonable course of action in the market. The choice then amounts to *whether to carry out the transaction* that to be executed requires a certain governance structure because of the attributes of the transaction, a decision that depends on the parties first settling on the terms for integrating in a firm. This is an entirely different problem, which requires further research.

Interestingly, both Coase and Williamson rely on the effects of specialization in analyzing economic organization—but in different ways. Williamson's emphasis on asset specificity is a case in point. But whereas Williamson's firm is predicted for and created around the need for highly transaction-specific resource investments, Coase's firm "need imply no specialization" (1988c: 4) and likely *cannot* be created primarily around the productivity gains from utilizing (co-)specialized resources. Coase's point of departure in the "specialised exchange economy" implies that the market is already specialized, but this specialization does not to Coase have any direct explanatory power for economic organization. In fact, Bylund (2014) argues that Coase practically *dismisses* specialization as a rationale for the firm (see also Bylund, 2015a), which may explain Coase's lengthy participation in the GM-Fisher Body debate. But Coase's marketing costs still depend on specialization as he assumes complementarity, and thus costly price discovery, while rejecting any significance of factors' substitutability in predicting vertical integration.

These differences between the transaction cost theories of Coase and Williamson means they are, in their logic, incommensurable. Williamson's theory of integration entails structural disparity between markets and firms *that depends on specialization*. Specialization takes place within or through firms, and in this sense the TCE argument—while drawing from Coase's (1937, 1960)

identification of marketing costs and the firm as a means to economize on them—contradicts Coase's very starting point. This difference is further underscored by the opposing directions of their respective explanations, as discussed above, where Coase sees specialization as emerging in the open market and then is reproduced within firms, whereas according to Williamson's TCE specialization cannot occur in the market due to the holdup risk—it must be created within firms.

IMPLICATIONS FOR STRATEGY

We have identified theoretical differences between the two main approaches to the transaction cost analysis of the make-or-buy problem. There are implicit yet fundamental differences between how Coase and Williamson view both the market and the firm, and the nature of the cost that determines the boundary between them. This difference goes much deeper than Coase not "buying" the asset specificity argument or their theories having different emphases, as is often claimed. Rather, as shown above, the theories employ different and incommensurable assumptions. They should therefore be considered two distinct approaches.

It is true that both Coase and Williamson see transaction costs as frictions (Mahoney & Qian, 2013), but they observe *different* frictions and rely on different logics with respect to the causes of firm organizing. Consider, for example, the difference between how Coase and TCE would react to the Resource-Based View's prescription that a firm may generate sustained competitive advantage by securing productive resources that are valuable, rare, inimitable, and substitutable (Barney, 1991). TCE, in Williamson's original formulation, would predict firms to be created around such unique resources only if they give rise to potential hold-up, but otherwise such transactions would be carried out in the market. Coase, in contrast, would consider the acquisition and use of such resources by the firm as parts of the firm's (manager's) strategy, which thus partially explains the firm's profitability and boundaries—and firm heterogeneity. But neither resources nor managerial strategy are a raison d'être for the firm: the reliance on management (instead of the price mechanism) is, and therefore the specifics of a firm's management determine both its boundaries and internal organization.

The differences between Coase's theory and TCE are relevant because the theories generate different explanations, predictions, and prescriptions with respect to firm organizing, management, and strategy (as the RBV example illustrates). Yet the theories are often conflated in the literature. There are at least two reasons for this. First, Williamson claims to have built his theory on Coase's core insight, which suggests there should be little to gain from studying Coase's work alone instead of Williamson's further elaborated version. And second, the dominant position of TCE in the management literature has placed Coase's work on the sidelines. As Foss (2005: 5) notes, "[f]ew issues of top journals [in strategic management] are published without at least one paper mentioning and perhaps using TCE." Indeed, TCE has been immensely influential and widely applied in research, and has been called an "empirical success story" (Williamson, 1996a: 55). This theory's vast adoption in the literature alongside the presumption that Coase's theory was a precursor but not a distinct theory, that Coase's original work primarily laid the foundation for TCE, has led to Coase's particular contribution to organizational economics has been largely overlooked.

The conflation of the theories is problematic because Coase's distinct theorizing is not only overlooked and misunderstood, and thus "much cited and little used" (Coase, 1972: 63), but should appear highly relevant to management and strategy. Coase offers a management-centric explanation for the firm, which directly relates firm size, internal organization, and performance differences with the specific cost structure of the market landscape and the firm's strategic positioning on it. These, in turn, are the result of the strategic management of the firm, and thus can be explained by the ability of management as well as the organization overall to properly assess and exploit variations across and changes within markets and industries. The theory also recognizes that the factors and processes that determine firm formation, the firm's boundaries, and its internal organization—including management—are institutionally embedded and "extremely complex" (Coase, 1992: 718), and thus supports a dynamic explanation of managing and organizing production (Porter, 1991). As compared

to Williamson's highly streamlined and formalized model, Coase's theory of the firm offers a straightforward logic where the variables and measurements are much less precise. While this means its predictions are not as exact, it also allows for contextually dependent explanations, inclusion of unobservable variables (an important aspect of strategic management research (Godfrey & Hill, 1995)), organizational learning, and managerial judgment and interpretation. Rather than a problem, this should make Coase's transaction cost theory of the firm *better suited* for strategic management theory than is TCE. As a consequence, overlooking Coase's contribution could have left strategic management at a comparative disadvantage. Reconsideration of Coase's original theory can uncover valuable but forgotten explanations and inspire new avenues for strategic management theorizing and practice.

Implications for theory

Coase adopts the firm (or, really, the means of coordination, that is, the price mechanism and manager, respectively) as unit of analysis and treats transaction costs as an exogenous influence on the firm. Within the firm, in contrast, the ability of management determines how well the firm fares. As a result, Coase's argument is conducive to studying issues central to strategic management and the role of management, including firm heterogeneity, firm size, and determination of firm boundaries.

Firm heterogeneity. Firms are the result of specific marketing costs and the manager's ability to reproduce the market's allocation of productive resources. As these costs arise due to the difficulty of discovering "what the relevant prices are" (Coase, 1937: 390), they vary across economic and geographical space. Consequently, different industries and locations have different marketing cost structures, which in turn give rise to different market structures. For example, densely populated areas such as cities (Jacobs, 1985) provide producers with more information on prices, which thereby lowers the cost of market organizing and should, consequently, see fewer or smaller, more narrowly

focused firms. This means firms in rural or comparatively less densely populated areas should have comparatively higher costs of price discovery, *ceteris paribus*, and we should therefore see firms that are overall larger and more vertically integrated. Put differently, firms in densely populated market spaces should be smaller and less diversified, and they would also be more dependent on specific managerial abilities. Firms thus differ in size across the market landscape as a result of the marketing cost structure.

Similarly, industries or regions with comparatively better access to and use of information technology see lower costs to both market and firm organizing. Technologies that affect one much more than the other, will therefore have a predictable effect on market structure. For example, access to e-trading platforms like the Internet or Amazon.com lowers the cost of market organizing of transactions but has little effect on managerial ability and firm capabilities, and should thus lead to overall smaller firm size. Similarly, technology that primarily lowers the cost of management would lead to fewer but larger firms (see below).

Extending Coase's reasoning, the emergence of firm clusters could be explained by the radically decreased cost of price discovery within their industry due to co-location. It would also explain why clusters such as Silicon Valley, despite bidding up prices for factors of production, persist and grow—and even attract small startups (that are presumably more price sensitive). A Coasean analysis would explain such growth, despite rapidly increasing factor prices, with the comparatively much lower cost for discovering the relevant prices for inputs—it is easier to discover or estimate the actual (market) value of a resource, for example a programmer skilled in a particular technology, within the economic context of Silicon Valley. It is thus, from a Coasean perspective, a strategic marketing cost decision whether a firm should locate in Silicon Valley or, for example, in a Midwestern town with much lower operating cost.

Firm size. In contrast to TCE, Coase sees as central to understanding the firm the ability of management to organize transactions at a level of efficiency comparable to that of market allocation

of resources. Consequently, the size of the firm, by which is meant the number of transactions it organizes, is primarily a function of managerial ability. This suggests not only that more highly skilled managers would tend to lead larger firms, but also that firms choose growth strategy in line with their managerial ability. For example, firms with professionalized management (*qua* management, thus management skills independent of specific industry expertise) should benefit from choosing a diversification strategy by expanding in accordance with expected organizational or productive synergies. Likewise, firms in which managerial ability is more closely tied to a certain kind of transaction (for example, an industry, or a type or scale of production) would benefit from a specialization strategy by pursuing growth through integrating similar transactions.

The ability to properly organize the transactions is further affected by the choice of specific decision hierarchies or organizational forms, and with management's ability to both structure, implement, and lead those structures. Professionalization of management, including management training, should thus be an effective means to facilitate growth in both scale and scope of the firm. Alternatively, or in conjunction, the firm can invest in implementing sophisticated methods and technologies for internal monitoring, reporting, and control, which increase managerial ability and therefore support growth. In fact, we can with Coase even predict that improved management should drive firm growth by allowing the firm to integrate more transactions profitably. As Coase (1937: 397) notes, "[a]ll changes which improve managerial technique will tend to increase the size of the firm."

Of course, managerial ability is at the same time moderated by the firm's specific costs of market exchange—the level of price discovery cost in the market in which the firm operates. Firm size depends also on the strategic positioning of the firm in the market such that marketing cost savings through management can be exploited.

Firm boundaries. Coase conceives of typical firms as organizing several transactions, where the firm's boundaries are determined by the manager's cost calculus for the marginal transaction. As

discussed above, the marginal transaction is determined by the cost savings due to superseding the price mechanism and the organizing costs due to, primarily, diminishing returns to management. Thus, the decision to integrate or disintegrate a transaction is based on the manager's perceived ability, the marketing cost situation, and the behavior of competing firms, the latter constituting both a lower threshold for effective cost savings and affecting, albeit indirectly, price discovery. As these variables change, or they are expected to change in a certain manner, the manager may reconsider previous decisions and thus a firm's boundaries will change over time. Making continuous adjustments to the firm's boundaries is an important aspect of Coasean management, as the firm to be successful must be properly positioned with respect to marketing costs, which includes both spatial-economic positioning and exploitation of managerial abilities. As marketing costs are different at different times and in different locations, and expectations of their magnitudes change, firm boundaries vary over time as well as with location characteristics (economic, institutional, etc.) as a result of strategic positioning.

Coase's analysis here also allows for diversification as a strategy within the firm, such that the manager can choose to organize a disparate set of transactions. Diversification can be used to exploit high levels of marketing costs in certain locations or industries, but, as mentioned above, may also be used to take advantage of synergies in the firm's internal organization and management structure. As managerial skill, marketing costs, or competitor behavior change, the profitability of organizing individual transactions may change and thus cause new decisions with respect to those transactions, which affect the firm's boundaries. Consequently, it is conceivable that a firm as a result transitions from one to another industry, as an intentional strategy or as a result of incremental adjustments over time.

Implications for practice

The Coasean analysis also offers insights that should be useful to practitioners and contributes to developing best practice. For example, conceiving of marketing costs as exogenous to the firm yet

with implications on firm organizing helps managers formulate strategies with respect to search and long-term contracting. Under high degrees of uncertainty about suppliers and prices, or about the effectiveness of specific institutions (Bylund & McCaffrey, 2017), Coase's analysis suggests that the firm should invest in market search to discover alternatives. Long-term contracts would be a proper strategy where relevant prices appear difficult to discover.

Where the economic situation or market search suggests that relevant price information is difficult to attain, and thus marketing costs are high, the firm benefits from expanding at an increased rate to exploit the cost advantage of integration. Managers may thus use changes in the cost situation, perhaps as indicated by varying degrees of economic density or the use and availability of communications technology, as signals for when and where to invest or divest. Decreasing marketing costs, indicated by decreasing profits and divesting competitors, suggests the structure of management within the firm is insufficiently effective—that the difference between internal allocation and market allocation is too great—and that the firm's managerial ability must be improved. Alternatively, the firm can identify transactions that have become comparatively ineffective in order to outsource/divest those and thus reduce the size of the firm. Per Coase's analysis, changing marketing costs affect the role and effectiveness of management, and thus the size and boundaries of the firm, but not necessarily the technological or capital structure for specific production processes.

Similarly, the firm's market positioning should take into account the current level and expected future changes to marketing costs that affect the firm. As those costs vary across time and space, firms are differently affected based on strategic positioning and can thus use marketing costs as a means for improving their market position or even gaining competitive advantage. This ties into the creation of strategic alliances and long-term contracting to control marketing cost impact. But it also relates to the use of market analysis and information gathering to overcome the cost of price discovery. The impact of technological development and adoption should also be considered, both

internally and with respect to external price discovery, since proper positioning with respect to certain technologies can be a cost advantage for the first mover (and a disadvantage for late-comers).

Furthermore, as the effectiveness of the firm's organizing of transactions to a significant extent depends on managerial ability, Coase's theory suggests advantages (lower organizing costs) may be attainable by actively partaking in the market for managers through continuous evaluation of the effectiveness of the firm's existing management structure and opportunities to improve those structures, for example by using the expertise of management consultants or hiring managers with specific abilities. But it also includes investing in formal managerial education and human resource management to increase management effectiveness and thereby facilitate lower organizing costs and, consequently, growing the firm.

CONCLUSION

Coase's theory is often conflated with Williamson's TCE, which means his distinct contribution has been all but forgotten. Yet the Coasean theory of the firm is distinct and allows for a much more specific analysis of firm formation and its evolution over time within a varied and varying market context. It should be much more useful for strategic management research.

I argue in this article that the respective transaction cost theories of Coase and Williamson are much more different than is typically recognized. Their theories have different units of analysis, they rely on different definitions of core terms (firms, markets, transaction costs), and use different logics. While Coase studies the firm as a collection of transactions organized by a manager whose ability determines the firm's boundaries, Williamson holds that the nature of a transaction determines what form of governance should be adopted: hierarchy, hybrid, or market. Perhaps more importantly, the respective theories use opposing logics with respect to the evolution of the market, where Coase sees specialization as occurring in the open market to then be reproduced within firms while Williamson's TCE precludes specializing without hierarchical governance. The theories are incommensurable.

Once we acknowledge the differences between Coase's and Williamson's theories, their

usefulness in theorizing as well as applied research and management practice should increase. This should also make it clear how the distinctly Coasean theory is suited for research in strategic management by allowing scholars to ask and answer different or more nuanced and interesting questions relating to the rationale, boundaries, and internal organization of the firm. It also places great emphasis on managerial ability as *explanans* for firm heterogeneity and performance.

Recognizing that Coase's cost theory of the firm is distinct from Williamson's TCE, as I have argued and outlined above, is not intended as a critique of the latter and it is also not intended to belittle the "empirical success story" (Williamson, 1996a: 55) that is Transaction Cost Economics. It is instead an opportunity to rediscover an existing but largely overlooked theory that may further enhance research in organizational economics.

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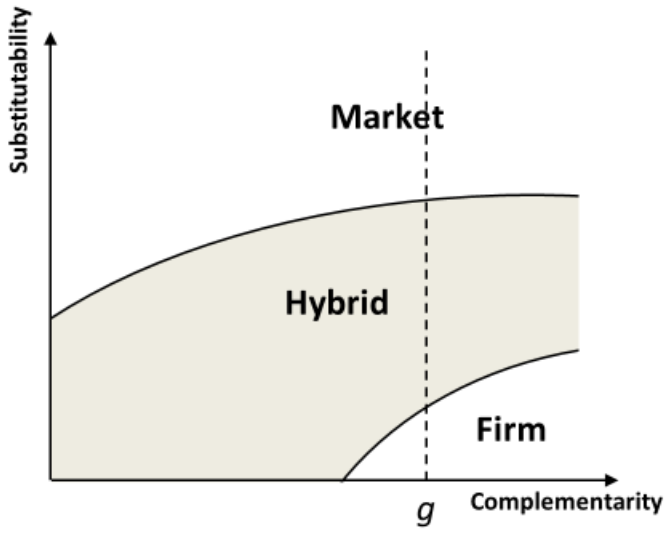

Figure 1. The discriminating alignment hypothesis with asset specificity expressed as substitutability and complementarity

Table 1. Coase's and Williamson's transaction cost frameworks

	COASE	WILLIAMSON
Unit of analysis	Firm	Transaction
Transaction costs	Cost of price discovery	Adjustment cost due to opportunism (both in order to avoid and in response to opportunistic behavior)
Cause of transaction costs	Heterogeneity and spatial distance → costly to discover prices	Asset specificity combined with guileful self-interest seeking behavior → holdup, maladaptation
Resource allocation	Firm ≈ Market	Firm > Market
Specialization	Through market exchange	Within firms
Efficiency in firm	Technical	Allocative
Efficiency in market	Allocative	-