



Global Co-Evolution of Firm Boundaries: Process Commoditization, Capabilities Development, and Path Dependencies

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This paper studies the co-evolution of firm boundaries and capabilities by examining the influence and interplay of process commoditization, changing external availability of capabilities and firm specific paths of governance decisions, along with strategic drivers guiding these decisions. We test hypotheses on a unique and comprehensive panel of global services sourcing projects from early experiments in 1980s through 2011. Our findings suggest that initial firm governance decisions are strongly influenced by process commoditization, external availability of services, and firm strategic objectives. With experience, governance decisions are primarily affected by past decisions and emerging – internal and/or external – sourcing capabilities. The results indicate persistent heterogeneity of boundary configurations as firm and supplier capabilities develop and differentiate over time.

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ABSTRACT

This paper studies the co-evolution of firm boundaries and capabilities by examining the influence and interplay of process commoditization, changing external availability of capabilities and firm specific paths of governance decisions, along with strategic drivers guiding these decisions. We test hypotheses on a unique and comprehensive panel of global services sourcing projects from early experiments in 1980s through 2011. Our findings suggest that initial firm governance decisions are strongly influenced by process commoditization, external availability of services, and firm strategic objectives. With experience, governance decisions are primarily affected by past decisions and emerging – internal and/or external – sourcing capabilities. The results indicate persistent heterogeneity of boundary configurations as firm and supplier capabilities develop and differentiate over time.

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Introduction

The constitution of firm boundaries is at the core of strategy and organizational research (Santos and Eisenhardt, 2009; Zenger et al., 2011). Firm boundaries are commonly discussed as an outcome of make or buy decisions (Williamson, 1985, 1991) and, increasingly, as a function of firm-specific assets and capabilities (Penrose, 1959; Barney, 1991). Departing from prior studies that focused on task or firm-level determinants of firm boundaries (e.g. Safizadeh *et al.* 2008), Jacobides and Winter (2005) have emphasized co-evolution of firm boundaries and both internal and externally available capabilities (see also Ciarli *et al.*, 2008; Malerba *et al.*, 2008). This paper contributes to this discussion by focusing on the impact of process commoditization, changing external availability of capabilities (supply driving demand) and firm specific paths of governance decisions, on the configuration of firm boundaries, and their co-evolution over time. The central focus of this paper is on the complex interplay of firm- (internal) and population-level (external) dynamics.

The empirical context of this paper is anchored in the three trillion (KPMG) and growing market for global sourcing of administrative and technical services (see e.g. Bunyaratavej *et al.*, 2011; Manning *et al.*, 2008; Doh, 2005) which in recent years has been changing the vertical scope and boundaries of both large multinational corporations (MNCs), and small and midsize firms. Several studies have examined antecedents of global services sourcing in general and outsourcing in particular (e.g. Ellram *et al.* 2008, Stratman 2008, McIvor 2009). However, the co-evolving dynamics involving governance mode decisions (captive or outsource), firm capabilities, and the dynamics of the global market of business services providers remain largely underexplored. Prior research suggests that firms differ in their paths of global expansion of sourcing operations (Gospel & Sako, 2010), involving, in some cases, development of firm specific sourcing and coordination capabilities (see also Jensen, 2009). Yet, how governance decisions relate not only to prior experience, but to the changing availability of providers of both commoditized and complex services has not been addressed systematically.

Following Davis and Marquis (2005), we argue that dynamic and complex phenomena, such as the co-evolution of firm boundaries and capabilities, can be explained by identifying *temporal underlying mechanisms* and by applying multiple theoretical lenses underlying these dynamics (see also Okhuysen and Bonardi, 2011). Specifically, we are interested in how particular mechanisms – process commoditization, availability of third party providers and their service offerings, and firm-level learning and path dependencies – affect global governance mode choices and resulting configuration of firm boundaries, and how the effect of these mechanisms changes over time. Our analysis further incorporates the role of firm strategic drivers in decisions to source business services globally. To test how these different mechanisms affect firm boundaries over time we use the comprehensive Offshoring Research Network (ORN) database which has been tracking global sourcing decisions across various business functions and locations from early experiments in the late 1980s through 2011.

This study contributes to the growing stream of literature on the dynamics of firm governance choices and industry-level changes (e.g. Jacobides & Winter, 2005; Ciarli *et al.*, 2008; Gospel & Sako, 2010) with a focus on a more fine-grained empirical understanding of the co-evolution of firm boundaries and capabilities on a global scale. We propose and empirically show that sourcing decisions and firm boundaries co-evolve as a joint outcome of internal firm specific and external dynamics. In particular, we demonstrate that growing external provider capabilities affect sourcing decisions of client firms differently depending on whether firms have more or less experience with global services sourcing. Less experienced client firms make decisions to outsource on the basis of availability of supplier capabilities, level of task commoditization and strategic importance of cost savings and speed to market rather than firm growth. Experienced firms are primarily guided by past governance decisions (captive or outsource), as they develop governance specific organizational capabilities and relations over time. In other words, initial sourcing decisions become important triggers of path-dependent learning and governance decisions, which explain persistent heterogeneity of firm boundary configurations as suppliers develop and differentiate capabilities in response to changing client populations and competition between suppliers.

The next section reviews the extant literature on the dynamics of governance choices, vertical scope, and market distribution of capabilities. We then introduce the context of global sourcing as an increasingly important arena for firm boundary constitution. The following section develops and tests hypotheses on the changing effects of task commoditization, external availability of services, firm-level strategic objectives and prior sourcing decisions, by time intervals and by firm experience. Finally, we discuss findings in terms of their empirical and theoretical implications.

The Co-evolution of Firm Boundary Constitution, Industry Dynamics and Firm Heterogeneity

The interest of economists, organization and strategy scholars in the constitution of firm boundaries has its foundation in the work of Coase (1937), Richardson (1972) and Williamson (1975) (for a recent review see Zenger, Felin and Bigelow, 2011). The economic and organizational advantages or disadvantages of internalizing a process or activity within the firm boundaries – vs. unbundling and sourcing products or services from other organizations – has been the focus of various organization theories including transaction costs economics (Williamson, 1975, 1985, 1991), resource dependence theory (Pfeffer and Salancik, 1978), resource-based view (Barney, 1991; Penrose, 1959; Wernerfelt, 1984), and dynamic capabilities (Teece *et al.*, 1997; Eisenhardt & Martin, 2000). The central focus of these theoretical approaches is on determining make or buy decisions on the basis of characteristics of tasks and cost tradeoffs (transaction cost economics including agency costs), resources required to perform critical activities (resource dependence theory), and firm-specific capabilities that sustain a competitive advantage (resource-based view; dynamic capabilities view).

More recently, several scholars have emphasized the importance of multiple dynamics influencing firm boundary constitution over time, including task features, firm idiosyncratic capabilities and industry-level dynamics (Jacobides & Winter, 2005; Diez-Vial, 2007; Argyres & Bigelow, 2010; Ciarli *et al.*, 2008; Dibiaggio, 2007; Wolter & Veloso, 2008). Firms are seen as part of an evolving system of interacting players, including competitors, potential clients and suppliers, whose strategic decisions and changing

capabilities influence each other's evolution (see also Lewin & Volberda, 1999). Jacobides and Winter (2005) in particular argue that vertical scope of firm activities is contingent upon distribution of capabilities within industries. Unequal distribution entails specialization effects and may trigger gains from trade, which, in turn, make vertical disintegration more likely. However, vertical disintegration also depends on whether or not focal firms can reduce transaction costs. Over time, the changes in vertical scope affect capability development processes within firms, which, again, change distribution of capabilities within industries (see also Gospel & Sako, 2010; Jacobides & Hitt, 2005; Diez-Vial, 2007). Dibiaggio (2007) also emphasizes the importance of specialization effects on vertical disintegration, but notes that development of abilities needed to govern complex relationships is equally important and needs to be incorporated into understanding dynamics of boundary constitution. Similarly, Jacobides (2005) argues that intra-firm abilities to partition and simplify coordination of processes may mediate the emergence of intermediate markets. Argyres and Bigelow (2010) and Ciarli *et al.* (2008) further argue that firm learning may promote task standardization and modularization, giving rise to scale and specialization economies, which, in turn, affect distribution of capabilities within industries.

This recent stream of research suggests that constitution of boundaries is a co-evolutionary outcome of both internal and external dynamics. *Internally*, changes in the ability of firms to perform particular tasks, coordinate and manage vendors, generate economies of scale and scope (Safizadeh, Field and Ritzman, 2008; Jacobides & Billinger, 2006), and benefit from learning and specialization effects (Dibiaggio, 2007), seem to affect decisions to vertically integrate or disintegrate particular processes. *Externally*, changes in availability of firms performing particular tasks (Jacobides & Hitt, 2005; Malerba *et al.*, 2008) – and generating cost advantages through specialization, learning, economies of scale and scope (Jacobides & Winter, 2005) – also affect the constitution of firm boundaries. The increasing standardization of tasks, therefore, is seen as a facilitating factor for vertical disintegration (Argyres & Bigelow, 2010), promoted both by supply-side specialization and buy-side contracting capabilities.

Although internal and external dynamics are recognized as important drivers of the co-evolution of firm boundaries and organizational capabilities, they also imply a fundamental tension which has not been sufficiently addressed conceptually or investigated empirically. The resource-based view and related approaches strongly suggest that internal capability development is often path-dependent and hence a source of *firm heterogeneity* within industries (Barney, 1991; Noda & Collis, 2001). Different strategic orientations of firms can be an additional and related driver of heterogeneity. Because of idiosyncratic strategies and firm specific paths of capability development, the propensity to externalize or internalize particular processes over time will *differ* across firms. At the same time, changing external sourcing opportunities may alter governance decisions across firms, thereby reducing heterogeneity. We seek to better understand this tension in order to develop a more nuanced understanding of the co-evolution of firm boundaries and capabilities.

Context of Global Services Sourcing

We investigate the changing configurations of firm boundaries in an increasingly important context of boundary constitution: the reorganization of firm value chains through global sourcing of business services. Unlike vertical disintegration in manufacturing, global services sourcing has primarily been an outcome the unbundling of functions and processes, such as HR, finance and accounting, IT infrastructure, software development, and analytics, across product lines and divisions (Sako, 2006). Starting with early experiments of sourcing administrative and technical processes offshore (see e.g. Doh, 2005; Lewin & Peeters, 2006), firms across industries, in particular from U.S. and Western Europe, have started restructuring and reorganizing their administrative and technical operations on a global scope, thereby exploiting specialized capabilities, location advantages such as lower labor cost and access to talent pools, as well as externally available service expertise (Kenney *et al.*, 2009; Manning *et al.*, 2008; Lewin *et al.*, 2009). Moreover, firms have utilized various service delivery models, ranging from purely captive (fully owned) operations, to joint ventures and third party providers. Advances in ICT have been demonstrated

to be important enabling factors, while also increasing reliability, security, and lowering costs of long-distance communication (e.g. Mithas & Whitaker, 2007). Relatedly, increasing availability of specialized global service providers (e.g. Ethiraj *et al.*, 2005) has become an important driver of global services sourcing in general, and global outsourcing in particular (Youngdahl & Ramaswamy, 2008).

While most studies agree that the growing outsourcing industry has contributed to the trend of global services sourcing (e.g. Levina & Su, 2008), research also shows that firms *differ* significantly in their paths towards establishing globally dispersed operations, using either captive (wholly owned units) or external providers (Gospel & Sako, 2010; Jensen, 2009). Whereas some studies have maintained the view that the level at which firm operations have been disintermediated through global outsourcing can be mainly explained by different degree of standardization of tasks and transaction costs (e.g. Ellram *et al.* 2008; Stratman 2008), many scholars have shared view that – quite independently of task features – differences in firm-level capabilities and sourcing strategies account for firm heterogeneity in decisions to outsource or internally deliver particular services (e.g. Holcomb & Hitt 2007, Kedia & Mukherjee 2009, McIvor 2009, Parmigiani & Mitchell 2009, Weigelt, 2009). However, most studies focusing on firm heterogeneity have, in turn, neglected the fact that, while firms may take rather idiosyncratic paths of governance decisions, the external environment, including changing external sourcing opportunities, is also affecting make or buy decisions. It is therefore important to consider both internal dynamics of sourcing decisions and external industry changes for a more comprehensive understanding of co-evolution of firm boundaries.

Hypotheses Development

In developing the hypotheses we distinguish between two coevolving dynamics: (1) the evolution and professionalization over time of global sourcing as a business practice along with development and growing maturity of supplier industry (external, population wide dynamics); and (2) client firm-specific growing experience with global services sourcing (internal, firm level dynamics).

Commoditization of Processes (H1)

In line with previous research, we propose that the degree to which processes are commoditized affects firm decisions to integrate or disintegrate these processes (Williamson, 1985). In general, commoditization refers to a process by which tasks and processes become more standardized and less firm-specific. Knowledge about performing these tasks diffuses across firms and industries, thus creating opportunities for intermediate markets of providers to take advantage of economies to scale and offer services at lower costs (see also Davenport, 2005). Commoditization affects so-called mundane transaction costs (e.g. Langlois, 2006; Baldwin, 2008) which refer to costs associated with definition of tasks, measuring performance and assessing service quality. If providers offer total cost advantages then market solutions are more likely (Williamson, 1985; Baldwin, 2008). However, if mundane transaction costs are high and/or processes are highly client-specific, they are more likely to remain in-house (Safizadeh *et al.*, 2008). Agency theory suggests that tasks that cannot be sufficiently specified should not be externally contracted (Jensen and Meckling, 1995). In the context of global sourcing many studies have confirmed the importance of task commoditization as a driver of external delivery solutions (Ellram *et al.*, 2008; Stratman, 2008; Kedia & Mukherjee, 2009; McIvor, 2009).

However, the importance of process commoditization in driving process disintegration may change over time. Prior studies report that specialized suppliers seek to move up the value chain by developing the capability to perform increasingly complex and comprehensive tasks (Gospel and Sako, 2010; Dibiaggio, 2007). This tendency has been shown for example in the automotive industry, where increasing vertical disintegration has led to the emergence of powerful component and systems suppliers taking on the entire process of developing and manufacturing brake systems, engines and other complex entities (e.g. Sadler, 1999). As competition among services providers increases, the provider market matures and becomes more concentrated, potential clients will be more likely to contract with full-service providers who create

economies of scale and scope by offering integrated service solutions (Lewin *et al.*, 2010). In addition, service providers develop industry and client specific competencies by making client specific investments into software and training which allow them to customize services and expand client relationships (Manning *et al.*, 2011). Over time, some providers therefore capitalize less on task commoditization and more on client and domain expertise, as well as developing deeper and more enduring client relationships. Paradoxically, this trend is also driven by *increasing* task commoditization and related cost pressures, and the perceived need of providers to differentiate and remain competitive through client and domain specific knowledge. Overall, task commoditization would be more important at an early stage than at a later stage when more complex services are demanded and offered. We therefore propose:

H1a: The degree of commoditization of a task or process will positively affect the likelihood that a client firm chooses to outsource the task or process at an early rather than a later stage in the evolution of the global sourcing industry (external dynamics).

In addition, firm internal learning processes, development of global sourcing capabilities and evolving relationships with third party service providers may also affect the importance of process commoditization as a driver of vertical disintegration. Although, at an early stage, firm sourcing decisions are likely to focus on outsourcing highly standardized tasks (e.g. Jensen, 2009), over time firms can be expected to learn to source various processes from globally dispersed locations and to develop the capability to disintermediate and source more complex tasks (e.g. Kenney *et al.*, 2009). Clients are likely to develop deeper collaborative relationships with suppliers, involving complex and sometimes idiosyncratic, client-specific governance arrangements (Dyer & Singh, 1998; Dibiaggio, 2007) that enable outsourcing more sophisticated and client-specific tasks. Furthermore, clients are likely to extend a limited number of already established supplier relationships rather than expanding the number of independent sourcing relationships (Manning *et al.*, 2011). This minimizes search and agency costs, generates synergy effects and economies of scale and scope, and allows companies to outsource more

comprehensive work packages based on already developed relationship-specific investments (Dyer & Singh, 1998). As clients gain outsourcing experience, decisions to outsource tasks would be increasingly less motivated by the level of task commoditization, and more by relying on and utilizing already established client-supplier relationships. The same argument can be made about firms that learn to source increasingly complex tasks from offshore captive subsidiaries. We therefore propose:

H1b: The degree of commoditization of a task or process will positively affect the likelihood that a client firm chooses to outsource the task or process when the firm has little global sourcing experience rather than when it has accumulated significant global sourcing experience (internal dynamics).

Dynamics of availability of provider capabilities (H2)

A central proposition in the literature on co-evolution of capabilities and firm boundaries is that changes in the availability of specialized providers of services affect the vertical scope of (client) firms (Jacobides & Winter, 2005; Argyres & Bigelow, 2010; Dibiaggio, 2007; Jacobides & Hitt, 2005). A number of studies on global services sourcing suggest that the provider industry has witnessed an accelerated growth of various service capabilities (Youngdahl & Ramaswamy, 2008; Ethiraj *et al.*, 2005; Athreye, 2005; Levina & Su, 2008). From the client firms' perspective, disintegrating and externalizing more complex, higher value added processes becomes more feasible as a greater number of suppliers develop capabilities to perform these processes. Also, the increasing availability of providers for particular services is likely to coincide with growing provider visibility to clients, as providers compete for client projects and hence take initiatives to actively promote their services. This, in turn, is likely to affect client decisions to source processes externally, instead of relocating a process in a captive organization unit offshore.

We further argue that, as global sourcing practices become more established and as the service provider industry matures and becomes more professionalized, client firms are more likely, either directly or through consultants, to have access to information about service offerings available from providers. As

global sourcing evolves over time, information about globally available services diffuses through consulting firms and industry associations (see e.g. GlobalServices, 2009), and collective knowledge about outsourcing opportunities within and across locations increases (see also Langlois, 1992), so that even inexperienced client firms are able to make informed (out)sourcing decisions. Finally, in recent years providers from both advanced and emerging economies have set up global service delivery centers across the world to provide services from near shore locations, allowing them to better initiate and manage client relationships (see e.g. Niosi & Tschang, 2010). This development, which resulted from demands by clients for near shore delivery centers and from competition between providers to differentiate from one another, further increased the visibility of provider capabilities to potential clients across the world. We therefore hypothesize:

H2a: The proportion of service providers able to offer a particular service will positively affect the likelihood that a client firm outsources that service to an external provider at a later rather than an early stage in the evolution of the global sourcing industry (external dynamics).

With regard to predicting the effect of internal dynamics, a more ambivalent picture emerges. On the one hand, prior studies suggest that as client firms gain experience with global sourcing, their knowledge about external sourcing opportunities increases (e.g. Langlois, 1992). As a result, firms would be better able to assess the availability of providers of particular services. With experience, firms may also gain trust in the fact that providers are not only available, but also capable of providing services in an effective and efficient way. On the other hand, prior studies (e.g. Beckman et al., 2004; Gulati, 1995; Uzzi, 1997) also suggest that as companies develop deeper relationships with suppliers or alliance partners over time, their search for potential future partners narrows. In other words, whereas inexperienced firms may engage in extensive search processes for initial projects, the perceived need for extensive search decreases over time as client firms develop experience in global sourcing. This is because client firms either develop idiosyncratic captive sourcing capabilities (see also below) or they re-select previous outsourcing

partners (e.g. Levinthal & Fichman, 1988; Gulati, 1995; Manning *et al.*, 2011). Therefore, although client firms might know about alternative sourcing opportunities over time, it is likely that this knowledge will not significantly affect their sourcing decisions. We therefore hypothesize:

H2b: The proportion of service providers able to offer a particular service will positively affect the likelihood that a client firm outsources that service to an external provider when the firm has little experience rather than when it has accumulated significant experience with global services sourcing (internal dynamics).

Initial Decisions, Path Dependency and Experience (H3)

Earlier we argued that the previous literature on firm boundary constitution has largely overlooked firm heterogeneity in affecting this dynamic. One major source of firm heterogeneity are the initial sourcing decisions firms make, which may lead to rather idiosyncratic paths of decision-making (Noda & Collis, 2001; Sydow *et al.*, 2009). These decision paths may be an important foundation for developing firm specific capabilities that can become the basis for competitive advantage (Helftat and Peteraf, 2003) as well as for exploiting and capitalizing on previous resources and capabilities (Barney, 1991; Teece *et al.*, 1997; March, 1991). However, initial decision-making paths can also be the cause of rigidities and path dependencies (Leonard-Barton, 1992; Levinthal & March, 1993; Sydow *et al.*, 2009), which may lead to lock-in and the exclusion of certain options (Arthur, 1988; Ghemawat, 1991) that become less feasible over time. We propose that a similar dynamic is affecting the co-evolution of firm boundaries in the context of global services sourcing. For example, recent studies suggest that when companies initially decide to set up captive shared services centers offshore, outsourcing decisions at a later stage become *less* rather than *more* likely¹. Reasons include the lack of development of outsourcing and contracting

¹ Quote from CEO Fortune 500 company: “[The] creation of [an] internal shared services group, in retrospect, became the major obstacle to achieving the next level of cost savings and process optimization. The resistance to offshoring [by] the shared services organization was fierce” (Lewin *et al.*, 2010)

capabilities combined with synergy effects - e.g. in terms of training and monitoring -, and the development of internal sourcing capabilities promoting the continuous preference for internal solutions (see also Sirmon *et al.*, 2008; Jacobides & Billinger, 2006; Safizadeh *et al.*, 2008). Initial decisions to outsource, on the other hand, can give firms the opportunity to develop collaborative capabilities, such as contracting and vendor management capabilities involving various governance practices and routines for evaluating external provider capabilities and performance (Dibiaggio, 2007; Argyres & Mayer, 2007; Dyer & Singh, 1998). The growing experience with external delivery helps firms better manage typical risks, such as loss of managerial control, intellectual property protection etc. (see also Grossman & Helpman, 2005). Finally, prior research suggests that, once initial client-supplier relationships involving sourcing of business services develop, they are not only stable, but open up opportunities for expanding outsourcing operations across services and client functions (Levinthal & Fichman, 1988; Manning *et al.*, 2011; Sako, 2006). This will increase the likelihood that firms persist with preferring external sourcing solutions. We therefore propose:

H3a: Past decisions to outsource processes increase the likelihood that a firm will choose to outsource new processes.

H3b: Past decisions to relocate processes as captive operation offshore decrease the likelihood that a firm will outsource new processes.

Strategic Objectives and Goals

Next to the above three mechanisms, another important source of firm heterogeneity in sourcing services globally results from firms' strategic goals and performance objectives. Prior research suggests that, in the context of global services sourcing, firms differ in the extent to which they are driven by particular strategic sourcing objectives, such as reducing labor and other costs, accessing talent, increasing speed to market, establishing access to new markets and other growth-related objectives (Lewin & Couto, 2007;

Massini *et al.*, 2010). Strategic objectives create legitimacy for action and direct attention of managers to attend to specific goals in decision-making processes (Ocasio, 1997), which may affect the development of organizational capabilities as well as constitution of firm boundaries over time. Three types of strategic goals can be identified as particularly relevant for global sourcing decisions: (1) reducing costs; (2) promoting firm growth; and (3) increasing speed to market.

The goal of decreasing labor and other costs is widely shared among companies engaged in sourcing of business services offshore (e.g. Doh, 2005). Vertical disintegration specifically (i.e. outsourcing) is typically seen by firms as an effective way to benefit from labor arbitrage and other cost reductions such as capital outlays (e.g. Ciarli *et al.* 2008). By contrast, if sourcing business services offshore is seen as integral element of the global growth strategy of the firm, we expect integration of activities to be more likely. This is because the ability of firms to grow highly depends on their ability to generate economies of scale and scope through bundling of resources and operations across locations as a source of competitive advantage (Penrose, 1959). Finally, some firms may have an overriding strategic interest of increasing speed to market through global sourcing and therefore source needed capabilities from specialized providers rather than attempt to develop such expertise internally (see also Ciarli *et al.*, 2008).

The importance of firm-specific strategic drivers in influencing sourcing decisions (disintegration or integration) may however, be expected to change over time. From an *external dynamics* perspective, prior research suggests that, as supplier industry matures and specialization effects proliferate (Jacobides & Winter, 2005), suppliers' ability to deliver services at lower costs, as well as undertake higher value adding activities increases (Ciarli *et al.*, 2008). Likewise, the global expansion of providers along with their ability to increase speed of service delivery (Niosi & Tschang, 2010) over time is likely to make outsourcing decisions more attractive for clients for whom speed to market is a strategic driver. We therefore propose:

H4a: The importance of cost reduction associated with global sourcing positively affects the likelihood that firms choose to outsource services at a later rather than at an early stage in the evolution of the global sourcing industry (external dynamics).

H4b: The importance of speed to market associated with global sourcing positively affects the likelihood that firms choose to outsource services at a later rather than at an early stage in the evolution of the global sourcing industry (external dynamics).

Although, from an *internal dynamics* perspective, strategic drivers for global sourcing may strongly influence initial search processes for sourcing solutions (see above discussion), they can become less relevant over time as firms gain experience and diversify their sourcing processes globally. For example, a number of studies have shown that firms, for whom the initial strategic drivers were reducing costs through global sourcing, discover opportunities of using their offshore captive facilities to perform more complex tasks and advancing other performance objectives, such as accessing talent, and enhancing product innovation (Jensen, 2009; Lewin et al., 2009). In other words, initial strategic drivers for global sourcing in general and outsourcing in particular may become less relevant compared to opportunities arising from emerging capabilities and sourcing relations. In addition, sourcing decisions might become more affected by particular operational challenges firms face over time, rather than by initial rationales for making sourcing decisions. We therefore propose:

H4c: A firm's strategic orientation towards cost saving and speed to market will increase the likelihood of outsourcing decisions when a firm has little experience with global services sourcing rather than when it has accumulated significant experience with global services sourcing (internal dynamics).

H4d: A firm's strategic orientation towards growth will decrease the likelihood of outsourcing decisions when a firm has little experience with global services sourcing rather than when it has accumulated significant experience with global services sourcing (internal dynamics).

Data and Methodology

We test our hypotheses (see Figure 1 for a summary) based on longitudinal data collected by the international Offshoring Research Network (ORN). The ORN is a network of scholars based in the U.S., Europe and Australia studying the dynamics and trends of global business services sourcing. Since its foundation in 2004, ORN research team has conducted two major annual surveys: the corporate (buy side) survey and the service provider survey. Data from both surveys are utilized for this particular study.

The corporate survey collects data from U.S. firms (since 2004), European firms (since 2006) and Australian firms (since 2009) on their global sourcing strategies, drivers, perceived risks, outcomes, future plans and concrete implementations, including fine-grained information on processes sourced from abroad - launch year, choice of location, choice of governance mode (both captive and outsourced) and performance data, e.g. savings achieved. The database used for this study is based on surveys conducted between 2005 and 2011, with data on 304 firms that were sourcing 930 business services projects offshore (captive and outsourced). Importantly, since the ORN database provides historical information on the year when a specific task or process was first offshored, we are able to carry out a longitudinal analysis of sourcing projects and governance mode choices over time, from experimental projects implemented even before 1990 to 2011.

Firms are based in different industries, primarily manufacturing, finance and insurance, software, and professional services. 38% are large firms (>10,000 employees); 26% are midsize (500-10,000 employees) and 36% are small (<500 employees) (Table 1 provides a detailed breakdown). Altogether, those firms

dependent variable is consistent with other studies analyzing governance mode choices of firms (e.g. Ellram *et al.* 2008, Stratman 2008).

The independent variables are derived from the two ORN surveys and listed and explained in Table 2. *Commoditization of processes* (H1) is operationalized as a 5 point Likert scale variable from the service provider survey – TASK_COMM – measuring the degree to which particular processes and functions, e.g. IT, software development, call centers, administrative services, are perceived by responding providers to have been commoditized at a particular point in time. We generated the variable by collecting data on perceived commoditization of processes from three survey runs – 2007, 2009 and 2010. The value for 2008 was computed as the average between 2007 and 2009. Because of lack of historical data on this variable, we decided to use the 2007 value as a proxy for years before 2007.²

External availability of services (H2) is measured by the lagged percentage of providers offering particular services in any particular year (IND_AVAIL). Data was derived from the ORN service provider survey. For example, if 2 out of 10 providers have provided call center services to global clients since 2001, our external availability index for call centers in 2002 would be 0.2. We thereby use historical information providers give about the year since when they have provided particular services.

Prior sourcing decisions (H3) for outsourcing and captive choices are operationalized as two dummy variables denoting, on the one hand, whether or not a client firm opted for the captive model at least once before making a particular sourcing decision (EXP_CAP), and, on the other hand, whether or not a client firm opted for the outsourcing model at least once before making a particular sourcing decision (EXP_OUT). There are cases where firms have experimented with both models (EXP_CAP =1; EXP_OUT=1) prior to making a particular decision.

² We ran robustness checks on the estimations of commoditization by function for the years 2000 to 2006, and 2011 based on the available data from 2007, 2009 and 2010 (least squares method). Results are similar, except that task commoditization becomes insignificant in one model configuration. Post-regression analyses, however, suggest similar trends as discussed below (using the constant commoditization measure for projects before 2007).

choice of governance mode in global sourcing decisions, and their changing effect over time, we carry out the analysis on two sets of two subsamples. In order to account for external dynamics, we refer to pure temporal dimension and split implementations into past (prior to 2005) and recent (since 2005) implementations. Splitting by year allows investigating changes in explanatory mechanisms (Davis and Marquis, 2005) for governance decisions across firm populations as global sourcing practices and the outsourcing industry have become more established and mature. Using the 2005 time split cuts the whole sample almost in half, providing statistical justification for choosing this particular year.⁴ To analyze internal dynamics, we split the sample according to the level of firm-specific experience with global sourcing: projects offshored with less than two years of firm prior experience with global sourcing vs. projects based on at least two years of firm prior experience with global sourcing. The rationale behind this is that once firms have accumulated some experience, the factors and mechanisms that drive model choices may be different than for firms' starting experimenting with global sourcing.⁵

Importantly for the interpretation of results, internal and external dynamics do not evolve independently from one another. Client firms have become more and more experienced with global sourcing over time (see Figure 2). However, as the total number of global sourcing projects has increased over time, the *number* of projects originating from firms with no prior experience has continued to grow (e.g. from 364 projects between 2000 and 2004, to 375 between 2005 and 2009, according to ORN data).

Results

Table 5 displays the results of the logit models estimated to test the effects of the degree of process commoditization, external availability of services, prior experience and strategic goals on outsourcing

⁴ For robustness checks we also used different time splits (2003, 2004, 2006, 2007). The results in terms of effects of our main variables when we used different years to split the sample are similar, indicating robust trends. We are happy to provide the results of these further regressions upon request.

⁵ We replicated sub-sample analysis for 'function specific' rather than general experience with global sourcing. The core findings remain the same and we decided to present here only the split by firm general experience with global sourcing. We also used different experience splits for robustness checks. We are happy to provide the results of these further regressions upon request.

dynamics; Cols. 4 and 6). Our findings suggest that the external availability of services affected early outsourcing decisions to a significant degree, and even more than in recent years (see odds ratios in Cols. 5 and 7). This suggests that independently of industry maturity, availability of suppliers increases the relative attractiveness of process outsourcing over vertical integration. We can confirm Hypothesis 2b that availability of suppliers affects sourcing decisions of inexperienced firms (col. 8) more than firms experienced with global sourcing (col. 10) – again supported by a fairly high odds ratio for projects based on less than two years of global sourcing experience (22.996). As firms grow experience with global sourcing, they might become aware of external sourcing opportunities. Yet, these matter less in firms' sourcing decisions because of the dominant role of already established sourcing relationships. This finding may also partly explain why, even at an early stage of industry development, available suppliers already represented an attractive option, mostly for inexperienced clients in search of viable sourcing alternatives. As we showed earlier, most firms engaging in global sourcing before 2005 were inexperienced and hence affected more by supplier availability. Again, by splitting the sample we obtain a more nuanced understanding of the effect of available supplier capabilities, which is positive and significant, as expected, in the full sample (Col. 2).

Prior decisions and experience. We hypothesized that prior experience with offshore outsourcing significantly increases the likelihood that firms outsource again (Hypothesis 3a), whereas previous experience with a captive offshoring solution decreases the likelihood of outsourcing (Hypothesis 3b). The regression results confirm both hypotheses. Prior outsourcing has a highly significant positive effect and prior captive solutions have a highly significant negative effect in all four subsamples: before/since 2005 (Cols. 4 and 6), and for both inexperienced and experienced firms (Cols. 8 and 10). These results are also confirmed in whole sample model (Col.2). This suggests that, in addition to task commoditization effects and industry-wide changes, sourcing governance choices display strong path dependencies, probably due to synergy and productivity effects and emerging capabilities in using a particular sourcing

model. This has important implications for understanding of co-evolution of industry dynamics and firm boundaries.

Strategic goals of firms. We further hypothesized how sourcing strategic goals may affect governance choices. First, we hypothesized that orientation towards saving costs and increasing speed to market increases the likelihood of outsourcing over integrating services, more at a later stage than at an earlier stage of industry maturity (H4a, H4b). These hypotheses are confirmed (Cols. 4 and 6). Second, we hypothesized and confirmed that inexperienced firms are affected by their strategic orientation to cost and speed in sourcing decisions more than experienced firms (H4c, Cols. 8 and 10). For experienced firms, internal path dependencies resulting from prior outsourcing experience seem to dominate all other factors, including their strategic orientation. The same holds for the importance of growth as a driver of global sourcing (H4d): whereas this driver significantly decreases the likelihood of outsourcing decisions for inexperienced firms, it does not have a significant effect among more experienced firms (Cols. 8 and 10). The analysis on the full sample (Col. 2) confirms that in general cost savings and speed to market goals favor outsourcing decisions and that growth objectives favor fully owned solutions. Again, the analysis on the subsamples reveals more nuanced dynamics.

Control variables. Firm size has a marginally negative significant effect in the control only regression (prob.=0.132, Col. 1), in the early stage model and for more experienced firms (respectively prob.=0.154, Col. 4, and prob.=0.117, Col. 6) suggesting that larger firms are less likely to externalize processes. This may be due to scale and scope economies that make captive operations comparatively more cost effective for larger firms. As for industry effects, firms in IT and software industries are significantly less likely to choose external delivery models, as they tend to have in-house business process capabilities, while firms in the infrastructure industry are significantly more likely to do so in the early stage and when firms are less experienced. With regard to home country effects, firms from U.S., UK and Netherlands were significantly more likely to use outsourcing in the early years of global services sourcing, but not in more recent years. Belgian firms show a different pattern, as they tend to prefer fully owned operations,

resulting co-evolution of firm boundaries over time. The study contributes to a growing stream of research on the co-evolution of firm capabilities and firm boundaries (Jacobides & Winter, 2005; Ciarli *et al.*, 2008; Dibiaggio, 2007; Diez-Vial, 2007; Gospel & Sako, 2010; Malerba *et al.*, 2008). We advance this research stream by examining the interplay of firm-internal and external dynamics affecting the co-evolution of firm boundaries. In particular, we reveal persistent heterogeneity of firm boundary configurations as business services become more commoditized and external capabilities develop and co-evolve with client-side sourcing arrangements. As we argue in more detail, this heterogeneity can be explained by the interplay of internal path dependencies, changing distribution of experience levels within industries, and supplier capability differentiation.

First, in line with the established literature on outsourcing (e.g. Ellram *et al.*, 2008; Youngdahl & Ramaswamy, 2008), we analyzed the effect of process commoditization as a significant driver of global service outsourcing decisions. Our dynamic analysis shows that, except for inexperienced firms, as global sourcing becomes a more established practice and the outsourcing industry continues growing and maturing, process externalization can no longer be explained by the commoditization of processes. A more fine-grained analysis of sourcing decisions by level of experience reveals that over time inexperienced firms continue to be more likely to externalize primarily commoditized processes. By contrast, as firms gain global sourcing experience, their decisions to internalize or externalize operations seems to be based more on path dependencies from past sourcing decisions than on the extent of process commoditization. Over time, firms learn to coordinate more complex processes globally, either internally or through deep relations with external providers, whereas inexperienced firms lack this capability. As a result, as the proportion of experienced client firms increases vis-à-vis inexperienced firms over time, process commoditization becomes less of a predictor of outsourcing decisions across the population of client firms.

Second, in line with prior research (e.g. Jacobides & Winter, 2005), we analyzed how the level of external service availability affects the tendency of firms to disintegrate processes and thereby change their

vertical scope of activities. We find that the degree to which client firms respond to market signals depends on their internal sourcing experience. Previous studies argue that, as firms gain experience with outsourcing particular processes, they become aware of external sourcing opportunities, which, in turn, affect future outsourcing decisions (Langlois, 1992). Our findings add an important nuance to Langlois' conclusion. In the context of global sourcing, those firms that lack experience with this practice are more likely to respond to the availability of providers for particular services than those experienced with global sourcing. Experienced firms may indeed become aware of external sourcing opportunities, but because of path dependence on prior choices and development of idiosyncratic sourcing capabilities, they may not respond to these changing opportunities.

The reason why inexperienced firms seem to respond more strongly to market signals of providers is related to our *third* major finding: the likelihood of firms to choose external rather than internal delivery models is highly dependent on previous sourcing decisions. We find that, because of the development of specific capabilities, previous outsourcing decisions make future outsourcing decisions more likely, whereas previous internal sourcing decisions favor future internal sourcing decisions. These path dependencies have been largely overlooked in the literature on firm boundary co-evolution within industries and in the outsourcing literature. 'Captive paths' may start because firms are initially geared towards aligning their global sourcing operations with growth strategies. 'Outsourcing paths' may start because firms initially find providers to deliver certain commoditized services for lower costs. Over time, client firms develop the capability to formulate robust contracts with providers and manage outsourcing relationships in effective ways (Argyres and Mayer, 2007), including multi-service relationships with same provider (Manning *et al.*, 2011). This, in turn, allows providers to engage in more complex and client-specific service relationships, and to create economies of scope across services. We argue therefore that experienced client firms do not primarily outsource processes because of process-related commoditization and cost advantages, but because of preexisting supplier relations and emerging joint capabilities to outsource and coordinate more complex service bundles across corporate functions (see

also Sako, 2006). In turn, experienced firms on a ‘captive path’ are similarly less likely to switch to outsourcing as they have developed internal sourcing capabilities that allow them to match scale and scope economies of potential providers. Because of the potential to bundle services across product lines and divisions (Sako, 2006), services sourcing can yield productivity gains both through captive and outsourced solutions. This can be seen as the key reason why providers often offer more commoditized services to inexperienced firms, while providing more complex and client-specific service bundles to long-term clients.

These findings have major implications for our understanding of the co-evolution of firm-level process capabilities, sourcing decisions and boundaries of firms. Previous research has argued that the co-evolution of firm boundaries is a function of unequal distribution of process capabilities within industries along the value chain, resulting gains from trade and potential specialization effects, and decreasing transaction costs for external sourcing solutions (Jacobides & Winter, 2005; Ciarli *et al.*, 2008). Furthermore, as supplier industries mature and advance their capabilities, and client firms develop more sophisticated sourcing capabilities, suppliers and clients may develop more complex sourcing relationships (e.g. Dyer and Singh, 1998). This dynamic has been demonstrated, for example, in automotive industry where client-supplier relations have co-evolved with increasingly comprehensive sourcing practices (e.g. Sako, 1996; Takeishi, 2001).

In the case of global services sourcing we observe a different dynamic. Unlike in the case of manufacturing (e.g., the Swiss watch making industry in Jacobides and Winter, 2005), where the co-evolution of client-side sourcing capabilities and supplier-side process capabilities have often led to an industry-wide ‘upgrading’ of supplier relationships along with the emergence of new intermediate markets, with the global sourcing of business services we observe that firms with no or little global sourcing experience, from different industries, keep entering and showing interest primarily in outsourcing highly commoditized business services, while, at the same time, the number of more experienced firms is increasing. Some of these experienced firms have benefitted from productivity gains

through idiosyncratic captive service solutions (e.g. shared services centers), driven by initial growth objectives or lack of external suppliers of particular services capabilities. Others have developed long-term relationships with suppliers, including the delivery of both standardized and more complex and/or client-specific bundles of services across business functions, divisions and product lines (Sako, 2006). Because of these parallel dynamics and the potential of both captive and outsourced delivery solutions to increase efficiency, we observe continued *heterogeneity* of firm sourcing experiences and boundary arrangements. In response, suppliers develop heterogeneous client-seeking and retaining strategies, thereby establishing segmented markets for inexperienced and more experienced client firms. Therefore, unlike prior studies, we suggest that co-evolutionary dynamics do not necessarily lead to homogeneous institutional changes of sourcing practices (see e.g. Windeler and Sydow, 2001 for the example of the TV movie industry), but that firm-level heterogeneity and path dependencies may promote differentiation rather than institutional homogeneity of sourcing practices.

This paper has some empirical limitations which can provide opportunities for future research. First, it uses a rather general distinction between outsourced and captive arrangements which leaves out of consideration the types of external providers used (e.g. local or international), and the variety of service delivery models (e.g., joint ventures). To better understand the role of providers in client sourcing decisions, future studies should take these differences into account. Second, this study introduced the role of institutional and political risk factors at the national level affecting sourcing decisions. However, government regulations and the emergence of maturity and ISO standards involving quality of service and rigor of processes at providers and clients, may also affect sourcing decisions (see e.g. Ethiraj *et al.*, 2005). Third, while findings hint at the importance of experience, firms differ in the way they learn and develop capabilities (Cohen & Levinthal, 1990). Future studies should therefore relate macro-level trends to micro-level processes in order to better understand path-dependent mechanisms affecting sourcing model decisions observed in this particular study.

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Figure 1: Factors explaining global firm boundary changes

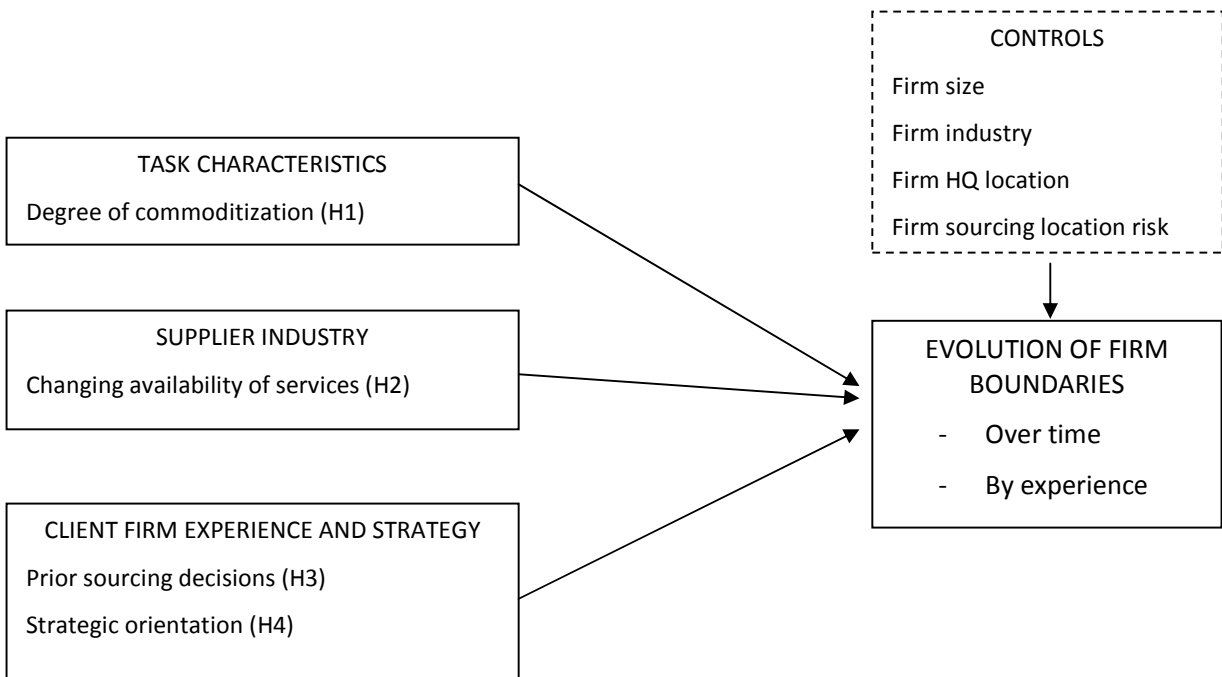


Figure 2: Evolution of global sourcing projects by levels of experience

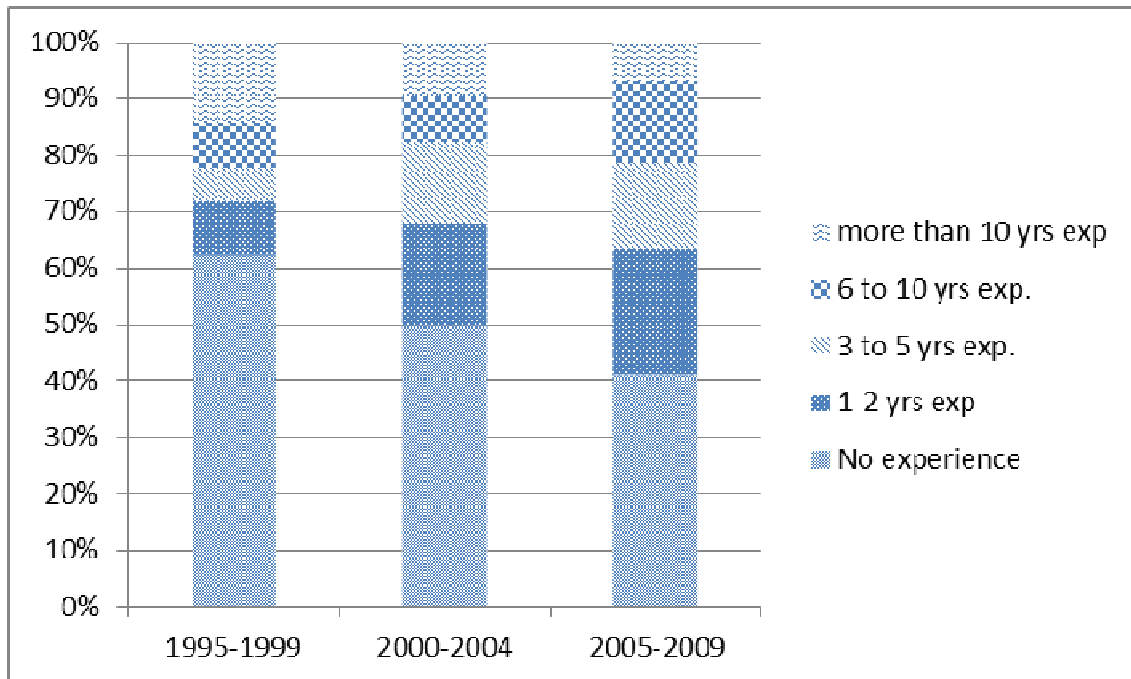
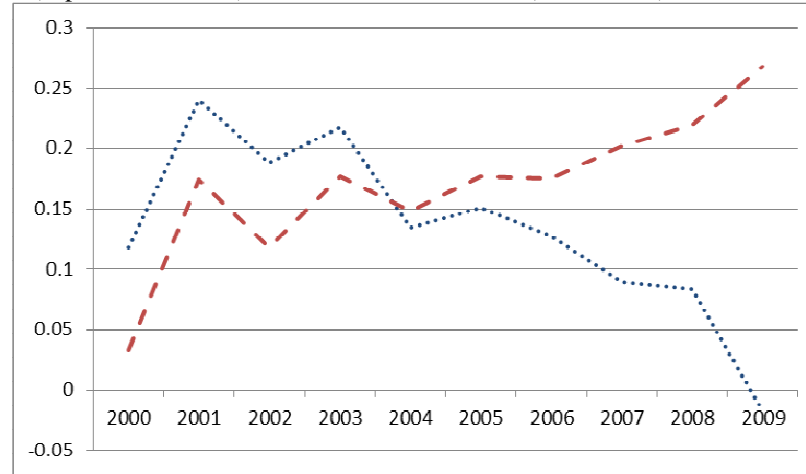
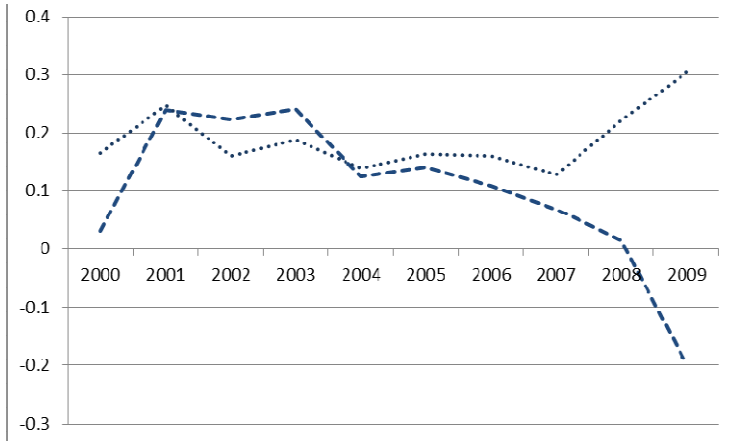


Figure 3: Correlation of governance choices, commoditization of processes and external availability of services

(1) Correlation between external delivery choice (dependent variable) and task commoditization (blue, dotted) and external service availability (red, dashed)



(2) Correlation between external delivery and task commoditization for inexperienced (dotted) vs. experienced firms (dashed) over time



(3) Correlation between external delivery and service availability for inexperienced (long dash) vs. experienced firms (short dash) over time

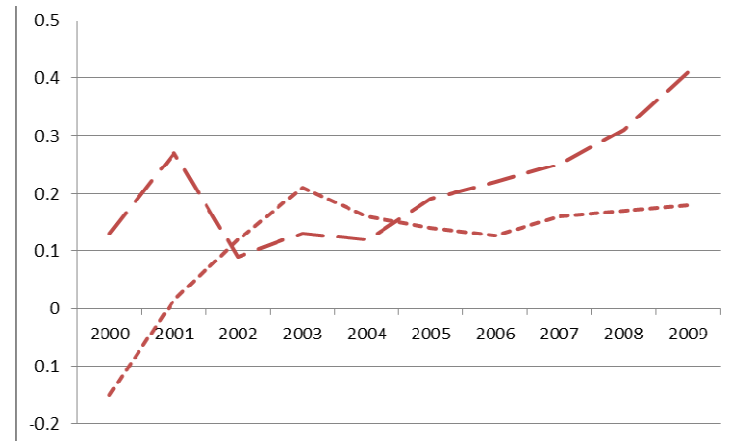


Table 1: Sample descriptive statistics

A: Sample descriptive statistics of client firms					
	% of companies	N	% offshore projects	N	
FIRM SIZE					
Small (=<500 empl.)	36%	108	26%	245	
Midsized (>501 - =<10,000)	26%	79	28%	256	
Large (>10,000)	38%	117	46%	429	
<i>Total</i>	<i>100%</i>	<i>304</i>	<i>100%</i>	<i>930</i>	
INDUSTRY					
Software and IT Services	28%	86	27%	247	
Financial Services	17%	53	18%	171	
Manufacturing	13%	41	18%	168	
Professional Services	12%	37	8%	79	
Telecommunications	6%	17	6%	58	
Retail and Consumer Goods	3%	10	4%	40	
Pharmaceuticals and Life Sciences	3%	9	2%	23	
Transportation and Logistics	3%	8	4%	34	
Energy, Utilities and Mining	1%	4	1%	9	
Other	13%	39	11%	101	
		304		930	
B: Distribution of offshore implementations across functions and locations of client firms					
Business Functions	% (N)	Home Country	Firms% / Projects %	Locations	% (N)
Analytical Services	4% (33)	USA	59% / 65%	India	41% (378)
Call Centers	16% (152)	Netherlands	13% / 13%	Asia	12% (109)
Engineering Services	9% (84)	Belgium	10% / 8%	Western Europe	12% (107)
Finance & Accounting	11% (101)	United Kingdom	4% /4%	Eastern Europe	10% (94)
Human Resources	3% (26)	Scandinavia	4% / 2%	Latin America	10% (91)
IT Infrastructure	22% (202)	Spain	2% / 2%	China	9% (85)
Legal Services	1% (8)	Australia	2% / 1%	US	4% (41)
Marketing & Sales	8% (73)	Germany	1% / 0%	Africa	1% (13)
Procurement	6% (56)	Other	6% / 5%	Australia	1% (6)
Product Design	3% (31)			Middle East	1% (6)
R&D	6% (55)				
Software Development	12% (109)				
C: Sample descriptive statistics of service providers					
Headquarters Location	%	N	Size*	%	N
USA	33%	221	Small (=<500 empl.)	45%	252
Western Europe	20%	131	Midsized (>501 - =<10,000)	37%	205
India	18%	118	Large (>10,000)	18%	101
Asia	9%	58	<i>Total</i>	<i>100%</i>	<i>558</i>
Eastern Europe	7%	45			
Latin America	6%	42			
China	5%	32			
Canada	2%	14			
Africa	1%	5			
<i>Total</i>	<i>100%</i>	<i>666</i>			

Table 2: Variables construction

Variables	Construction
<u>Dependent</u>	
Outsourcing	Dummy = 1 for outsourcing, 0 for captive implementations offshore (ORN Clients Survey)
<u>Independent</u>	
Task commoditization	1 to 5 (low to high) score attributed to “degree of commoditization” for the focal offshored function (ORN Service Providers Survey).
Availability of SP	% of service providers delivering the focal business function by year (ORN Service Providers Survey)
Prior Sourcing Decisions - Outsource	Dummy = 1 if company (at least in part) <i>outsourced</i> functions prior to focal project, else 0 (ORN Clients Survey)
Prior Sourcing Decisions - Captive	Dummy = 1 if company (at least in part) used <i>captive</i> models prior to focal project, else 0 (ORN Clients Survey)
Driver: Cost Saving	1 to 5 (low to high) mean score attributed to “labor cost savings” and “other cost savings” as strategic drivers for the focal offshore implementation (ORN Clients Survey).
Driver: Market	1 to 5 (low to high) mean score attributed to “access to new market”, “global strategy” and “firm growth” as strategic drivers for the focal offshore implementation (ORN Clients Survey).
Driver: Speed to Market	1 to 5 (low to high) score attributed to “increasing speed to market” as strategic driver for the focal offshore implementation (ORN Clients Survey).
Host country risk Index	100 points index of political risk of the focal host country (International Country Risk Guide published by PRS group, April 2010)
<u>Controls</u>	
Company size	Logarithm of number of employees in the company in year offshore implementation is launched (ORN Clients Survey)
Industry	Dummies for: Finance, Software / IT, Manufacturing, Professional Services, Telecommunications
Headquarters	Dummies for: USA, UK, Netherlands, Belgium
Host country risk Index	100 points index of political risk of the focal host country (International Country Risk Guide published by PRS group, April 2010)
<u>Sub Samples Criteria</u>	
D_Post 2005 decisions	Dummy = 1 for implementations launched in or after year 2005, 0 before 2005 (ORN Clients Survey)
D_Late implementations	Dummy = 1 for 3rd or later offshore implementation by a company, 0 for 1 st or 2 nd offshore implementation (ORN Clients Survey)
EXP_YEARS	Dummy = 1 if company has at least one project offshore; 0 for 1 st time offshore (ORN Clients Survey)

Table 3: Correlations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Decision to outsource	1																	
2. Task commoditization	0.14***	1																
3. External service availability	0.23***	0.41***	1															
4. Prior outsourcing projects	0.27***	-0.01	0.06***	1														
5. Prior captive projects	-0.38***	-0.05**	-0.12***	0.14***	1													
6. Low cost strategy	0.10***	0.14***	0.07**	0.11***	-0.08***	1												
7. Growth strategy	-0.21***	-0.20***	-0.21***	-0.02	0.16***	0.00	1											
8. Speed-to-market strategy	0.05**	-0.17***	-0.00	0.04	-0.01	-0.06***	0.42***	1										
9. Firm size	-0.04*	0.12***	0.02	0.22***	0.13***	0.14***	-0.09***	-0.12***	1									
10. Finance	0.13***	0.07***	0.12***	0.21***	-0.06***	0.13***	-0.08***	-0.02	0.23***	1								
11. Software / IT	-0.18***	0.04*	0.11***	-0.16***	0.07***	-0.05***	-0.05***	0.01	-0.21***	-0.23***	1							
12. Manufacturing	-0.10***	-0.12***	-0.18***	-0.01	0.05**	-0.03	0.07***	0.03	0.09***	-0.18***	-0.19***	1						
13. Professional Services	0.03	-0.04*	-0.01	-0.12***	-0.10***	0.02	0.06***	0.06***	-0.21***	-0.16***	-0.17***	-0.13***	1					
14. Telecommus	0.06***	0.07***	-0.04*	0.04	0.03	0.06***	0.04**	-0.06***	0.13***	-0.13***	-0.13***	-0.10***	-0.09***	1				
15. HQ USA	0.11***	0.08***	0.08***	0.15***	-0.08***	0.11***	-0.06***	0.04**	0.20***	0.16***	0.10***	-0.07***	-0.05***	-0.08***	1			
16. HQ UK	0.02	-0.01	0.04*	0.07***	0.02	0.08***	0.02	-0.03*	0.10***	-0.07***	-0.06***	-0.10***	0.05***	0.26***	-0.25***	1		
17. HQ Netherlands	-0.03	-0.05**	-0.10***	-0.03	0.04*	-0.17***	0.13***	0.08***	-0.19***	-0.10***	-0.00	0.10***	0.09***	-0.08***	-0.34***	-0.10***	1	
18. HQ Belgium	-0.12***	-0.06**	-0.04*	0.16***	0.03	-0.06***	0.06***	0.03*	-0.29***	-0.10***	0.08***	-0.02	0.08***	-0.03**	-0.23***	-0.06***	-0.09***	1
19. Host country risk	0.16***	0.11***	0.18***	0.02	-0.06**	0.17***	-0.18***	-0.05**	0.07***	0.03**	0.06***	-0.07***	0.07***	0.03	0.11***	0.03*	-0.10***	-0.07***

Significance levels: <.01***; <.05**; <.10*

Table 4: Descriptive statistics

		# Obs	Mean	Std. Dev.	Min	Max
1	Decision to outsource	2605	0.504	0.500	0	1
2	Task commoditization	1863	3.129	0.462	2.08	3.91
3	External service availability	1863	0.191	0.131	0.01	0.56
4	Prior outsourcing projects	1946	0.426	0.495	0	1
5	Prior captive projects	1993	0.425	0.495	0	1
6	Low cost strategy	2678	0.734	0.355	0	1
7	Growth strategy	2620	0.507	0.342	0	1
8	Speed-to-market strategy	3094	0.456	0.498	0	1
9	Firm size	4673	8.046	3.183	0	13.12
10	Industry: Finance	5499	0.182	0.386	0	1
11	Industry: Software / IT	5499	0.197	0.398	0	1
12	Industry: Manufacturing	5499	0.127	0.333	0	1
13	Industry: Professional Services	5499	0.106	0.308	0	1
14	Industry: Telecommunications	5499	0.065	0.247	0	1
15	HQ USA	5643	0.471	0.499	0	1
16	HQ UK	5643	0.067	0.249	0	1
17	HQ Netherlands	5643	0.114	0.318	0	1
18	HQ Belgium	5643	0.054	0.226	0	1
19	Host country risk	3745	-72.8	4.6	-91	-53.8

Table 5: Estimation of logit model - DV: probability of outsourcing

	WHOLE SAMPLE			BEFORE 2005		SINCE 2005		INITIAL Implementations		LATER Implementations	
	Controls (1)	Full (2)	Odds Ratios (3)	Full (4)	Odds Ratios (5)	Full (6)	Odds Ratios (7)	Full (8)	Odds Ratios (9)	Full (10)	Odds Ratios (11)
Task commoditization		0.389* (0.226)	1.475	0.623** (0.319)	1.864	0.226 (0.309)	1.254	0.504* (0.283)	1.656	0.250 (0.340)	1.284
Availability of SP		2.461*** (0.871)	11.717	3.347* (1.890)	28.415	1.835† (1.835)	6.268	3.135*** (1.115)	22.996	1.559 (1.375)	4.754
Exp: First Outsourced		1.106*** (0.273)	3.022	1.318*** (0.410)	3.737	1.079*** (0.373)	2.941	1.530*** (0.554)	4.616	1.006*** (0.398)	2.734
Exp: First Captive		-1.862*** (0.284)	0.155	-1.986*** (0.382)	0.137	-1.844*** (0.408)	0.158	-1.684*** (0.529)	0.186	-2.146*** (0.399)	0.117
Driver: Cost Saving		0.489* (0.300)	1.630	-0.019 (0.470)	0.981	0.874** (0.417)	2.396	0.623† (0.395)	1.865	0.287 (0.452)	1.333
Driver: Growth		-1.367*** (0.351)	0.255	-1.318*** (0.437)	0.268	-1.727*** (0.564)	0.178	-1.710*** (0.480)	0.181	-0.785† (0.514)	0.456
Driver: Speed to Market		0.328† (0.223)	1.388	0.114 (0.284)	1.120	0.751** (0.321)	2.118	0.456† (0.279)	1.577	0.100 (0.333)	1.105
Firm size	-0.121† (0.048)	-0.057 (0.044)	0.945	-0.102† (0.071)	0.903	-0.009 (0.055)	0.991	-0.036 (0.054)	1.326	-0.110† (0.070)	0.896
ind_finance	0.453 (0.452)	0.272 (0.382)	1.313	0.749† (0.502)	2.116	-0.441 (0.520)	0.644	0.282 (0.397)	0.965	0.199 (0.663)	1.220
ind_software/IT	-1.354*** (0.369)	-1.107*** (0.335)	0.331	-1.007** (0.429)	0.365	-1.341*** (0.474)	0.262	-0.875** (0.383)	0.417	-1.840*** (0.550)	0.159
ind_manufacturing	-0.677 (0.448)	-0.132 (0.421)	0.876	0.293 (0.483)	1.341	-0.786 (0.602)	0.456	-0.367 (0.562)	0.693	0.094 (0.610)	1.098
ind_prof services	-0.576 (0.539)	0.393 (0.508)	1.482	0.190 (0.800)	1.209	0.455 (0.568)	1.577	0.633 (0.595)	1.884	-0.247 (0.860)	0.781
ind_infrastructure	0.456 (0.622)	0.894* (0.523)	2.445	1.741** (0.687)	5.702	-0.123 (0.659)	0.884	0.897† (0.594)	2.451	0.749 (0.800)	2.115
hq_usa	0.640 (0.450)	0.374 (0.444)	1.454	1.661*** (0.644)	5.265	-0.210 (0.587)	0.810	0.292 (0.478)	1.339	0.737 (1.136)	2.091
hq_uk	0.437 (0.671)	0.149 (0.642)	1.160	2.620** (1.284)	13.733	-0.510 (0.742)	0.600	-0.418 (0.873)	0.659	0.946 (1.310)	2.576
hq_holland	0.494 (0.619)	0.654 (0.563)	1.924	1.858** (0.754)	6.414	0.408 (0.858)	1.504	0.664 (0.603)	1.942	0.764 (1.257)	2.148
hq_belgium	-0.493* (0.594)	-1.000† (0.624)	0.368	0.109 (0.982)	1.115	-1.261* (0.713)	0.283	-1.250* (0.724)	0.287	0.377 (1.156)	1.458
Country risk	0.101*** (0.023)	0.082*** (0.025)	1.086	0.120*** (0.028)	1.127	0.045 (0.045)	1.046	0.057† (0.035)	1.059	0.100*** (0.032)	1.105
Constant	8.316*** (1.742)	5.247** (2.110)		6.455*** (2.449)		3.417 (23.563)		2.761 (2.829)		7.507 (2.913)	
N	930	930		461		469		486		444	
Prob>chi ²	0.0000	0.0000		0.0000		0.0000		0.0000		0.0000	
Log likelihood	-554.603	-450.159		-213.817		-219.137		-253.565		-188.301	
Pseudo R ²	0.1335	0.2967		0.3308		0.3052		0.2290		0.3881	

Robust standard errors in parentheses. Significance levels: 0.01***, 0.05**, 0.10*, 0.15 †.