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The Many Faces of Asset Specificity: A Critical Review of Key Theoretical Perspectives

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This paper presents a review of the concept of asset specificity and of the impact which asset specificity is expected to exert on the performance of buyer–supplier relationships. The paper begins by unpacking the complex definitional features of asset specificity and how its multifaceted nature is reflected in an inconsistent and rather ad hoc operationalization of the construct in the extant empirical literature. Following a comprehensive examination of the many dimensions of asset specificity, the review then focuses on the expected role of asset specificity in inter-firm relationships according to three different theoretical perspectives: transaction costs economics, the resource-based view and relational exchange theory. Considerable ambiguities and inconsistencies are highlighted by reviewing hypotheses typically developed within their respective theoretical framework. The paper concludes by identifying key challenges and new directions in order to derive maximum benefit from future research.

Introduction

Asset specificity has emerged as a core concept of transaction cost economics (TCE) (also commonly referred to as transaction cost theory, TCT), which is still seen as the dominant theoretical framework for studying organizational boundary choices (Geyskens *et al.* 2006). In particular, asset specificity has become a key construct in research into make-or-buy decisions (Espino-Rodríguez *et al.* 2008) and the performance of buyer–supplier relationships (Artz 1999; Haugland 1999; Heide and Miner 1992; Heide and Stump 1995; Lui *et al.* 2006, 2009). Although Marshall (1949, p. 172) was the first to coin the term 'specialized ability' in his description of materials and processes required for specific individual trades purposes, the concept of asset specificity was not fully articulated until the emergence of Williamson's (1971, 1975, 1979, 1983) TCT, according to which asset specificity was argued to be the most important factor (alongside uncertainty and transaction frequency) in determining the choice of governance, namely hierarchy or market. Williamson (1985, p. 95) refers to asset specificity as 'the degree to which an asset can be redeployed to alternative uses by alternative users without sacrifice of productive value'.

As Geyskens *et al.* (2006) point out, like most influential theories, TCT has not been fully developed. In particular, the concept of asset specificity has been criticized for being loosely defined (Barthelemy and Quelin 2002), which explains the absence of a commonly agreed operationalization of

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the construct (David and Han 2004; Lohtia *et al.* 1994; Shelanski and Klein 1995). Consequently, further attention to the development of the definition of asset specificity and its measurement has been called for (Shelanski and Klein 1995; Wiggins 1991). This call provides the first motivation for this review paper.

Further, the explanatory power of asset specificity in relation to organizational boundary choices and the effectiveness of inter-firm relationships has been a central debate in previous literature. Transaction cost economics postulates that asset-specific investments should only be deployed on the expectation of substantial cost savings and/or value-adding advantages, but it also posits that asset specificity increases the hazards of opportunism and the transaction costs necessary to safeguard against the risk of opportunistic expropriation (Heide and Stump 1995; Parkhe 1993). Based on the level of asset specificity, firms select an appropriate governance structure, with inter-firm relationship performance expected to be maximized when opportunistic behaviour incentivized by asset specificity is reduced (David and Han 2004; Lui *et al.* 2009; Rindfleisch and Heide 1997). However, contrary to TCT, which focuses on opportunistic behaviour in transactions, other streams of literature that draw primarily from the resource-based view of the firm (RBV) (Penrose 1959) and relational exchange theory (RET) (Macneil 1980) contend that inter-firm relationship performance is enhanced by trust-based collaborative behaviour and the development of core competences as intangible, relation-specific assets. These streams of research also warn of the potential danger of measuring competitiveness and relational performance purely in terms of costs and price (Prahalad and Hamel 1990).

Commenting on the resource and competence-based literature in particular, Williamson (1999) argues that

> while competence research on learning and path dependency is especially good at uncovering biases, the lens of TCT affords comparative institutional perspective . . . I see the relation between competence and governance as both rival and complementary – more the latter than the former . . . Healthy tensions are posed between them. Both are needed in our efforts to understand complex economic phenomena as we build towards a science of organization. (pp. 1105–1106)

However, there is a lack of systematic investigation of the tensions between, and unique contribution of TCT, the RBV and RET in relation to the role that asset-specific investments play in the performance of buyer–supplier relationships and inter-firm relationships more generally. Moreover, as noted by Lui *et al.* (2009), as researchers attempt to make sense of the arguments of TCE and RET, they very often relax some core assumptions of, or integrate RET variables into, the TCE framework. Doing so can breed ambiguity and reduce the uniqueness and simplicity of both theories. The above concerns provide the second motivation to compare and contrast the role of asset specificity in affecting the performance of inter-firm relationships through the distinct theoretical perspectives of TCT, the RBV and RET.

The objectives of this paper therefore are, first, to fully unpack the complex and multifaceted nature of asset specificity, responding to the call for a deeper conceptualization and operationalization of the concept (Shelanski and Klein 1995; Wiggins 1991; Williamson 1979). Second, a critical review of the role of asset specificity in buyer–supplier relationships grounded in TCT, the RBV and RET is undertaken by examining hypotheses typically developed within the above theories so as to highlight the contradictions and tensions surrounding the role of asset specificity in inter-firm relationships across theoretical perspectives. The essence of the present contribution, therefore, is to consolidate existing research on asset specificity, draw attention to questions and issues that need to be addressed and, in so doing, outline profitable avenues for future research. According to Pfeffer (1993), such effort should facilitate both the systematic advancement of knowledge and the development of theory.

Asset specificity: definitional and operational issues

Identifying definitional themes

Since Williamson's (1985, p. 95) original definition of asset specificity, several researchers have tried to redefine the concept by emphasizing particular facets using their own interpretation (see Table 1). Although these attempts should be praised for their intention to enrich our understanding of the concept, failure to organize them systematically in a blended framework leaves ambiguity over the complex meaning of asset specificity (David and Han 2004). As evidenced in Table 1, the wide-ranging definitions corroborate the concern expressed by David and Han (2004).

Table 1. Definitions of asset specificity

Source	Definition	Key theme
Erramilli and Rao (1993, p. 21)	Transaction-specific assets are non-redeployable physical and human investments that are specialized and unique to a task (Klein *et al.* 1990; Williamson 1986).	Uniqueness of assets to task/activity
Widener and Selto (1999, p. 48)	Assets are specific if they are unique to certain activities.	
Espino-Rodríguez and Gil-Padilla (2005, p. 398)	An asset is specific when it cannot be reassigned to an alternative use (Williamson 1975, 1985).	Transferability of assets/investments needed for supporting a particular transaction
Brown and Potoski (2005, p. 335)	Asset specificity refers to whether specialized investments are required to produce the service/good. By special investments, we mean investments that apply to the production of one service but are very difficult to adapt for the production of other services/goods.	
Morill and Morill (2003, p. 494)	A transaction-specific investment is one that is necessary to support a particular transaction, but is not readily redeployable or useful to any other transaction.	
John and Weitz (1988, p. 340)	Asset specificity refers to the extent to which specialized or non-redeployable investments are needed to support an exchange.	
Williamson (1985, p. 95)		
Williamson (1988, p. 70)	Asset specificity has reference to the degree to which an asset can be redeployed to alternative uses and by alternative users without sacrifice of productive value.	
Murray and Kotabe (1999, p. 795)	Asset specificity refers to investments made in specific (non-marketable) resources.	
Williamson (1985, p. 55)	Asset specificity refers to durable investments that are undertaken in support of particular transactions, the opportunity cost of which investments is much lower in best alternative uses or by alternative users should the original transaction be prematurely terminated.	The value of the asset outside a specific transactional relationship
Lohtia *et al.* (1994, p. 261)	Transaction-specific asset (TSA) is an asset, either tangible or intangible, that has little value outside of a particular relationship.	
Brouthers and Brouthers (2003, p. 1181)	Specific assets are investments made that have little value outside the specific transactional relationship.	
Heide and John (1990, p. 27)	Specific investments are investments made by a firm that are of considerably less value outside the focal relationship.	
Vining and Globerman (1999, p. 11)	An asset is specific if it makes a necessary contribution to the production of a good and it has much lower value in alternative uses (Klein *et al.* 1990)	
Barney and Hesterly (1996, p. 119)	Asset specificity refers to the difference in value between an investment's first best use (in the current transaction) and the second best use (in some other transaction).	
Walker and Weber (1984, p. 373)	Assets are specific to a transaction when they are highly specialized and thus have little or no general purpose outside the buyer–supplier relationship.	
Buvik and Anderson (2002, p. 10)	Asset specificity describes investments made by the buyer in physical assets, production facilities, tools, and knowledge that are tailored to a specific purchasing relationship.	
Anderson and Schmittlein (1984, p. 386)	Asset specificity arises when durable assets become customized to the user.	
Anderson (1985, p. 238)	Transaction specific assets are those assets that are tailored to a particular user (transaction) and thus are valuable only in a narrow range of alternative uses.	
Deegan (1997, pp. 2–3)	Specific investments are investments which generate returns (specific returns) that are contingent upon the continued existence of a particular coalition. An investment is specific to a particular firm or coalition if its current deployment generates greater returns than would be available elsewhere. Its current use is the most optimal use.	Value embedded in the continuance of a transactional relationship
Lamminmaki (2005, p. 517)	A highly specific asset is an asset that has limited value in an alternative use and hence the value of which resides by the continuance of the trading relationship.	
Lyons (1995, pp. 431–432)	Asset specificity is the degree to which the value of an investment is tied to continuing trade between a particular pair of traders.	
Williamson (1979, pp. 239–240)	Idiosyncratic transactions are transactions on which the specific identity of the parties has important cost-bearing consequences.	The importance of the identity of the two parties in the transaction process
Wiggins (1991, p. 607)	A transaction specific asset is one whose value is substantially higher when used in a transaction between two identifiable parties.	

To identify interpretative patterns, we categorize such definitions into six focal themes: (i) the degree of customization needed to support the transactional relationship; (ii) the uniqueness of assets or investments deployed to the task; (iii) the importance of the identity of the two parties in the transaction; (iv) the transferability of assets or investments needed for supporting a particular transaction; (v) the value of the assets or investments outside that transactional relationship; and (vi) the value tied in or embedded in the continuance of the relationship. Evidently, these themes are interrelated. For instance, the degree of customization involves resources or assets that are devoted, on the one hand, by the supplier in carrying out the activity/service being transacted and, on the other hand, by the buyer in dealing with a particular provider. The degree of customization is, in turn, determined by the degree of uniqueness of the assets deployed to the activity or function being transacted (Erramilli and Rao 1993; Widener and Selto 1999), and by the extent of the transferability of such assets to other activities outside that relationship (Brown and Potoski 2005; Espino-Rodríguez and Gil-Padilla 2005; John and Weitz 1988; Morill and Morill 2003; Murray and Kotabe 1999). According to Barney and Hesterly (1996, p. 119); the latter refers to 'the difference in value between an investment's first best use (in the current transaction) and its second best use (in some other transaction)'. The difference in value is referred to by Klein *et al.* (1978, p. 298) as 'appropriable quasi rents' – 'the excess of its value over its salvage value, that is, its value in its next best use to another renter'. Hence, the greater the specificity level embedded in a transactional relationship, the higher its quasi rent stream (Deegan 1997). In turn, this quasi rent reflects the importance of the transactional parties' identity (Williamson 1979). A typical example is the relationship between a building owner and the owner of the land on which the building rests (Wiggins 1991). Since the value of both the land and the building depends on continued trade between these two owners, should this relationship cease, both parties would be at risk of losing the value of their investment. By way of contrast, a continued relationship could create a lock-in situation that could be opportunistically exploited by one party or the other to the detriment of the relationship (Williamson 1979, 1985). Locked-in parties may react by trying to resist partner influence, resulting in greater relationship conflict and less overall satisfaction (Joshi and Arnold 1997). The above should convincingly demonstrate that the six focal themes are interconnected and form integral parts of the asset specificity concept.

Different dimensions of asset specificity

The challenge of understanding the concept of asset specificity goes beyond its theoretical and definitional complexity: its operationalization has been a major issue. As early as 1985, Anderson (1985) called for the development of a more consistent and comprehensive measurement of asset specificity in an effort to reach a better approximation of the construct's complex nature. However, until today there has still been a lack of a commonly agreed operationalization of the asset specificity construct (Lohtia *et al.* 1994; Shelanski and Klein 1995) and considerable inconsistencies have emerged from the empirical findings concerning its measurement (David and Han 2004; Macher and Richman 2008; Wang 2002). This can be partly attributed to the loosely defined nature of the construct (Barthelemy and Quelin 2002). It has also been argued that asset specificity is not directly observable, requiring the use of multiple indicators (Morill and Morill 2003), and even the adoption of multiple dimensions (Anderson 1985).

The breakthrough of conceptualizing a multidimensional construct of asset specificity came from Williamson (1983, p. 526) himself, who distinguished four types of asset specificity: (i) human asset specificity; (ii) physical asset specificity; (iii) site specificity; and (iv) dedicated asset specificity, to which both brand name capital specificity (Williamson 1985) and temporal specificity (Malone *et al.* 1987; Masten *et al.* 1991) were later added, resulting in a total of six dimensions. Further, Zaheer and Venkatraman (1995) added procedural specificity to tailor the asset specificity construct to the context of the service industries. As shown in Table 2, many studies have neglected the above dimensions and simply conceptualized a broad, overall level of asset specificity. Among those studies that have taken into account, to various extents, the distinct dimensions to measure asset specificity, the majority of them have done so for the purpose of obtaining an aggregate measure of asset specificity in estimation, with the notable exceptions of Masten *et al.* (1989) and De Vita *et al.* (2010). According to Joskow (1987, p. 17), although different dimensions of asset specificity could be seen as 'different instances from the same phenomenon', the differentiation between

Table 2. Dimensions of asset specificity

Author(s)	Asset specificity dimensions								Research method and setting	
	Seven types of asset specificity							Broad level	Data collection	Industry context
	Human	Physical	Site	Dedicated	Brand	Temporal	Procedural			
Adler *et al.* (1998)	√	√		√					Secondary data	Airforce
Anderson (1985)	√								Survey	Electronic
Anderson and Schmittlein (1984)	√								Survey	Electronic
Barthelemy and Quelin (2002)								√	Survey	Several
Brouthers and Brouthers (2003)	√			√					Survey	Several
Brown and Potoski (2005)	√	√	√			√		√	Survey	Municipal service
Bucklin and Sengupta (1993)	√	√							Survey	Several
Buvik and Reve (2001)								√	Survey	Manufacturing
De Vita *et al.* (2010)	√		√	√	√	√	√	√	Survey	Service industries
Deegan (1997)								√	Survey	Several
Dibbern *et al.* (2005)	√								Survey	Several
Dragonetti *et al.* (2003)								√	Survey	Several
Gatignon and Anderson (1988)					√				Secondary data	Several
Ghani and Khan (2004)	√	√	√						Interview	Automobile
Heide and John (1990)		√					√		Survey	Several
Heide and John (1992)	√	√		√			√	√	Survey	Several
Houston and Johnson (2000)	√								Secondary data	Several
John and Weitz (1988)	√								Interview & survey	Several
Joskow (1987)			√					√	Secondary data	Electric generation
Klein and Roth (1990)	√	√							Survey	Several
Klein *et al.* (1990)	√	√							Survey	Several
Lamminmaki (2005)	√	√	√	√	√	√			Interviews	Hotel
Levy (1985)	√	√	√		√			√	Secondary data	Several
Lieberman (1991)		√							Secondary data	Chemical
Lui *et al.* (2009)								√	Survey	Manufacturing
Lyons (1995)		√							Survey& interview	Engineering
Masten (1984)		√	√						Survey	Aerospace (single firm)
Masten *et al.* (1991)	√	√				√			Survey	Shipbuilding (single project)
Monteverde and Teece (1982)	√	√							Survey	Automobile
Morill and Morill (2003)	√								Survey	Several
Murray and Kotabe (1999)	√	√		√					Survey	Several
Nishiguchi (1994)	√	√	√	√					Survey	Electronic
Poppo and Zenger (1998)	√							√	Survey	Several
Espino-Rodríguez and Gil-Padilla (2005)	√							√	Survey	Hotel
Stump and Heide (1996)		√					√	√	Survey	Chemical
Walker and Poppo (1991)	√	√							Survey	Single firm
Walker and Weber (1984)								√	Longitudinal study (3 years)	Automobile
Wang (2002)	√			√					Survey	Several
Weiss and Anderson (1992)	√	√						√	Survey	Electronic
Widener and Selto (1999)	√								Survey	Several
Zaheer and Venkatraman (1995)	√						√		Survey	Insurance

dimensions is highly valuable when it comes to empirical applications. Below, we provide a concise yet comprehensive review of the various asset-specificity dimensions so as to highlight the multi-faceted nature of this complex construct.

Human asset specificity refers to the degree to which skills, knowledge and experience of a firm's personnel are specific to the requirements of dealing with another firm (Zaheer and Venkatraman 1995). It could be characterized as unique technical skills and experience required in carrying out the activity being transacted (John and Weitz 1988; Walker and Poppo 1991). It has also been described as knowledge-specific assets (Dibbern *et al.* 2005) that arise from learning-by-doing (Williamson 1996), and which are not easily transferable, owing to their limited application in other work settings (Lamminmaki 2005). According to Ruchala (1997), human asset specificity involves not only the expertise that is required for carrying out a particular activity, but also the costs of training and the development of a corporate culture that facilitates the interaction within the transactional relationship. In empirical application, this dimension has been proxied by the extent of the supplier's access to the buyer's confidential information (Anderson 1985; Anderson and Schmittlein 1984; Klein *et al.* 1990; Weiss and Anderson 1992) and the annual hours spent by the supplier's personnel interacting with the buyer (Dibbern *et al.* 2005).

In contrast to human asset specificity, which has been described as complex and difficult to be quantified, *physical asset specificity* is typically portrayed as a dimension the assessment of which is 'relatively straightforward' (Williamson 1996, p. 108). It refers to investments in physical assets that are tailored to a specific transaction and have few alternative uses, owing to their specific (design) characteristics (Joskow 1987, 1988; Morill and Morill 2003). For example, owing to the supplier's investments made to customize the wings of a specific Boeing plane, this particular wing manufacturing facility would have little value to the supplier in other transactional relationships (Milgrom and Roberts 1992). One obvious way to assess the extent of physical asset specificity is to measure the uniqueness of equipment and tools required by the supplier for the purpose of the transactional relationship (Klein and Roth 1990; Stump and Heide 1996; Walker and Poppo 1991). Recognizing the subjective nature of the above approach, an alternative is to operationalize physical asset specificity in terms of the extent of the actual investments in physical assets made by the supplier specifically for the purpose of the relationship (Bucklin and Sengupta 1993; Heide and John 1990; Klein *et al.* 1990; Lieberman 1991; Murray and Kotabe 1999; Weiss and Anderson 1992). However, the above approaches still fail to reveal whether or not investments in physical assets hold alternative value outside the transactional relationship (Shelanski and Klein 1995). To address this issue, Lyons (1995) and De Vita *et al.* (2010) incorporated in their measurements the likelihood of redeployment of those physical assets in other applications outside the relationship.

Site specificity refers to a situation where the buyer and the supplier are involved in a 'cheek-by-jowl' relationship with one another due to the importance of close proximity in reducing inventory and other related processing costs. However, once in place, the assets involved are highly immobile and, thus, the cost of their relocation is very high (Joskow 1988; Lamminmaki 2005; Morill and Morill 2003; Williamson 1983). An example of site specificity is the deliberate location of some electric generating plants next to particular mines, with the expectation of a potential long-term coal supply relationship (Joskow 1987). Most studies measured site specificity by focusing exclusively on the physical proximity between the two parties, using the distance between the subcontractor and the customer's premises as the proxy of choice (Ghani and Khan 2004; Joskow 1987; Nishiguchi 1994). An alternative approach was adopted by Levy (1985), who made use of secondary data to categorize the degree of site specificity of certain transactions, depending on the proportion of inputs shipped within 500 miles of the plant. However, as noted by De Vita *et al.* (2010), both these approaches fail to capture the extent to which physical distance is a function of the transactional relationship: for example, as a result of an 'asset specific' relocation of the supplier due to its intention to secure a long-term relationship with the buyer.

Dedicated asset specificity is different from physical asset specificity, but such a distinction is notably difficult to articulate. It refers to assets that are of general purpose as opposed to specialized uses (physical asset specificity), but which have been made for a particular transactional agreement that is likely to entail a long-term relationship. Should this relationship end prematurely, excess capacity will, however, be created (Joskow 1987; Lamminmaki 2005; Williamson 1983). For example, a product contract with one large customer may cause a firm to expand its capacity to meet demand, which would

ultimately result in significant over-capacity and important financial disruption if the customer in question chooses not to renew the contract (Ruchala 1997). Although most studies measure this dimension exclusively in relation to the supplier, dedicated asset specificity could, under certain circumstances, be related to an investment made by the buyer, such as additional investment in laboratory accessories that help the firm to assess the quality of a bigger proportion of goods acquired.

Temporal specificity refers to the importance of timing and co-ordination required by a transactional relationship. As Malone *et al.* (1987, p. 486) explain: 'an asset is time specific if its value is highly dependent on it reaching the user within a specified, relatively limited period of time'. One example of temporal specificity is the case of shipbuilding, where the ability to hold buffer stock is limited, hence timely delivery becomes vital to prevent costly delays (Lamminmaki 2005; Lohtia *et al.* 1994; Masten *et al.* 1991). Among the very few studies that operationalized temporal specificity, Masten *et al.* (1991) employed the need for precise scheduling within the transactional relationship as a proxy, Lamminmaki (2005) referred to the importance of timely delivery of clean linen in the hotel industry, and Brown and Potoski (2005) measured temporal specificity by rating the requirement of service punctuality in order to prevent any deterioration in the quality of services.

Brand capital specificity relates to reputation investment. A transactional relationship involving activities which have a direct and high effect on the overall firm performance could be described as one of high brand capital specificity. For instance, a supplier could find itself in a position enabling it to intentionally or unintentionally cause damage to the buyer's reputation (Gatignon and Anderson 1988; Lamminmaki 2005; Lohtia *et al.* 1994). A typical example is the outsourcing of restaurants within the hotel industry, where a bad reputation of the restaurant services could prove very costly to the overall hotel business (Lamminmaki 2005). Both Levy (1985) and Gatignon and Anderson (1988) measured the degree of brand capital specificity by the extent of advertising expenditure intensity (i.e. the advertising/sales ratio).

Procedural asset specificity refers to organizational routines and workflows that are tailored to a particular transactional relationship and which are difficult to modify once created or to redeploy without value reduction. This dimension was originally developed by Zaheer and Venkatraman (1995) to capture physical asset specificity in the service industry, where investments in physical components and tools are unlikely. Although most papers have not treated procedural asset specificity as a separate dimension nor have explicitly stated the term (see, for example, Buvik and Reve 2001 and Buvik and Haugland 2005), many of them seem to have actually included this dimension, either intentionally or unintentionally, in their overall operationalization of the asset specificity construct. Example items include the degree of customization of the supplier's workflows and routines in the hotel industry (Zaheer and Venkatraman 1995) and the required adaptation of the production process and system in the chemical manufacturing industry (Stump and Heide 1996).

The above review confirms the multifaceted nature of asset specificity and reveals several interesting patterns in the existing body of literature. First, although human asset specificity was described by Williamson (1979) as the most difficult dimension to operationalize owing to its intangible nature, in accordance with the findings reported by Lohtia *et al.* (1994) and David and Han (2004), this factor emerges as the most frequently considered. This could be explained by the fact that direct measures of asset specificity have often focused on the people-intensive nature of the construct (Rindfleisch and Heide 1997), which could be seen as inevitable, since 'specific human capital is central to transactions' (Williamson 1979, p. 244). Nevertheless, this overemphasis on human asset specificity appears to have detracted attention from other dimensions. Indeed, as can be seen from the empirical studies summarized in Table 2, apart from physical asset specificity (which has also received considerable attention), the other dimensions have seldom been considered in empirical research.

Second, these facets of asset specificity form distinct and interrelated, rather than substitute and isolated, dimensions of the construct. For example, physical, procedural and site specificity often involve the allocation of staff with specialist knowledge and skills or specially trained personnel to perform the activity (human asset specificity). Site specificity (measured in terms of physical proximity) may be highly correlated to temporal asset specificity to ensure smooth and seamless delivery of services, which in turn is essential to brand capital specificity in industries where just-in-time delivery is a built-in element of business operations. Similarly, temporal specificity may require the supplier and/or the buyer

to appoint specialized staff (human asset specificity) and customize existing operating procedures (procedural asset specificity) to the needs of the transactional relationship. The interconnectedness of the asset specificity dimensions indicates that simply examining one dimension of the construct may be inadequate. A holistic approach is therefore needed to investigate how the dimensions reinforce one another and how the interactions of these distinct dimensions contribute to inter-firm relationship performance. The disaggregated approach to the measurement of asset specificity that was employed in De Vita *et al.* (2010) confirmed the empirical necessity to treat asset specificity as more than a composite construct.

Third, it is worth noting that, although there is agreement in the literature that asset specificity involves specific investments by the buyer and/or the supplier, with the exception of a few studies (Bucklin and Sengupta 1993; Buvik and Haugland 2005; De Vita *et al.* 2010; Espino-Rodríguez and Gil-Padilla 2005; Ghani and Khan 2004; Heide and John 1990, 1992), most measures employed focus on investments made by the supplier only.

Finally, the explanatory power of each asset-specificity dimension may be dependent upon the nature of the transactional activity involved and the industry in which the supplier and/or the buyer operate. As noted earlier, physical asset specificity may have less relevance in service industries (Zaheer and Venkatraman 1995). Similarly, while site specificity is vital to the outsourcing of restaurant services by hotels (Lamminmaki 2005), it may have very limited applicability in the context of information technology (IT) outsourcing. Despite this, most of the existing studies are either based on a single industry (Anderson 1985; Anderson and Schmittlein 1984; Espino-Rodríguez and Gil-Padilla 2005), or predominantly focus on a single type of outsourcing, such as IT (Dibbern *et al.* 2005; Poppo and Zenger 1998; Wang 2002). Levy (1985) and De Vita *et al.* (2010) are among the very few exceptions who studied asset specificity across different industries while controlling for different types of functions being outsourced. Nevertheless, the former was based solely on secondary data, unlikely to yield reliable measurement (Rindfleisch and Heide 1997), while the latter was based on small sub-samples of observations for each industry type. Evidently, more research is needed to compare and contrast the effects of different asset specificity dimensions on inter-firm relationship performance across different industries and with reference to different transactional activities/functions being outsourced.

The role of asset specificity in inter-firm relationship performance

Studies that test TCE propositions have flourished in recent years. Macher and Richman (2008, p. 1) refer to this phenomenon as 'a heralded success story in the industrial organization economics literature'. Several literature reviews (David and Han 2004; Macher and Richman 2008) also concur that existing empirical studies have found strong support for the core arguments of TCE, particularly those regarding the choice of governance structure. This is indeed true when a purely economic approach has been taken to examine the role of asset specificity in organizational boundary decisions. However, researchers in the business fields have questioned the explanatory power of TCE, arguing that business relationships involve social factors which go beyond the basic transaction costs logic of the TCE framework. In particular, it has been suggested that the study of business relationships must take into account not only the characteristics of the transaction in question, but also the characteristics of the relationship itself (Dwyer *et al.* 1987). In other words, the interaction of social and economic factors must be considered (Stern and Reve 1980). Increasingly, researchers have studied the role of asset specificity in organizational boundary decisions and inter-firm relationship performance drawing on different theoretical streams, namely TCE, the RBV and RET (Espino-Rodríguez *et al.* 2008; Haugland 1999; Lui and Ngo 2005; Lui *et al.* 2009; Parkhe 1993; Pilling *et al.* 1994; Ring and Van de Ven 1994; Sriram *et al.* 1992). To respond to Lui *et al.*'s (2009) call for understanding the unique contribution of each theoretical stream, in what follows we review the conceptual development and empirical evidence pertinent to the impact of asset specificity on inter-firm relationships within TCE, the RBV and RET.

Asset specificity and transaction cost economics

Transaction costs are defined by Williamson (1985, p. 2) as the 'comparative costs of planning, adapting, and monitoring task completion under alternative governance structures'. The most important factors that influence transaction costs which, in turn, determine the firm's choice of governance structure (i.e.

market or hierarchy) are asset specificity and opportunistic behaviour, along with uncertainty and bounded rationality (Williamson 1975). Transaction cost economics posits that, under buyer–seller relationship conditions of high asset specificity (non-redeployable investments specifically dedicated to the relationship), the higher transaction costs to be incurred to safeguard against costly opportunism make vertical integration, rather than market-based transactional relationships, the most efficient, and hence the preferred, governance structure.

While the transaction costs explanation for firms' boundary choice versus market governance has been widely investigated, receiving considerable empirical support (e.g. Anderson and Schmittlein 1984; Klein *et al.* 1990; Levy 1985; Masten 1984; Monteverde and Teece 1982), the TCE's implication for the performance of buyer–supplier relationships in the presence of asset-specific investments has only received scant attention. As noted by De Vita *et al.* (2010), this is particularly striking when considering that, although factors influencing the make-or-buy decision are of great significance, of no less importance and possibly of greater relevance is the question of what happens to those firms that do choose to enter market transactions under conditions of high asset specificity. Indeed, TCE not only predicts that a hierarchy is the preferred governance structure because it reduces the contractual costs necessary to safeguard against the opportunistic hazards posed by asset-specific investments, it also implies that, should such transactions be performed through the market, unilateral specific investments will have negative economic and qualitative consequences on the performance of inter-firm relationships. Indeed, although specific assets should only be deployed on the mutual expectation of a positive impact on relationship performance stemming from substantial cost and/or value-adding advantages, under conditions of inadequate contractual safeguards, TCE posits that such relationships will be 'subject to costly haggling and maladaptiveness' (Williamson 1985, p. 89). As thoroughly evidenced by the comprehensive reviews of TCE undertaken by David and Han (2004) and Geyskens *et al.* (2006), most theoretical hypotheses and empirical tests of TCE have focused on the examination of the former core proposition rather than the latter implication.

A related aspect which has received insufficient attention in the TCE empirical literature is the direct role – rather than the moderating effect – of asset-specific investments. Indeed, while the core tenets of TCE ordinarily lead to the formulation of hypotheses in which asset specificity moderates the 'governance choice–performance' relationship, tests of the direct impact of aggregate or disaggregated measures of asset specificity on the performance of inter-firm relationships are few and far between. An even smaller subset of studies considers the direct effect of asset-specific investments undertaken by both sides of the inter-firm relationship dyad. As noted earlier, with very few exceptions (Bucklin and Sengupta 1993; De Vita *et al.* 2010; Espino-Rodríguez and Gil-Padilla 2005; Ghani and Khan 2004; Heide and John 1990, 1992), most measures in existing studies focus solely on the effect of suppliers' asset-specific investments. Buvik and Reve (2001) provide a rationale for this tendency by arguing that exposure to opportunism is evidently more pronounced under conditions where the supplier unilaterally employs specific assets since, faced with the buyer's opportunism while being locked into the relationship, the supplier's only option to save on the costs of the relationship is to cut back on the operational resources, with a consequent negative impact on delivery performance as well as buyer's satisfaction. Yet there is no reason to assume that most dimensions of asset-specific investments could not be undertaken by either side of the buyer–supplier dyad. As vividly illustrated by Artz (1999, p. 117):

> TCE arguments predict that these assets can also have a negative effect on the OEM [Original Equipment Manufacturer]. Since specialized assets are worth little outside the present relationship, the OEM is dependent on the good-faith behaviour of the supplier to realize the value of its investment. Consequently, the OEM's control over that supplier is reduced (Heide and John 1992). As control declines, the OEM is forced to expend more time and effort negotiating and monitoring contracts to safeguard its investment. [. . .].Furthermore, since the supplier knows the OEM is at least somewhat 'locked in' to the relationship, its incentive to provide superior delivery performance is reduced. The increased transaction costs and less favorable delivery performance likely result in lower satisfaction.

On the basis of the above, it can be concluded that, according to TCE, failure to safeguard against costly opportunism through adequate contractual safeguards essentially means that an increase in different dimensions of the buyer, or of the seller's, non-redeployable investments negatively affects inter-firm relationships.

The few studies that have considered the question of the extent to which the performance of buyer–supplier relationships is affected by specific investments by both buyers and suppliers (Artz 1999; Buvik and Reve 2001; De Vita *et al.* 2010; Heide and John 1990, 1992; Heide and Stump 1995; Rokkan *et al.* 2003) have produced mixed results from which no conventional wisdom can be gauged. Such studies also display differences in the operationalization of several constructs (including 'outsourcing transaction' and 'performance') making direct comparisons of results difficult.

However, in a significant extension of Williamson's original framework, Klein and Leffler (1981) and Williamson (1983, 1996) describe bilateral exchanges that are characterized by reciprocal investments. They argue that such reciprocal investments can signal a credible commitment by both parties in an exchange relationship and, hence, moderate any potential trading hazard arising from asset specificity through the creation of 'a mutual reliance relation' (Williamson 1983, p. 528). Evidently, if two parties invest in specific assets in approximately the same magnitude, the potential for opportunistic hold up from one party or the other would be highly reduced (Conner 1991). As eloquently put by Williamson (1983, pp. 530–532):

> The offer of hostages [caused by highly specific investment] poses a hazard of expropriation. One way to deter this is to expand the contracting relationship from one of unilateral to bilateral exchange . . . Reciprocity in these circumstances is thus a device by which the continuity of a specific trading relation is promoted with risk attenuation effects.

Based on the TCT notion of reciprocal exposure therefore, the hypothesis that reciprocal non-redeployable investments in a given transactional relationship positively affect inter-firm relationship performance has typically been tested by investigating the symmetrical dependence of the interaction effects between buyers' and suppliers' specific investments (see, for example, Artz 1999; De Vita *et al.* 2010; Heide 1994).

Asset specificity and the resource-based view

The RBV emphasizes resources and capabilities as the genesis of competitive advantage: resources are heterogeneously distributed across competing firms, and are imperfectly mobile which, in turn, makes this heterogeneity persist over time (Barney 1991; Penrose 1959; Wernerfelt 1984). Fundamentally, it is the V.R.I.N. (valuable, rare, inimitable and non-substitutable) resources of the firm that enable or limit the choice of markets it may enter, and the level of profit it may expect (Wernerfelt 1984). However, resource advantage may not suffice: the firm needs to possess distinctive capabilities to make better use of its resources (Penrose 1959). Prahalad and Hamel (1990, p. 82) put forward the concept of 'core competence', defined as: 'the collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technologies'. Schoemaker (1992) adds that core competences have to be distinctive, durable, controllable and able to generate success. This view is echoed by Grant (1996), who argues that higher specificity generates specific knowledge, culture and routines that are difficult to imitate, and the accumulation of which results in core competences that enhance internal efficiency and co-ordination. For comprehensive reviews of the wider resource-based literature, the reader is referred to Mahoney and Pandian (1992) and Barney and Arikan (2001). It is worth noting, however, that, within most of the RBV literature as it relates to the make-or-buy decision (i.e. outsourcing context only), the terms 'core competence' and (asset) specificity have been used, either intentionally or unintentionally, as interchangeable. This marks a considerable deviation from the original TCE definition of asset specificity, a distortion that carries non-trivial implications for the expected effect of asset specificity on inter-firm relationships within some RBV studies. One such study is by Cox (1996), in which, further to cross-fertilize the RBV and TCE, it is argued that

> high asset specificity refers to the skills and expertise that are the core competences of the firm in sustaining their position [. . .]. These transactions should always be undertaken within the firm if it is to retain its ability to make profits. (Cox 1996, p. 61)

While equating asset specificity to the notion of core competence amounts to a gross distortion of the TCE meaning of asset specificity, a similar idea has been put forward by Espino-Rodríguez and Padron-Robaina (2006, p. 55):

> the RBV considers that a firm must possess unique resources that enable it to achieve competitive advantage. This uniqueness can be seen in terms of specificity (Williamson 1991). Therefore, when the activity to be outsourced comprises idiosyncratic

resources, relying on external resources to develop those specific relationships may be very costly.

According to the RBV, a firm's advantage over market has nothing to do with the costs of mitigating the hazards of opportunism. On the contrary, it is said to derive from a firm's ability to supply shared values, language and coding schemes – 'the higher order organizing principles' described by Kogut and Zander (1992), which the market supposedly cannot supply. Indeed, according to Coff (2003), transfer within the firm is facilitated by shared language which generates a bundle of distinctive capabilities; it is such a bundle which creates core competence. The latter must be protected by firms 'sticking to their knitting' and by transacting only those activities which are considered 'non-core' (Prahalad and Hamel 1990). Based on this line of thinking, the reason for internalizing an activity shifts from economizing on transaction costs by switching into a hierarchy mode of governance (internalization through vertical integration or in sourcing) when asset specificity becomes sufficiently high (TCE reasoning), to the RBV notion of superior capabilities stemming from the distinctive ways through which activities are performed within the firm (Teece *et al.* 1997) which, in turn, can be a valuable source of competitive advantage (Barney 1991; Conner 1991). As such, the rationale for internalizing an activity has been redefined from 'an avoider of a negative' (avoider of opportunism) to 'a creator of a positive' (Conner 1991, p. 139). In this context, therefore, the RBV postulates a positive relationship between the internalization of highly asset-specific activities (core competences) and firm performance.

Although Alexander and Young (1996, p. 17) argued that 'the conclusion that such activities should not be outsourced is at least open to challenge', most studies framed within the RBV warn of the danger of outsourcing a core competence (e.g. Cox 1996; Quinn 1999). As highlighted by Espino-Rodríguez and Gil-Padilla (2005, p. 400): 'activities that are specific should not be outsourced because they are the ones that enable competitive advantage to be developed'. The view is exemplified by Quinn (1999, p. 12), who contends that 'once a company develops a true best-in-world core competency, it should never outsource it'. The danger of outsourcing a core competence has been further corroborated by Poppo and Zenger (1998, p. 872), who found that 'significant performance losses accrue as firms choose to coordinate firm-specific [core competence] IS [information systems] activities in the market'.

From the above review of asset specificity within the RBV, it is reasonable to conclude that asset specificity is internalized in order to improve both firm, and potentially intra-firm, performance, but that internalization of asset specificity may have a negative impact on the associated transactional activity and therefore relational performance between the transacting firms.

Nevertheless, the idea of core competence protection through internalization could be criticized, for it neglects the extent to which the seller's reputational capital alongside the buyer's contractual devices could handle the problem of expropriation in the context of inter-firm relationship performance. Furthermore, it ignores the process by which both individual and common capabilities could be developed through close buyer–supplier relationships (Lorenzoni and Lipparini 1999). Indeed, while transactional relationships may on occasion bring about the risk of undermining the isolating mechanisms for protecting competences, they can be a valuable source of new knowledge, thus generating positive externalities (Baden-Fuller *et al.* 2000). This sentiment has been accentuated by the recent extension of the RBV, the dynamic capabilities perspective (Eisenhardt and Martin 2000; Teece *et al.* 1997; Wang and Ahmed 2007), which 'as a coordinative management process opens the door to the potential for inter-organizational learning' (Teece and Pisano 1994, p. 545). At the heart of this perspective is the idea that, in order to keep pace with the changing environment, firms' capabilities must constantly be redefined, and so do firms' input–output relationships. The implications of this idea on outsourcing have been exemplified by De Vita and Wang (2006) who, drawing on the case of the PC-maker Dell, demonstrated how the velocity of change within industries has brought about the appearance of a new generation of outsourcing characterized by less rigid organizational boundaries and where both information and knowledge sharing are facilitated by co-operative relationships. This emphasis on organizational networks as a vehicle for knowledge creation (Grant 1996) and as a stimulus for capability development, learning and innovation (Powell *et al.* 1996) raises questions over TCE's opportunism-driven logic, which neglects the benefits that can accrue from intensive knowledge-based collaborations (Lorenzoni and Lipparini 1999; Zajac and Olsen 1993). Indeed, the net economic surplus through the tying up of exchange relations could offset the costs associated with specific investments, in which case 'opportunism-independent

knowledge-based considerations can outweigh opportunism-related ones' (Conner and Prahalad 1996, p. 489). In the search for an alternative view to a transactional value perspective, one relevant to creating and claiming joint value in inter-firm relationships, Zajac and Olsen (1993, p. 143) conclude that: 'Strategic and learning gains often increase transaction value while simultaneously increasing transaction costs, [but] the value gains often outweigh the transaction costs efficiency losses' [emphasis added]. Based on the above, it can be deduced that the relationship between the level of asset specificity (core competence) and inter-firm relationship performance is positively moderated by inter-organizational learning. This proposition, in turn, can be rationalized not only in terms of the extent to which increased learning enforces the utilization and economic pay-off of specific investments, but also in terms of an enhanced 'relationship atmosphere', a relationship connotation further elaborated upon by the RET discussed below.

Asset specificity and relational exchange theory

While TCT explains governance through the properties of transactions, RET focuses on the properties of relationships. Relational exchange theory draws on the work of a number of authors, mostly from the marketing field, who have examined relational norms between organizations. This research stream owes much to the pioneering work of Macneil (1980), who emphasized how 'soft' relationship features such as atmosphere, reciprocity, flexibility, knowledge-exchange and solidarity determine 'the behaviour that does occur in relations, must occur if relations are to continue, and hence ought to occur so long as their continuance is valued' (Macneil 1980, p. 64). In a nutshell, RET postulates that, by guiding and regulating the standards of trade and conduct, relational norms limit opportunism and give rise to bonding effects (Brown *et al.* 2000; Gundlach *et al.* 1995; Heide and John 1992). Although Williamson (1986, p. 103) suggests that Macneil's approach suffers from 'serious problems of recognition and application', since the paper by Kaufman and Stern (1988) – which is commonly referred to as 'the first known attempt to operationalize Macneil's relational exchange norms' (Kaufman and Stern 1988, p. 545) – a considerable number of studies have subjected the role of relational norms in relationships characterized by asset specificity to empirical scrutiny (Heide and John 1990, 1992; Johanson and Mattson 1987; Lui *et al.* 2009; Rokkan *et al.* 2003). This work suggests that relation-specific assets, specific investments in the assets, people and procedures of a business relationship, will increase co-operative behaviour and enhance inter-firm relationship performance (Anderson and Weitz 1992; Ganesan 1994).

Underlying RET is the idea that relationships develop over time, where each transaction has a history and a future. Indeed, a relation-specific asset signals the two parties' commitment and desire to invest in an 'endured' or 'long-term' relationship (Lui *et al.* 2009). Parties within the transaction may act with the expectation of a future economic relation through continued interaction which would restrict opportunistic behaviour in the current period. This line of thinking has brought about general agreement between RET scholars on the assumption that increased relational content in a sustained exchange relationship or one expected to extend over time is likely to encourage even closer co-operation between parties and thus further discourage opportunistic behaviour (Noordeweir *et al.* 1990).[1] As eloquently summarized by Rokkan *et al.* (2003, p. 215):

> the possibility of future business may in itself serve as an enforcement device. To the extent that specific investments that create greater-than-normal returns for the receiver have been deployed, the value of the future revenue stream is even greater. Thus, refraining from opportunistic exploitation of the investor increases the receiver's chances of reaping the investments' long-term benefits. In effect, a relationship's extendedness serves to transform the inherent expropriation potential that specific assets represent into a bonding scenario.

In examining the role of relation-specific assets in inter-firm relationships, in addition to relational norms of solidarity and a future time horizon, empirical studies within the RET tradition often integrate another moderating variable that arises out of the social context of transactions, namely, trust. As suggested by Bradach and Eccles (1989, p. 104), trust between buyer and seller is 'a sort of expectation' that reduces the risk that the business partner will behave opportunistically. In considering both how

[1]Working within the inter-temporal logic of the 'shadow of the future' (Axelrod 1984, p. 126) and the game-theoretic framework of repeated interaction, economists too have investigated the role of relational norms in relationships characterized by asset specificity. For a useful overview of some theory (e.g. Kvaloy 2007; Ruzzier 2009) and some evidence (e.g. Corts and Singh 2004; Gil and Marion 2009) see Gibbons' (2005a) useful overview.

trust is created and how it functions as a governance mechanism, Bradach and Eccles (1989) place emphasis upon the importance of: (i) diffuse social norms of obligation and co-operation; and (ii) personal relationships that overlap with economic exchange as means of establishing trust. Hence, while under inadequate contractual safeguards asset-specific investments may lower inter-firm performance as maintained by TCT, trust-based collaborative ties can moderate positively the performance of the relationship (Dyer 1997; Dyer and Singh 1998; Saxton 1997).

While admitting that specific exchange relationships which feature personal trust will survive greater stress and display greater adaptability, Williamson (1979) challenges the exclusion of opportunism from the explanation of the boundaries of the firm (see also Conner 1991 and Kogut and Zander 1992), as it eliminates the need for contract drafting, problem monitoring and reputation investment (Foss 1996) and therefore assumes myopia (Williamson 1999). Williamson (1999, p. 1094) states that

> as between myopia and foresight, the competence perspective mainly emphasizes the former . . . much of the competence literature displays an active aversion to opportunism and places emphasis on what Diego Gambetta (Gambetta 1988) has referred to as the elusive notion of trust.

However, Chiles and McMackin (1996) maintain that the introduction of trust in the TCE model can alter the efficient boundaries of the firm by decreasing both the *ex ante* and *ex post* contracting costs. The predicted relationship between asset specificity and a close, trust-based inter-firm collaboration has also been empirically backed up by Ghani and Khan (2004), who found that asset specificity is significantly correlated with inter-firm linkages, as suppliers who have invested in relationship-specific assets tend to have a stronger collaboration with their main customer. They also found asset specificity to be associated with good relationship performance measured in terms of assistance, information sharing and trust. Similar findings were uncovered by Anderson and Weitz (1992), who found highly specific (idiosyncratic) investments to be positively related to the commitment of both parties in a business relationship, and by Anderson and Narus (1990) who showed that co-operation is an important antecedent of trust and that trust grows out of co-ordinated efforts.

The above review highlights the contribution of RET to the debate on the relationship between asset specificity and inter-firm relationship performance in terms of the identification of several moderating variables expected to exert a considerable influence. Specifically, RET predicts that, under conditions of strong norms of solidarity, relationship extendedness and a close, trust-based collaboration, asset specificity is positively associated with relational performance between the transacting firms.

Discussion and future research directions

Despite considerable interest in the development and application of the concept of asset specificity, this critical review reveals that, owing to the multifaceted nature of this complex construct, a consensus on the theoretical and empirical definition of asset specificity remains elusive. This review also shows that the effect of asset specificity on inter-firm relationship performance remains inconclusive. Several ambiguities and inconsistencies with respect to both the treatment of asset specificity and its role on inter-firm relationship performance are apparent and are particularly pronounced when different theoretical perspectives are called upon to explain the discerned relationship.

First, in spite of the potential that lies in the cross-fertilization of ideas across potentially complementary frameworks, we find that the concept of asset specificity – as originally intended by Williamson – does not travel well across theoretical perspectives, imposing significant 'translation costs'. A particularly noticeable distortion of the asset specificity concept is evident in the way in which such a construct is housed within some studies of the RBV literature, where – in the outsourcing context – asset specificity is equated to the notion of 'core competence', denaturalizing its original significance. Although these definitional inconsistencies across theoretical perspectives may explain the often contradictory predictions relating to the impact of asset specificity on the performance of inter-firm relationships, they reaffirm the need to adhere to a uniform interpretation of the concept. Whatever its use, asset specificity must continue to refer to 'a property invested in a relationship', as the application of this concept cannot be rendered devoid of the distinguishing 'TCE content' within which it originated.

Secondly, we observe that even studies framed solely within the TCE tradition tend to treat asset specificity as a global construct, thereby ignoring the

possibility that 'relationship performance' – however defined – might respond differently to the different dimensions of asset specificity unpacked in the earlier part of this review. This problem is more severe in studies grounded in the RBV and RET, which draw little distinction between the different dimensions of asset specificity or between buyers' and sellers' specific investments. As shown in Table 2, over half the studies that have considered the role of specific investments in buyer–supplier relationships have only examined at the most two distinct types of asset specificity (most commonly, human and physical specificity), and over one-third of them have done so for the sole purpose of computing an aggregate measure of asset specificity. To date, only four studies appear to have considered the influence of temporal and brand specificity, in spite of the importance commonly accorded to the latter in terms of reputation capital. What is even more striking is the scant attention paid to site specificity, only examined by approximately 10% of such studies, despite the fact that site specific investments are – by their very nature – the most sizeable in terms of economic value and non-redeployability content, and the ones most likely to give rise to lock-in or hold-up scenarios. As noted earlier, there is also a paucity of empirical work examining the interaction effects of different types of specific investments undertaken by both buyers and suppliers. This could be due to the fact that it is often difficult and perhaps impractical to carry out research by surveying both suppliers and buyers while achieving a reasonable response rate. Nevertheless, this issue could be overcome by surveying one party (e.g. the buyer) within the relationship and then using its perceptions of the specific investments undertaken by its counterpart (the supplier). The use of buyers' perception in relation to suppliers should not affect negatively the measurement validity of the construct, since previous studies show that suppliers and buyers share consistent perceptions not only of the performance of the exchange relationship (Anderson and Narus 1990; Anderson and Weitz 1992), but also of the attributes of the exchange (Heide and John 1990).

Empirically, the measurement of asset specificity is still very ad hoc, being characterized by an, at best, discretionary and inconsistent operationalization of the construct. Although further empirical verification is needed to establish the discriminant validity of different dimensions of asset specificity, such dimensions are conceptually distinctive, calling for the disaggregated treatment of different types of asset-specific investments (drawing from either questionnaire-based survey or administrative data) while controlling for both the industry in which the supplier and/or buyer operate as well as the nature of the transactional activity itself.

Thirdly, a clear and consistent approach to the definition and measurement of 'relationship performance' is called for in this literature. Most of the theoretical and empirical studies within the TCE framework have traditionally been concerned with capturing the performance outcome of the alignment between organizational form and transaction characteristics, and have accordingly placed emphasis on 'transaction costs' to quantify 'governance efficiency'. In this context, where the trade-off is between production value and transaction costs, the presence of specific assets requires the evaluation of the extent to which such assets will create additional transaction costs to safeguard against opportunistic behaviour (Williamson 1975) or even allow reduction (economizing on) transaction costs (Buvik and John 2000). However, the analysis of the direct effect of asset-specific investments in buyer–supplier relationships calls for a wider definition of relational performance, one which explicitly considers the realization of expected gains (cost savings and/or value-adding advantages, including relationship satisfaction) *vis-à-vis* standardized solutions in the supplier market or even in-house production. It is worth noting that, under the latter approach to the evaluation of relationship performance (see, for example, Poppo and Zenger 1998 and De Vita *et al.* 2010), the firm's benchmarking calculation of the net gains factors in any additional contracting, negotiating and safeguarding costs incurred in outsourcing the function under conditions of asset specificity. A unified and consistent adoption of this more holistic approach to the definition and measurement of relationship performance in this literature would go some way towards reducing ambiguity and facilitating comparisons of findings across empirical studies located across different theoretical traditions.

The inconsistencies highlighted above constitute an even greater concern, considering that the review of the impact of asset specificity focused exclusively on predictions typically derived from the conceptual premises of three of the most prominent theories, namely TCE, RBV and RET. However, the existence of additional theoretical perspectives not included in this review compounds the heterogeneous treatment that characterizes the analysis of the impact of asset specificity on the performance outcome of inter-firm

relationships. For example, though not as prominent as TCE in the management literature, the Property Rights Theory (PRT) of the firm pioneered by Grossman and Hart (1986) and Hart and Moore (1990) has emerged as an important framework for the study of both boundary choice and inter-firm relationship performance. Although PRT starts from the same premises as TCE (incomplete contracts and *ex post* quasi rents), the types of specificity that matter and their predicted effects can be quite different from those obtained within TCE (see Gibbons 2005b; Holmström and Roberts 1998; Whinston 2003). Property Rights Theory has also been extended to a relational world (see, for example, Baker *et al.* 2002) and connections to the RET are evident.[2]

Methodologically, an important agenda for future research entails consideration of the possibility that the impact of asset specificity on inter-firm relationship performance goes beyond a simple, linear effect. As De Vita *et al.* (2010) pointed out, the threshold at which specific investments begin to trigger opportunistic expropriation may vary because of the value (cost) and non-redeployability content embedded in them. They further argued that, below this threshold, where asset specificity may represent an insufficient hostage to trigger expropriation, an increased level of specificity may instead lead to a more effective and efficient relationship. In contrast, beyond this threshold, where one party's individual gain from opportunistic expropriation is perceived to outweigh the shared benefits from an improved relationship, an increased level of asset specificity is likely to incentivize opportunistic behaviour, which in turn undermines inter-firm relationship performance. This suggests that the impact of asset specificity on inter-firm relationship performance may not follow a constant, linear effect, but rather be governed by an inverted U-shaped function. Future research may develop this lead and examine, through a longitudinal analysis, whether a threshold effect does indeed exist.

Finally, future analyses aiming to integrate different theoretical perspectives should – in addition to ensuring adherence to the original TCE notion of asset specificity and the consistent adoption of a wider, all-encompassing definition of relational performance – take account of a series of organizational, contingent and control variables that have proved to have explanatory power in previous studies located across theoretical traditions. These include the presence or otherwise of reciprocity in specific investments, the learning content of the inter-firm relationship, the degree to which the relationship hinges upon trust-based collaborative ties, the specific nature of the relational norms that govern such a collaboration, and its longevity or future time horizon. Also firm size is an important control variable for reasons of scale and scope economies, market power aspirations, and the ability to aggregate inputs (Anderson and Schmittlein 1984, p. 388). Firm size is also an indicator of the power relationship between two parties, with large firms likely to impose control over smaller transactional partners which, being more constrained by resources may, in turn, be more prone to opportunistic behaviour (Heide and John 1988).

Conclusions

The concept of asset specificity has been and continues to be refined in the light of new theoretical and empirical developments. With the aim of taking stock of past research and identifying challenges and new directions for future work, we first reviewed the development of the concept of asset specificity and identified six interrelated definitional themes that reflect the inherently complex nature of asset specificity. Further, we unpacked the multifaceted construct of asset specificity and drew attention to the idiosyncratic nature of its many distinct dimensions. The review then focused on the role of asset specificity on buyer–supplier relationship performance as implied by TCT, the RBV and RET. Ambiguities and contradictions were highlighted within these competing yet potentially complementary theories. These include the adoption of an inconsistent definition of asset specificity across theoretical perspectives, a tendency – even within empirical studies solely framed within the TCE literature – to adopt an aggregate measure of asset specificity, and lack of a uniform definition of relationship performance, one that would allow comparability of findings. In guiding future empirical work, in addition to uniform definitions of asset specificity and relationship performance, the review calls for a disaggregated operationalization of the asset-specific construct, one that would allow the separate estimation of all the distinct dimensions of asset specificity, since relationship performance might respond differently to different types of specific investments by buyers and/or sup-

[2]The authors thank an anonymous reviewer for this valuable suggestion.

pliers. Particular attention should be paid to the influence of brand specificity and site specificity, which appear to have been under-researched thus far, in spite of the importance commonly accorded to them in terms of reputation capital, economic value and non-redeployability content. The review also calls for longitudinal analyses able to control for possible non-linearities in estimation. Finally, future work aiming to integrate the different theoretical perspectives examined should include in model specifications a wide range of key moderating variables (such as firm size, reciprocity in specific investments, the nature of the relational norms governing the inter-firm relationship, its longevity and future time horizon) in order to explain better the complex relationship between asset specificity and inter-firm relationship performance.

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