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Competitive Implications of Interfirm Mobility

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This paper examines the competitive consequences of interfirm mobility. Because the loss of key members (defined as top decision makers) to competing firms may amount to a replication of a firm's higher-order routines, we investigate the conditions under which interfirm mobility triggers transfer of routines across organizational boundaries. We examine membership lists pertinent to the Dutch accounting industry to study key member exits and firm dissolutions over the period 1880–1986. We exploit information on the type of membership migration (individual versus collective) and the competitive saliency of the destination firm as inferred from the recipient status (incumbent versus start-up) and its geographic location (same versus different province). The dissolution risk is highest when collective interfirm mobility results in a new venture within the same geographic area. The theoretical implications of this study are discussed.

Key words: interfirm mobility; routines replication; competition

1. Introduction

The recruitment, development, and retention of employees are central factors for organizational survival. While focus on people as a source of superior performance is hardly new (e.g., Penrose 1959, Pfeffer 1994, Grant 1996), it has recently become even more salient on the grounds that a firm's stock of routines is enacted by its members (Cyert and March 1963, Nelson and Winter 1982, Coff 1997, Pennings and Wezel 2006a). Not surprisingly, recruiting individuals from rival organizations has been a technique increasingly used to access resources and routines not available in-house (see Rao and Drazin 2002). Likewise, firms attempt to limit outbound movement of members to competing firms (see, e.g., Coff 1997).

Much of the theory and research to date has focused on the antecedents of turnover with general inquiries on voluntary turnover (for a review, see Williams and O'Reilly III 1998, e.g.). Inquiries on possible turnover consequences have revolved around the impact on the transferring member's performance (Harris and Helfat 1997, Huckman and Pisano 2006). Another subset of research studies has examined cases of turnover limited to interfirm mobility, and their consequences for the source firm (Sørensen 1999), the destination firm (Agarwal et al. 2004, Rao and Drazin 2002, Wezel and Saka 2006), or both the source and destination firms (Phillips 2002). Evidence suggests that spin-offs are speedier than de novo firms in mobilizing resources (Ruef 2005) and tend to replicate or modify an idea encountered through their previous employment history (Bhide 1994). In their study of the U.S. commercial laser industry, Klepper and Sleeper (2005) have further confirmed that spin-offs inherit knowledge from their sources. The rationale of these studies is that members moving to a peer firm bring along not only their skills and experience (McKelvey 1982, Boeker 1997, Rao and Drazin 2002), but also those organizational routines in which they have played a part (Phillips 2002).

Despite this large body of research, several issues remain unresolved. Many studies assume that interfirm mobility entails the transfer of resources and routines without any further qualification. However, resources and routines are distinct and so are the conditions under which they can be successfully transferred. As they move from firm to firm, members bring along their human and social capital, but the extent to which they can replicate existing routines in the destination firm is less obvious because routines are less dependable on single individuals. Previous studies treat such behavioral templates as homogeneous and do not distinguish between high-order and operating routines. This distinction is particularly important for explaining the competitive implications of interfirm mobility. Lower-order routines are decomposable and portable (Baldwin and Clark 2002) and readily replicated across time and space.

By contrast, higher-order routines attend to the creation and coordination of lower-level routines as well as organizational resources (Dosi et al. 2000, Winter 2000, Zollo and Winter 2002), and it remains unclear whether their value can be captured in the destination firm (see Edmondson et al. 2001).

This paper explicitly studies the competitive implications for the donor organization of higher-order routine replication due to interfirm mobility. Our theoretical argument rests on the premise that recruiting key organizational members from rivals is a critical mechanism by which firms can appropriate not only routines, but also resources (e.g., Rao and Drazin 2002). Prior research has also suggested how the consequences of personnel mobility are not confined to the recipient firm because inflows or outflows, or both, may eventually increase the competitive similarity between donor and recipient organizations (Sørensen 1999, Phillips 2002, but see Boone et al. 2006). We argue that a critical condition for the emergence of interorganizational similarity can be attributed to the transfer of higher-order routines due to personnel outflows. Because these routines govern processes of resource acquisition and allocation, their successful replication is a source of competitive interdependence. A review of the conditions facilitating higher-order routine replication, therefore, helps us understand when interfirm mobility produces competitive consequences that undermine the donor's survival chances. It is worth noting that whether or not the recipient benefits from this routine transfer remains a separate issue. Our main concern is with the competitive interdependence between the donor and the recipient produced by increased similarity. That is why we investigate the conditions that preserve the integrity of routines being transferred rather than the performance implication of the transfer for the recipient.

Based on the definition of routines adopted in this paper (see §2), three sets of distinct but interdependent conditions conducive to routine replication are spelled out. First, replication is more likely to succeed when organizational members leave as a group, and even more so if they have worked together for an extended time. Second, organizational members have more freedom in replicating routines when leaving and starting a new venture than joining an incumbent already endowed with a well-engrained set of routines. Finally, successful replication is a function of the co-location of the two firms because routines embody both organization- and context-specific characteristics. Because successful replication increases the interdependence between organizations, this study sheds light on the competitive implication of routine replication due to interfirm mobility.

The present study analyzes the entire population of Dutch accounting firms over the period 1880–1986. Because the concern is with the competitive implications for the donor organization of higher-order routine replication due to interfirm mobility, we focus on the departure of so-called key members, i.e., members with decision-making authority (e.g., members of the board of directors, or senior partners). Following previous research on interfirm routine transfer as a function of departing individuals' position or rank in the origin firm (Phillips 2002), we track the departure of partners, disregarding exits of other members, such as associates, whose participation in the creation of higher-order routines is much less critical. Other forms of turnover, including death, retirement, or transfer to a nonrival firm, are rather inconsequential in competitive terms. Such turnover is unlikely to engender replication of organizational routines in rival firms, which is the focus of this paper.

The paper is organized as follows. Section 2 presents the theory and its five hypotheses. Section 3 describes the study's empirical setting, data, and independent and control variables. Section 4 explains the motivation behind the models estimated and the method employed to test the hypotheses. Section 5 presents the results. We conclude by discussing the main implications of the findings and identifying important topics for future research (§6).

2. Theoretical Background

We start with the premise that interfirm mobility may produce a transformation of a firm's competitive surroundings. Previous studies showed how personnel mobility might increase similarity of routines and resources across organizations (Boeker 1997, Sørensen 1999, Phillips 2002, Pennings and Wezel 2006b) and their competitive interdependence. We concern ourselves only with the competitive implications occasioned by organizational routines replication resulting from interfirm mobility. The focus is on routines because resources such as human and social capital are typically attached to individuals. Even when resources are firm specific and therefore less valuable in a different context, members may bring them along as they move from firm to firm.

By contrast, successful replication of firm-entrenched routines is a less-obvious outcome of interfirm mobility. Routines usually originate from repeated interaction among multiple actors inside or outside the firm over an extended period of time, which render them less sticky to single individuals. As a result, the odds of success at replicating them are contingent on a much broader range of conditions to be satisfied. Previous research showed how existing routines are more effectively transferred between a firm and its offspring or progeny (Phillips 2002, Klepper 2001), but this is just one condition facilitating their replication that requires us to elaborate on the mechanisms that allow preserving their integrity and value in a different context than the one in which they

originally developed. The present paper moves beyond existing research on the competitive implications of interfirm mobility, precisely because it provides an effort to embrace a whole set of interdependent conditions rooted in the definition of routines.

Routines are hierarchical in their configuration. Their categorization has followed an ordering from operational to metaroutines (Cyert and March 1963, Nelson and Winter 1982). While the former dictate day-to-day firm behavior, the latter refer to the managerial discretion to coordinate, integrate, and deploy resources throughout the organization (see Knott 2001). Higher-order routines govern the use, combination, or recalibration of lower-order ones (Nelson and Winter 1982, Teece et al. 1997). This integrative role renders higher-order routines readily transferable when moved by groups rather than individuals. Such view is in line with Nelson and Winter (1982, p. 105) who underscored that "to view organizational memory as reducible to individual member memories is to overlook, or undervalue, the linking of those individual memories by shared experience in the past, experiences that have established the extremely detailed and communication system that underlies routine performance." When people migrate to other firms, therefore, the propensity to replicate routines will be higher as they move with peers who have experienced similar histories and display equivalent cognitive dispositions.

We claim that three conditions affect the efficacy of higher-order routine replication and its impact on the donor's performance. First, it is important to distinguish between solitary and group migrations of members. Next, because existing organizations soon after their birth become imprinted with high-order routines that are unlikely to be modified during their existence (see Baron et al. 1996), we should examine how the classification of the destination firm—established or entrepreneurial—impedes or facilitates that routine transfer. Finally, as a partial replica of the donor firm, the competitive fallout will be more intensive if that replica resides in the same environment because the firm with reproduced template is more likely to secure resources (e.g., funding, employees, goodwill) that mirror those of the donor.

2.1. Interfirm Mobility: Individual vs. Collective Replication

Following Cohen and Bacdayan (1994, p. 555), routines can be defined as "patterned sequences of learned behavior involving multiple actors who are linked by relations of communication and/or authority." For instance, landing a commercial aircraft is a highly standardized but complex task, involving multiple actors performing interconnected subtasks that require proper coordination. One cannot fully understand how that routine actually works by examining only the pilot's part (Cohen and Bacdayan 1994, p. 555). Routines depend on "the connections, the stitching together of multiple participants and their actions to form a pattern that people can recognize and talk about as a routine" (Pentland and Feldman 2005, p. 6). They are, therefore, anchored in the context or interactions of actors, whether internal or external to the firm, whose behavior they govern.

Replication varies depending on whether routines are operational or metaroutines. This view fits that of Cyert and March (1963) and Nelson and Winter (1982) who elaborated on a dual routines perspective, where organizational behavior stems from two sets of hierarchically ordered routines: a set of operational routines that control day-to-day actions, and a set of metaroutines that govern operational routines (see Knott 2001). Meta- or higher-order routines lie at the core of managerial intervention. They entail learned sequences of conduct regarding governance, idiosyncratic, procedural knowledge of the competitive environment and organization of work flows—in short, the arrangement and coordination of firm activities (Teece et al. 1997, Henderson and Cockburn 1994). Their directive role and involvement of people and processes permeate the behavior of the entire organization. In this respect, higher-order routines are holistic in their use and are harder to replicate than atomistic or modular ones such as those associated with operational tasks such as sales, production, and other functional activities. Furthermore, higher-order routines are inherently social and success of replication hinges on retention of their integrity.

Being socially constructed, higher-order routines transcend individual skills. That is why several authors (e.g., Kogut and Zander 1992, Levitt and March 1988, Nelson and Winter 1982) have argued that turnover does not necessarily compromise the integrity of existing routines and firm performance, on the premise that organizational routines are partly independent from individuals (for a more comprehensive review, see Felin and Foss 2005). Empirical research has likewise shown that routines are strongly embedded in the behavior and cognition of organizational members (Song et al. 2003): When migrating elsewhere, those very individuals could replicate previously developed routines. Therefore, interfirm mobility may lower the donor's firm performance through the leakage of proprietary routines as a result of the migration of members who have internalized the donor firm's legacy. Successful transfer of routines to another firm is also a function of the position or rank of a departing individual in the origin firm. As Phillips (2002, p. 476) puts it, the "more critical the potential founder's position is, the more likely that the parent organization's resources and routines will be affected as that founder exits to entrepreneurship."

However, because routines usually involve multiple actors, whether internal or external to the firm, their replication in other firms depends on preserving existing patterns of interaction among those actors (Nelson and Winter 1982). The ability to preserve their integrity, and

thereby their successful replication, is diminished when organizational members leave alone. This also accords with the finding from a study showing that surgeons' performance declines when they try to move their individual skills set toward other hospitals (so-called splitting of membership): Existing surgical routines combine with hospital-specific cultural and institutional elements to produce well-integrated operation room teams of medical personnel (Huckman and Pisano 2006). When ported into other organizations, those routines become dislodged and produce comparatively inferior postoperative results—i.e., higher patient mortality.

However, when groups rather than individuals export their routines, the tacit coordination and alignment of any replication is more readily attained (see Edmondson et al. 2001). Individuals are only partially engaged in the firm's bundle of routines because their skills are complementary with those of their colleagues. In contrast, collective departure is more conducive to holistic replication since preexisting systems of coordinated roles can be maintained. Successful replication of routines, therefore, is contingent on whether mobility entails groups or single individuals. If a group of members departs together for a new firm, its routines can be transferred with greater integrity and at greater risk to the source firm. Accordingly, we hypothesize

HYPOTHESIS 1A (H1A). *The risk of organizational dissolution is higher when key members leave collectively rather than individually.*

Although collective movements engender successful replication, not all groups are homogeneous. Groups vary along dimensions that affect successful routine transfer across organizational boundaries. Member homogeneity hinges on shared internalization of routines among individual members. The accumulation of a common mind-set is subject to time compression diseconomies because compliance with or attachment to certain routines depends on the amount of time spent together. As Groysberg and colleagues (2006, p. 94) recently showed, similar considerations hold even in the case of an executive's mobility because "individual manager's effectiveness can be attributed to his experience working with colleagues or as part of a team." Central to the present perspective is both the notion of repeated interaction among actors and the idea that this interaction must unfold over an extended time.

As members have been congealed into a common mind-set, they will preserve their stock of routines and therefore stand a better chance at replicating them. The longer the departing members have kept company, the more likely they are to subscribe to a common logic and a well-institutionalized template. This argument is consistent with empirical research on the relevance of team cohesiveness in building group coordination and trust. For example, in their study on start-ups in the semiconductor industry, Eisenhardt and Schoonhoven (1990) argued that "executives who have a history together have probably learned how to get along and communicate with each other" (p. 509). Ruef and his coauthors (2003) similarly found that trust and familiarity are more critical to founding team composition than are complementary skill sets. The implication is that, under conditions of collective out-migration, members who have spent a significant amount of time together manifest better odds of successful replication. We thus hypothesize

HYPOTHESIS 1B (H1B). *The risk of organizational dissolution due to collective exit is higher the more time departing members have spent together before turning over.*

2.2. Member Exit and Firm Destination: Start-ups vs. Incumbents

Prior research has shown that individuals formerly employed by established firms often start new ventures (Freeman 1986, Burton et al. 2002). This phenomenon is common to both high-tech (Braum and MacDonald 1978, Klepper and Sleeper 2005, Agarwal et al. 2004) and service (Phillips 2002) industries. Replication of routines in a start-up typically results in a more reliable and authentic copy of routines than replication in an existing firm. Departing members enjoy less leeway in transferring existing routines from other firms when they join an incumbent with an established set of routines. The competitive implications of routines replication are bound to be more harmful when the source firm is new and not yet endowed with such institutionalized practices. The reason is that high-order routines become imprinted during early stages of the organizational life cycle and shape future actions and behaviors (see, e.g., Baron et al. 1996).

Knowledge stored in individual memories is "meaningful and effective only in some context" (Nelson and Winter 1982, p. 105). Lacking the conditions that prompted the emergence of certain routines, the replication of routines might be severely compromised. Using a genealogical framework, Phillips (2002) showed how members who leave an existing (parent) organization to found a new venture (progeny) within the same population are more likely to transfer resources and to replicate routines from their former employer. Because they are not constrained by preexisting patterns of interaction in the destination firm, those members enjoy more latitude in creating conditions similar to those of the source firm. As a result, the parent organization's blueprint will "carry over to the new organization through the career experiences of the offspring's founders" (Phillips 2002, p. 474). Similarly, the literature on spin-offs (e.g., Bhide 2000, Agarwal et al. 2004, Klepper and Sleeper 2005) has shed new insights on the role of departing members for the build-up of a new firm. Because spin-offs

exploit their parents' knowledge to offer products or services similar to those of their parents, they are competitively more threatening. As Agarwal and her colleagues (2004, p. 501) noticed, "spin-outs pose a special threat to incumbents since they can capitalize on knowledge gained from discoveries made during the course of their founders' employment in the incumbent firm."

Unlike start-ups, established firms exhibit an array of routines. Because routines—especially higher-order routines—become imprinted in organizations early on (Stinchcombe 1965), any incumbent recipient exhibits a pattern of interaction producing resistance against the import of extramural routines. Internal resistance is likely to ensue because transferring routines from another firm might jeopardize the functioning of routines in the destination firm by questioning what Nelson and Winter (1982) called *the truce*—i.e., the presence of an implicit understanding reducing the conflict between the divergent interests among organizational members. Attempts at replicating routines from another source may undermine the truce and require new processes and objectives, together with reestablishing a political equilibrium among the membership. In the case of newly founded firms, no truce is under threat and the replication of routines does not face any internal resistance. It is therefore plausible to expect successful transfer of existing routines to be more likely if the host organization is an entrepreneurial rather than an incumbent firm—and, by implication, to observe greater harm to the source firm. We thus hypothesize

HYPOTHESIS 2 (H2). *The risk of organizational dissolution due to key members' interfirm mobility is higher when the recipient firm is a newly founded rather than an incumbent firm.*

2.3. Member Exit and Spatial Routines Replication

Collective turnover and start-ups as destination are conditions conducive to routine replication. The departure of organizational members, however, takes on a rather different significance depending on whether or not the source and the destination firms are co-located. Replication is context dependent in that the actors whose conduct reflects the enactment of routines are institutionally embedded. As Nelson and Winter (1982, p. 125) put it, "a routine may involve extensive direct interactions with the organization's environment and the making of numerous 'choices' that are contingent both upon the state of the environment and the state of the organization itself." While geographic proximity is recognized as an important condition for routine replication, it becomes relevant only if proximity implies similarity in the broader organizational context. To put it differently, it is not physical distance per se that matters, but whether that distance corresponds to historical, socioeconomic, and institutional differences. Previous research has showed the existence of significant historical, socioeconomic, and institutional differences across spatially proximate locations (see, e.g., Putnam 1996, Linz and de Miguel 1966).

As this stream of research suggests, the replication of routines due to interfirm mobility among co-located firms is more likely to succeed when they share the same context. This line of reasoning is consistent with Stinchcombe's (1965) original insights. As Lounsbury and Ventresca (2002, p. 21) recognized, "Stinchcombe focuses on the capacity for new organizations to develop new roles and routines that vary based on the distribution of generalized skills outside an organization, the initiative of employees in the labor force, the degree of trust among workers based on competence in work roles." Because we defined routines as sequences of learned behavior involving multiple actors both internal and external to the firm, we expect institutions, customers, and competitors to significantly shape them. When actors share the same context, existing patterns of interaction—including relations of communication or authority relations, or both—among such actors become geographically embedded.

The connection between routines and their context has been emphasized in recent theorizing on the origins of organizational capabilities, defined as high level or metaroutines (Winter 2000). In elaborating on capability learning, for instance, Winter (2000) asserted that metaroutines are meaningful only "in relation to a particular competitive context" (p. 982) and "are wired directly to the environment" (p. 983). This line of reasoning seems also to be consistent with the insights of ecological research (Hannan and Freeman 1977, 1984), whose framing of inertia implies a close correspondence between the organizational routines and the broader institutional and historical, not merely competitive, context. The same bundle of routines that enhances the fit between the organization and its external environment might prove of little value when applied to a different context. The implication is that successful replication, and its associated competitive threat, is contingent on whether or not the donor and recipient organizations share the same context. Accordingly, we hypothesize

HYPOTHESIS 3 (H3). *The risk of organizational dissolution due to key members' interfirm mobility is higher when they migrate to co-located competitors.*

These three dimensions—collective versus individual, start-up versus incumbent, same versus different context—can generate diverse survival consequences for the donor. For instance, while the movement of groups of key members harms survival, this effect varies with the destination firm being new or established, or sharing the same environment. A complete appreciation of the survival consequences of interfirm mobility requires considering all three conditions jointly.

Interfirm mobility should have greater competitive implications for the donor when the departure of members amounts to a collective rather than an individual act and results in an entrepreneurial rival residing in the same competitive environment. Groups of members that move to newly founded firms exhibit substantial discretion in replicating previously acquired routines, especially within the same context. With any other combination of these three dimensions (e.g., the rival is located in a different environment, or is an established firm, or the departure involves a single member), the competitive effects of interfirm mobility diminish. We thus hypothesize

HYPOTHESIS 4 (H4). *The risk of organizational dissolution due to interfirm mobility is highest when key members leave in groups to start a new firm in the same context.*

3. Empirical Setting

To test our hypotheses, we traced the composition of the Dutch accounting industry over the period 1880–1986. In line with more recent studies using data on this industry (see Pennings and Wezel 2006a), we divided the overall population of accounting firms into 11 subpopulations, each corresponding to a different province. Our rationale is that each province represents a distinct selection environment. Cattani et al. (2003) offered a detailed discussion of the historical, socioeconomic, and institutional factors making provinces the appropriate unit of analysis to study how spatial heterogeneity affects organizational founding rates within each subpopulation. We argue that the same factors and geographic boundaries are critical for the likelihood of replicability of existing routines across organizations. Because organizations and their routines are designed to match a specific environment, successful replication is contingent on whether or not the origin and the destination environments are the same.

Over the period spanned by our study (i.e., 1880–1986), the Netherlands, the setting of the current study, comprised eleven provinces: North Holland, South Holland, Fryslan, Groningen, Drenthe, Overijssel, Gelderland, Utrecht, North Brabant, Zeeland, and Limburg. In the seventeenth century, the seven northern provinces included autonomous regions held together through a confederation, the Republic of the United Provinces. Perhaps it was the extraordinary degree of autonomy and home rule that accounts for the disinclination of provinces to secede. Such autonomy further engendered their unique socioeconomic identity. Two of the three southern provinces, very much like Italy's Mezzogiorno, are located below the Rhine and the Meuse Rivers and were ruled partly by the Republic and partly by Spain and Austria. Although those provinces showed a delayed economic development as compared to the northern provinces, they exhibit patterns of development that are comparable to European standards.

Apart from history, the provinces vary in soil structure, geology, religion, economic development, urbanization, and language or dialect (Frysk is an officially recognized language, spoken in the northern province of Fryslan, while provinces such as Groningen, Zeeland, and Limburg speak a distinct sublanguage, or dialect. Inhabitants from other provinces are not able to communicate fluently in the local language. The provinces are not merely administrative units, but are also historically, culturally, institutionally, and economically distinct entities. Historically, provinces are path dependent in their socioeconomic developments, endowed with unique socioeconomic legacies to which locally active accounting firms have become attached and which further evolved into geographically defined strategic groups. The idiosyncratic historical path to industrialization that Dutch provinces took has generated a distinctive pattern of regulating social groups that continues to influence the evolution of individual firms as well as entire industries. Altogether, we believe that these reasons justify our choice of mapping the geographic dimension along a dichotomous indicator (within/outside province) rather than using a continuous measure (i.e., distance in kilometers from the donor firm to the recipient).

3.1. Data

The data we use in this paper are similar to those that Pennings et al. (1998) analyzed in their study on the effect of organization-level changes in human and social capital on firm dissolution. Because our observation period ends in 1986, our initial population is also smaller than that examined by Boone et al. (2000), whose study extended until 1992. We further eliminated single proprietorships from our risk set, ending up with a population of 676 organizations. We collected information on the name, address, and status (partner or associate) of individual professional accountants, and also on the name and address of individual organizations from the membership lists and directories of accountant associations, which were published at intervals varying from every year to every five years. More precisely, the frequency (in percent) of one-, two-, three-, four-, and five-year intervals are 24%, 60%, 6%, 8%, and 2%, respectively. These larger gaps in data challenged our mapping of the effects of interfirm mobility on organizational dissolution. However, as explained in §4, in our analyses we controlled for the variance in interval length by creating

a variable accounting for diverse time spans. We reconstructed the histories of individual organizations by first aggregating individual-level data to the firm level. The data cover the entire population of Dutch accounting firms over the period 1880–1986.

Following Boone et al. (2000) and Phillips (2002), we define dissolution as exit from the market, without distinguishing between bankruptcy and merger or acquisition (M&A). Our choice is motivated by the fact that "failure, in the sense of bankruptcy, cannot be observed in the audit industry and, therefore, cannot be distinguished from other types of exit" (Boone et al. 2000, p. 368). Thus, organizational dissolution encompasses different types of exit, ranging from the case in which a firm disappears because its owners are no longer listed in the Certified Professional Accountant (CPA) directories, to the case of dissolution by acquisition or merger. In all such cases, we coded our dichotomous dependent variable as one and removed the firm from the risk set. Because the industry became more concentrated in the late 1960s in the wake of intense M&A activity, we checked whether our results might be affected by our broad notion of dissolution. We conducted a sensitivity analysis including only the data up to and including 1966. The results obtained remain similar to those presented in the paper.

Accounting firms are stratified, consisting of partners and associates. In the analysis, we investigated the interfirm mobility events involving only partners because they usually possess superior replication potential (if only because they have been around longer and have successfully completed the tournament to partnership). The competitive effects of higher-order routine replication should therefore be higher when departure of organizational members involves partners rather than associates. Within accounting firms, partners serve as producer-managers by actively participating in the business as key production workers (Maister 1993). Unlike shareholders of large corporations, partners are also responsible for the overall management. Their decision-making power extends to the task of building or changing routines, such as those dealing with hiring and firing policies, procuring work and deploying junior professionals, differentiation (i.e., to hedge against market shrinkage), investment, personal financial planning, and liability insurance premium decisions. (For more details, see Maister 1993.) Being owners, partners enjoy more latitude in the transfer of organizational routines. This latitude of freedom is much larger in newly founded firms because partnership agreements strictly define the criteria of succession (e.g., setting the voting rights of partners for the transition) and the principles behind the successor's management.

3.2. Qualitative Evidence

The present study draws from archival sources and subjects the data to an econometric analysis exposing relationships between variables that defy comprehensive efforts at triangulation with other data—most notably qualitative observations. The replication of routines, which is central in this study, remains an unobserved phenomenon. As we argued before, the migration of senior members to peer firms harms the donor firm particularly because, under certain conditions, the senior members can successfully replicate higher-order routines. To obtain a more intuitive understanding, three consultants were interviewed. One was a former partner in a Swedish accounting firm (he retired in January 2006), one is still affiliated with a Dutch accounting firm, and one is no longer active as a CPA but currently heads a major Dutch consulting company to accounting firms. Although our study period ends in 1986, only one of the interviewees began to work as a CPA prior to that year. Because they all are or were partners of large accounting firms, we had the opportunity to ask them specific questions regarding different classes of routines (which in the paper we labeled as higher-order and operating routines), their stickiness to individuals, and their replication due to interfirm mobility. The interviews were semistructured and lasted from one to three hours each.

According to one senior CPA, it is important to distinguish between what he calls "technically" and "commercially" proficient CPAs because different types of routines are involved in the performance of their tasks. The technical routines that are usually relevant in activities such as auditing and sampling are highly portable and therefore more easily separable from professionals. By contrast, on the commercial side routines can only be transferred when people move. The commercial routines play a critical role when it comes to recruiting, coaching, and retaining junior professionals to ensure their loyalty. Professionals can take with them these higher-order routines as they leave to join or create another firm. Higher-order routines are partly attached to professionals and their career profiles.

A second CPA hinted at the difference between outbound movements toward a new versus an incumbent firm. He suggested that the management style of partners renders a firm consistent in its governance. For instance, he referred to changes in the rules of governance after the completion of a merger when the treatment of billable hours was revised and partners' discretionary allocations were suddenly curtailed—and which made the smiles on their faces disappear just as suddenly. This scenario contrasted with a peer firm where changes in firm climate did not occur each time a new wind blew, but where they rather stuck to their way of doing things. In that firm, as our consultant noted, no *tussensprints* are observed; *tussensprint* is Tour de France jargon for an intermittent and opportunistic acceleration.

Both CPAs objected to the view that partner mobility also produces mobility among clients. They point to

anticompete clauses as part of partnership agreements. Because clients, too, are legally expected to abide by such clauses, the transfer of a professional to a peer firm does not result in a concomitant transfer of clients. Reputational damage to the professional and firm would exacerbate the ill-advised appropriation of such clients. If anything gets transferred, it is governance practices that migrate with the partner to a peer firm. The competitive damage due to partner turnover, therefore, can be hardly attributed to a loss of clients.

Finally, when probing individual versus collective departure, one CPA hinted at the major advantage of collective transfer to form a new firm: "When departing as a team, they can leverage their governance skills they are no longer distracted by 'atmospheric frictions,' personality clashes, or person-culture misfits; in short they start with a clean slate and do not become distracted politically." Recruitment and retention of people working well together far exceed any other success factor in the accountancy. The competitive advantage derives from getting professionals, much less so from getting clients.

Although such observations are rather limited in validating the econometric results to be reported, they nevertheless shed light on the meaning of higher-order routines in our setting and on their replication as a result of interfirm mobility. Moreover, the implicit triangulation resulting from combining archival data with interview data, in conjunction with key informants' review of our study, helped us to overcome the limitations of each separate source and to reduce construct validity problems (see Yin 1994).

3.3. Independent Variables

We tested our hypotheses by distinguishing interfirm mobility according to the three dimensions suggested by our theory: (1) joint group experience, (2) type of destination: incumbent or a newly founded organization, and (3) location of destination: same province or different province. The conditions under which they pose a competitive threat to the donor firm, however, are likely to vary. Our theoretical reasoning suggests that interfirm mobility affects the source firm's survival chances more strongly when partners leave collectively (Hypothesis 1A). We thus created two dummy variables flagging whether the event under study involved individual (*Individual-exit*) or collective (*Group-exit*) cases of interfirm mobility.[1] We defined a group as consisting of two or more partners who leave their employer and wind up working together for another firm, whether an incumbent or a start-up.

We carried out the test concerning the potential of the group to replicate existing routines by counting the average number of years that the departing members spent together before their exit. Our choice of this variable is rooted in existing research that shows how joint experience improves cohesion, trust, and efficacy of communication among team members (Eisenhardt and Schoonhoven 1990, Zenger and Lawrence 1989, Groysberg et al. 2006). While in any given interval a firm might lose several partners who exit individually, we typically observe only one collective departure in any given year. For each firm, our data do not display two or more groups of defecting partners during the same year, but more than one partner may leave to start up a new venture or join a competitor. Because higher-order routines typically involve multiple actors linked by patterns of communication and interaction, the ability to preserve the routines' integrity as well as replicate them in a different context is diminished when a partner leaves alone. Although the number of partners leaving individually also represents a loss of valuable human and social capital for the focal firm (and we control for this effect in the analysis), our theory suggests that the degree of competition faced by the donor is proportional to the stock of experience shared by the defecting members.

Following this logic, we tested Hypothesis 1B by creating a measure of the (logged) average joint experience of defecting members. We also ran the analysis using the minimum number of years that organizational members spent together before leaving as a group. The average might confound the case where just a few group members worked together for a long time, while the others only for a few years, with the case where, on the contrary, all group members almost always worked together. Thus, even if the average joint experience could be the same in both cases, the situation would of course be significantly different. In the latter case group members most likely contributed to the creation of (and therefore would be sharing) the same bundle of routines. Because, in our data, groups typically consist of partners who worked together most of the time before leaving, the results do not depend on whether we use the average or the minimum number of years.

The average joint experience was then disaggregated in several ways to test the remaining hypotheses. To test Hypothesis 2 we distinguished between the average experience of departing members founding a new venture (*Group-average-joint-experience-to-new-firm*) and the average experience of departing members joining an existing firm (*Group-average-joint-experience-to-incumbent*). The sum of these two variables is *Group-average-joint-experience-to-any*. As before, because we presume that the effect of the joint experience of departing members increases organizational dissolution at a decreasing rate, we log-transformed each member exit variable. To test Hypothesis 3, we distinguished between the (logged) average joint experience of partners moving to a firm located within the same province as the source firm (*Group-average-joint-experience-to-local-firm*) and the experience of partners moving to a different one (*Group-average-joint-experience-to-nonlocal-firm*).

The ultimate question to be addressed, however, is how these three forces jointly shape organizational survival. We predicted that the competitive effects of interfirm mobility are stronger when collective rather than when individual departures lead to a new venture in a geographic area similar to that of the source firm. Accordingly, we sorted the average experience of departing members along four different combinations to test Hypothesis 4. In particular, we distinguished between (1) the (logged) average joint experience of organizational members leaving as a group to found a new venture located within the same (*Group-average-joint-experience-to-local-new-firm*) or a different (*Group-average-joint-experience-to-nonlocal-new-firm*) province, and (2) the (logged) average joint experience of organizational members leaving as a group to work for an incumbent firm located within the same (*Group-average-joint-experience-to-local-incumbent*) or a different (*Group-average-joint-experience-to-nonlocal-incumbent*) province. Because all the above variables can take on the value of zero, we log-transformed them after adding one to their base value. Finally, to reinforce our causal inferences, we lagged all the independent variables by one observation period.

3.4. Control Variables

In the final model, we included several control variables—at the organizational, historical, and provincial levels—to rule out a number of competing hypotheses.

Organizational Controls. A crucial alternative hypothesis concerns internal disruption. Because internal disruption of routines should take place in the presence of any type of turnover, we controlled for turnover events (e.g., death, retirement, or joining a nonaccounting firm such as a client organization) that represent exit from the sector by creating the (logged) variable *Other-than-interfirm-mobility*. Our theory suggests that the replication of higher-order routines is a distinct phenomenon from the transfer of (human and) social capital as a result of interfirm mobility. Like previous research (e.g., Phillips 2002, Rao and Drazin 2002), we did not directly measure routines. However, unlike this research, we tried to tease apart the effect of routines' replication from the potentially confounding consequences of losing social capital by creating the variable *Social capital loss*, which measures the change in the stock (in years) of province-specific experience due to interfirm mobility. While this variable may also account for human capital features, we rely on our robustness checks—see model section on the individual level analyses—to rule out the existence of selectivity on exiting partners' human and social capital. We also ruled out the impact of any diaspora effect by adding a control that adjusts for the percentage of partners leaving in a specific year relative to the total number of partners at the company level the year before an interfirm mobility event (*Percentage-of-partners-exiting*). Additionally, instead of measuring the ratio of partners to associates, we followed Phillips (2002) by taking the (logged) number of associates, while controlling for the (logged) number of partners. A dummy variable was coded as one to indicate a very *Small firm*—i.e., size of two employees—as such more fragile and exposed to a higher risk of failure. We finally controlled for the number of years elapsed since the founding of an organization by creating the variable *Age*. Following Petersen (1991), we coded the variable by taking the midpoint of each period.

Historical Controls. The Dutch accounting industry has been marked by important historical events that might well account for organization dissolution in specific years. Several controls were added. We created two dummies for the governmental regulations dealing with *World War I* conditions (one if during 1914–1918, zero otherwise) and the occurrence of *World War II* (one if during 1941–1946, zero otherwise). Another institutional event was the emergence of a *Single association* (or NIvRA—Netherlands Institute for Certified Accountants), which represented the collective interests of all Dutch accounting organizations and was established in 1966 (one if year $>$ 1966, zero otherwise). Besides establishing disciplinary rules, the organization granted the Registered Accountant (RA) license on condition that a prospective auditor acquired "knowledge of complicated audit techniques (such as statistical sampling, risk analysis, and analytical review) and extensive knowledge of financial accounting (measurement methods, regulations, and standards)" (Maijoor and van Witteloostuijn 1996, p. 555). The effect of regulatory changes enforced in 1971 and 1984 that significantly heightened the demand for audit services was captured by two dummy variables, *Regulation of 1971* (one if year $>$ 1971) and *Regulation of 1984* (one if year $>$ 1984). We used the rate of unemployment (*Unemployment*), a time-varying variable measured at the national level, to control for some of the circumstances under which the migration of professional accountants is more (less) frequently observed.

Provincial Controls. We tried to estimate the extent to which more general ecological phenomena affect the risk of organizational dissolution with the inclusion of the linear and quadratic effects of density measures at the provincial level: *Province density* and *Province density*^{2} (i.e., density squared). To control for the impact that the number of organizations populating the industry has on organization dissolution we also included $C4$, a measure of the level of concentration of the industry given by the total market share of the top four firms. The risk of dissolution might also be influenced by how many firms were created or dissolved each year, which reflects not only the degree of munificence of the environment, but also the extent to which ecological conditions affect interorganizational mobility by creating or destroying

Table 1 Descriptive Statistics

Variable	N obs.	Mean	Std dev	Min	Max
Age	5,404	14.667	13.626	0.50	66.00
World War I	5,404	0.028	0.165	0.00	1.00
World War II	5,404	0.080	0.272	0.00	1.00
Single association	5,404	0.264	0.441	0.00	1.00
Regulation 1971	5,404	0.199	0.399	0.00	1.00
Regulation 1984	5,404	0.123	0.329	0.00	1.00
Province inhabitants	5,404	1,810,008	652,859	271,669	3,121,471
C4	5,404	0.239	0.121	0.11	1.00
Birth province	5,404	14.383	11.967	0.00	65.00
Death province	5,404	14.126	12.928	0.00	57.00
Provincial density at founding	5,404	57.356	37.076	0.00	126.00
Provincial density	5,404	70.496	37.067	0.00	126.00
Provincial density squared	5,404	6,343.395	4,781.663	0.00	15,876.00
Unemployment	5,404	7.399	8.006	0.10	32.70
Small firm	5,404	0.409	0.492	0.00	1.00
No. of partners (log)	5,404	1.098	0.853	0.00	5.07
No. of associates (log)	5,404	0.539	1.706	0.00	5.34
Other-than-interfirm-exits (log)	5,404	0.409	1.717	0.00	12.06
Social capital loss	5,404	0.077	0.438	0.00	10.00
Percentage-partners-leaving	5,404	0.047	0.243	0.00	9.00
Group-exit dummy	5,404	0.079	0.270	0.00	1.00
Individual-exit dummy	5,404	0.157	0.364	0.00	1.00
Group-avg-joint-exp-to-any (log)	5,404	0.938	0.357	0.00	2.80
Group-avg-joint-exp-to-new (log)	5,404	0.971	0.315	0.00	0.74
Group-avg-joint-exp-to-inc (log)	5,404	0.929	0.440	0.00	1.25
Group-avg-joint-exp-to-same-pr (log)	5,404	0.985	0.910	0.00	4.67
Group-avg-joint-exp-to-diff-pr (log)	5,404	0.944	0.402	0.00	3.74
Group-avg-joint-exp-to-inc-same-pr (log)	5,404	0.984	0.179	0.00	1.79
Group-avg-joint-exp-to-new-same-pr (log)	5,404	0.987	0.183	0.00	2.74
Group-avg-joint-exp-to-inc-diff-pr (log)	5,404	0.973	0.222	0.00	2.43
Group-avg-joint-exp-to-new-diff-pr (log)	5,404	0.993	0.125	0.00	2.56

new job opportunities. Thus, we included two variables, *Birth province* and *Death province*, to control for the number of firms founded and dissolved during the previous year within a given province. We also included the variable *Province density at founding* to account for any imprinting effect. Finally, to capture variations in carrying capacity (number of potential clients) over time, we controlled for *Provincial inhabitants,* the number of inhabitants in each province for each year. Tables 1 and 2 report the descriptive statistics and the correlation values for the variables we used in the analysis.

4. Model and Methods

In creating the data set, we treated the year in which the organization appeared for the first time on the Register of Accountants as the founding year and the last year of appearance as the year of dissolution. We divided the life of each organization in firm years (Tuma and Hannan 1984). After excluding single proprietorships, the final data set includes the life of 676 firms divided into 5,404 year-segments, for a total of 518 exit events.

For the analysis, we used event-history techniques. The coarse data points suggest the adoption of a discrete-time formulation. We model the rate at which failure events occur at a particular time t, conditional on the values of the observed covariates and on the event not having occurred prior to time t. This rate, $r[t \mid X(t)]$, is generally known as the hazard rate. It is formally defined as

$$P_{it} = \Pr(T_i = t \mid T_i \geq t, X_{it}),$$

where T is the discrete random variable measuring the uncensored date of survival and P_{it} is the probability that firm i at time t will still be in existence, given that it did not fail in any previous time interval. A further complication in using this procedure is due to the presence of crude observation points. The data structure challenges the use of a logit model. As Yamaguchi (1991) noted, logit model approaches can be interpreted as a ratio of two odd; such a ratio approaches the ratio of two rates only if the interval between observations is sufficiently small. A valid alternative is a continuous-time data specification that can be used to derive a model for data grouped into intervals (Allison 1995). A complementary log-log specification accomplishes this goal. Under the assumption that events are generated by Cox's proportional hazard rate model, we have

$$\log[-\log(1 - P_{it})] = \alpha_t + \boldsymbol{\delta}'\mathbf{x}_{it},$$

Table 2 Pairwise Correlations

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Age	1.00														
2. World War I	−0.06	1.00													
3. World War II	0.20	−0.05	1.00												
4. Single association	−0.28	−0.10	−0.18	1.00											
5. Regulation 1971	−0.24	−0.08	−0.15	0.83	1.00										
6. Regulation 1984	−0.18	−0.06	−0.11	0.63	0.75	1.00									
7. Province inhabitants	−0.02	−0.15	−0.03	0.27	0.23	0.17	1.00								
8. C4	−0.26	−0.08	−0.19	0.85	0.85	0.63	0.22	1.00							
9. Birth province	0.04	−0.06	0.10	0.17	0.10	0.17	0.35	0.08	1.00						
10. Death province	0.00	−0.13	−0.08	0.18	0.19	0.21	0.48	0.18	0.45	1.00					
11. Provincial density at founding	−0.26	−0.13	0.00	−0.07	−0.10	−0.12	0.62	−0.12	0.29	0.41	1.00				
12. Provincial density	0.21	−0.11	0.09	−0.41	−0.38	−0.31	0.50	−0.44	0.20	0.35	0.69	1.00			
13. Provincial density squared	0.23	−0.14	0.06	−0.47	−0.42	−0.34	0.40	−0.48	0.09	0.29	0.64	0.97	1.00		
14. Unemployment	0.06	0.02	0.17	−0.14	−0.04	0.07	−0.17	−0.20	0.15	0.08	−0.09	0.12	0.12	1.00	
15. Small firm	−0.08	0.09	−0.01	−0.11	−0.10	−0.10	−0.07	−0.10	−0.06	−0.06	0.02	−0.02	−0.02	0.05	1.00
16. No. of partners (log)	0.10	−0.02	−0.03	0.17	0.16	0.14	0.09	0.17	0.14	0.14	0.01	0.02	−0.01	−0.02	−0.56
17. No. of associates (log)	0.11	−0.11	0.02	0.12	0.13	0.13	0.21	0.12	0.08	0.15	0.11	0.10	0.10	−0.13	−0.47
18. Other-than-interfirm-exits	0.07	0.01	−0.04	0.02	0.01	−0.01	0.00	0.02	−0.01	0.07	0.04	0.05	0.05	−0.02	−0.19
19. Social capital loss	0.09	−0.02	−0.03	0.03	0.05	0.05	0.01	0.04	0.06	0.03	0.00	0.00	0.00	−0.04	−0.10
20. Percentage-partners-leaving	0.10	0.01	−0.02	−0.03	−0.02	−0.02	−0.02	−0.02	−0.05	−0.03	−0.03	0.01	0.02	−0.06	0.00
21. Group-exit dummy	−0.02	−0.05	−0.07	0.17	0.11	0.05	0.10	0.15	0.01	0.11	0.04	−0.03	−0.03	−0.14	−0.15
22. Individual-exit dummy	0.05	0.06	0.02	−0.14	−0.12	−0.10	−0.11	−0.15	−0.04	−0.02	−0.02	0.05	0.05	0.09	−0.03
23. Group-avg-joint-exp-to-any	0.01	−0.02	−0.04	0.12	0.13	0.13	0.05	0.12	0.02	0.05	0.01	−0.03	−0.04	−0.05	−0.10
24. Group-avg-joint-exp-to-new	0.00	0.00	−0.03	0.11	0.09	0.11	0.04	0.10	0.03	0.02	0.00	−0.03	−0.04	−0.01	−0.05
25. Group-avg-joint-exp-to-inc	0.02	−0.03	−0.04	0.08	0.10	0.07	0.04	0.09	−0.01	0.05	0.01	−0.02	−0.02	−0.07	−0.10
26. Group-avg-joint-exp-to-same-pr	−0.01	0.01	−0.03	0.10	0.10	0.12	0.02	0.09	0.03	0.02	−0.01	−0.03	−0.04	0.00	−0.05
27. Group-avg-joint-exp-to-diff-pr	0.05	−0.02	−0.03	0.06	0.05	0.02	0.04	0.06	−0.01	0.03	0.01	−0.02	−0.01	−0.07	−0.09
28. Group-avg-joint-exp-to-inc-same-pr	−0.04	−0.02	−0.03	0.09	0.11	0.12	0.04	0.09	0.02	0.05	0.01	−0.02	−0.02	−0.02	−0.05
29. Group-avg-joint-exp-to-new-same-pr	0.01	0.01	−0.02	0.08	0.08	0.10	0.01	0.07	0.03	0.01	−0.01	−0.03	−0.04	0.01	−0.04
30. Group-avg-joint-exp-to-inc-diff-pr	0.06	−0.02	−0.02	0.03	0.03	0.01	0.02	0.03	−0.01	0.03	0.01	−0.01	0.00	−0.07	−0.08
31. Group-avg-joint-exp-to-new-diff-pr	−0.01	−0.01	−0.02	0.07	0.05	0.04	0.04	0.07	0.00	0.02	0.02	−0.02	−0.02	−0.02	−0.04

Table 2 (cont'd.)

Variable	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
16. No. of partners (log)	1.00															
17. No. of associates (log)	0.49	1.00														
18. Other-than-interfirm-exits	0.39	0.21	1.00													
19. Social capital loss	0.22	0.18	0.38	1.00												
20. Percentage-partners-leaving	−0.01	0.01	0.08	0.06	1.00											
21. Group-exit dummy	0.20	0.09	0.26	0.15	0.06	1.00										
22. Individual-exit dummy	0.08	−0.04	0.52	0.25	0.09	0.06	1.00									
23. Group-avg-joint-exp-to-any	0.17	0.11	0.20	0.25	0.05	0.32	0.07	1.00								
24. Group-avg-joint-exp-to-new	0.13	0.09	0.17	0.24	0.04	0.14	0.07	0.61	1.00							
25. Group-avg-joint-exp-to-inc	0.13	0.07	0.15	0.15	0.04	0.33	0.04	0.80	0.04	1.00						
26. Group-avg-joint-exp-to-same-pr	0.10	0.08	0.13	0.22	0.02	0.13	0.07	0.58	0.80	0.12	1.00					
27. Group-avg-joint-exp-to-diff-pr	0.15	0.08	0.20	0.17	0.05	0.31	0.04	0.70	0.32	0.70	0.02	1.00				
28. Group-avg-joint-exp-to-inc-same-pr	0.06	0.03	0.04	0.08	0.01	0.14	0.01	0.49	−0.01	0.61	0.16	0.00	1.00			
29. Group-avg-joint-exp-to-new-same-pr	0.09	0.08	0.12	0.21	0.02	0.10	0.07	0.51	0.80	0.01	0.98	0.02	−0.01	1.00		
30. Group-avg-joint-exp-to-inc-diff-pr	0.11	0.07	0.15	0.13	0.03	0.28	0.04	0.64	0.05	0.78	0.02	0.88	0.00	0.02	1.00	
31. Group-avg-joint-exp-to-new-diff-pr	0.09	0.05	0.12	0.13	0.04	0.09	0.02	0.35	0.58	0.05	0.01	0.51	−0.01	0.00	0.07	1.00

where α_t is an unspecified function of time, $\mathbf{x}_{it}$ is the vector that includes all covariates and controls, and $\boldsymbol{\delta}$ is the vector of coefficients. The model resembles a piecewise specification with the difference that the hazard of failure is not forced to remain constant across intervals, but is allowed to fluctuate in various ways so long as the assumption of proportionality within each of them is satisfied. Following Pennings et al. (1998), we set those intervals equal to the time gaps in our data and controlled for firm age—i.e., a curvilinear effect of duration.

Further potential problems in our analysis concern the direction of causality and endogeneity. Interfirm mobility might be an effect rather than a cause of organizational dissolution; individuals are more likely to quit when their firm is performing poorly and "death is sneaking around the corner" (see Wagner 1999). We addressed this concern in different ways. First, we lagged the variables by one period. Because in our data a period ranges from a one- to a five-year interval, for 84% of the firms in our database a one-period lag corresponds to one to two years, and for 16% to three to five years. But endogeneity may be due to systematic differences across exiting individuals. High-profile partners (i.e., with high-quality human capital), for instance, are more likely to leave the company to join an incumbent or to found their own venture. In a similar vein, the inclination to remain in the same area may also be higher for individuals with a high stock of human and social capital. This potential scenario renders endogenous any donation to organizations located in similar geographic areas, potentially biasing the values of the estimated coefficients.

We then double-checked the robustness of our findings in several ways. The spurious effect of poor performance on interfirm mobility might be ruled out by controlling for a lagged accounting measure of performance. Because we could not obtain accounting data on firm performance (e.g., financial data), we opted for a different solution: Size growth represents an often-used proxy for organizational success (for example, see Sørensen 1999); therefore, the lagged rate of *Size growth* can be construed as lagged performance, under the assumption that firms expand their ranks when they perform well. Size is easily observed by the firm's membership, and growth in membership suggests success and long-term viability. If performance is what motivates members to stay or quit, the harmful effects of turnover should be weaker in well-performing organizations. We examined this possibility by creating an interaction term between size growth and our most relevant measures of interfirm mobility—i.e., group average experience transferred to newly founded firms within the same province. The results of this robustness check are reported in the last column of Table 3.

Second, we checked the existence of any underlying correlation between the partners' human or social capital and geographic destination by running a set of analyses at the individual level. More specifically, we reconstructed the history of all the accountants in our database and measured the probability of remaining within the same province against that of moving to a different province on the realization of an interfirm mobility event. After excluding the single proprietorships and all the nonmobility events (i.e., other than interfirm mobility cases such as death and retirement) we ended up with a sample of 867 cases of partner mobility; 62% involves movements within the same province and 38% across provinces. We proxied the quality of the human capital involved in the transfer by measuring the relative time-to-promotion of each partner—i.e., the number of years needed to move from associate to partner; for a discussion of the relevance of this measure see Maister (1993). The results (obtained with a complementary log-log specification, coding one the event of remaining within the same province, and zero all the movement across provinces) reassured us that human capital randomly distributes across geographic space on an interfirm mobility event. The estimates of the coefficients associated with human and social capital (proxied by local experience) were positive but far from being statistically significant. Again, the same coefficients turned out to be statistically insignificant when we estimated the impact of social and human capital on the decision to found a new company (65% of the cases) versus joining an incumbent (35%) on exiting.

We further checked the existence of any systematic difference across firms due to unobserved effects by running a random effects complementary log-log model.[2] Because no evidence of any unobserved effect was found, we present the results adopting a more parsimonious specification. The analyses presented below, however, are controlling for fixed effects at the province level (not reported in Table 3) to account for unobserved systematic geographic differences across provinces. The statistically significant improvement in the fit of the model due to the addition of provincial fixed effects points to the existence of different selection environments. All the estimates were obtained using STATA 8.

5. Results

Table 3 presents the estimates of the complementary log-log models for organizational dissolution. Model 1 includes all the control variables. In Model 2, we tested Hypothesis 1A by adding our measures of individual and group-related mobility. In Model 3, a measure of the (logged) average time spent together by the groups leaving is used to test Hypothesis 1B. In Model 4, we juxtaposed the average joint experience of group migrations within and across provinces to test Hypothesis 2. To test Hypothesis 3, in Model 5 we looked at the effect of average joint experience of groups moving to newly founded firms and incumbents (located both inside and outside

Table 3 Complementary Log-Log Models for the Dissolution Rate of Dutch Accounting Firms, 1880–1986

Variable	Model 1	Std. err.	Model 2	Std. err.	Model 3	Std. err.	Model 4	Std. err.	Model 5	Std. err.	Model 6	Std. err.	Model 7	Std. err.
Time gap 2 years	1.510	0.095**	1.275	0.114**	1.501	0.095**	1.503	0.096**	1.509	0.095**	1.502	0.096**	1.513	0.096**
Time gap 3 years	−2.134	1.006**	−1.952	1.019*	−2.125	1.006**	−2.123	1.006**	−2.128	1.006**	−2.126	1.006**	−2.121	1.006**
Time gap 4 years	3.422	0.182**	3.002	0.210**	3.382	0.183**	3.386	0.182**	3.406	0.183**	3.369	0.184**	3.386	0.185**
Time gap 5 years	2.652	0.559**	2.515	0.535**	2.604	0.561**	2.618	0.560**	2.641	0.559**	2.617	0.560**	2.634	0.560**
Age	−0.087	0.012**	−0.091	0.013**	−0.088	0.012**	−0.088	0.012**	−0.088	0.012**	−0.089	0.012**	−0.089	0.012**
Age 2	0.002	0.0002**	0.002	0.0002**	0.002	0.0002**	0.002	0.0002**	0.002	0.0002**	0.002	0.0002**	0.002	0.0002**
World War I	−0.078	0.607	0.051	0.618	−0.074	0.608	−0.073	0.608	−0.075	0.608	−0.073	0.608	−0.091	0.608
World War II	−0.536	0.398	−0.362	0.389	−0.498	0.398	−0.500	0.398	−0.517	0.398	−0.492	0.398	−0.517	0.402
Single association	1.195	0.280**	1.174	0.316**	1.190	0.278**	1.185	0.277**	1.187	0.279**	1.179	0.276**	1.165	0.277**
Regulation 1971	−0.016	0.281	0.118	0.258	−0.009	0.280	−0.001	0.280	−0.001	0.281	0.008	0.282	0.045	0.284
Regulation 1984	−1.680	0.222**	−1.450	0.237**	−1.694	0.222**	−1.690	0.222**	−1.693	0.222**	−1.705	0.223**	−1.713	0.223**
Province inhabitants (in millions)	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.03
C4	1.151	1.141	0.590	1.124	1.105	1.131	1.081	1.135	1.098	1.140	1.082	1.136	0.994	1.141
Birth province	−0.021	0.007**	−0.025	0.007**	−0.021	0.007**	−0.021	0.007**	−0.021	0.007**	−0.021	0.007**	−0.020	0.007**
Death province	0.059	0.006**	0.058	0.006**	0.059	0.006**	0.059	0.006**	0.059	0.006**	0.059	0.006**	0.059	0.006**
Provincial density at founding	0.006	0.003**	0.007	0.003**	0.006	0.003**	0.006	0.003**	0.006	0.003**	0.006	0.003**	0.006	0.003**
Provincial density	−0.030	0.014**	−0.024	0.015	−0.027	0.014*	−0.017	0.014	−0.026	0.014*	−0.027	0.014*	−0.026	0.014*
Provincial density squared	0.0002	0.0001**	0.0002	0.0001**	0.0002	0.0001**	0.0002	0.0001**	0.0002	0.0001**	0.0002	0.0001**	0.0002	0.0001**
Unemployment	−0.063	0.017**	−0.039	0.016**	−0.063	0.017**	−0.063	0.017**	−0.063	0.017**	−0.063	0.017**	−0.063	0.017**
Small firm	0.047	0.115	0.528	0.128**	0.057	0.115	0.054	0.115	0.045	0.115	0.060	0.115	0.109	0.118
No. of partners (log)	−0.007	0.075	−0.335	0.083**	−0.028	0.076	−0.028	0.076	−0.017	0.077	−0.024	0.075	0.048	0.080
No. of associates (log)	−0.067	0.034*	−0.070	0.039*	−0.066	0.034*	−0.067	0.034*	−0.069	0.034**	−0.066	0.034*	−0.038	0.035**
Other-than-interfirm-exits	0.011	0.026	−0.094	0.031**	0.008	0.027	0.007	0.027	0.008	0.027	0.011	0.027	0.004	0.028
Social capital loss	0.157	0.065**	0.116	0.069*	0.115	0.063*	0.112	0.064*	0.126	0.062**	0.117	0.063*	0.073	0.077
Percentage-partners-leaving	0.252	0.102**	0.213	0.128*	0.256	0.102**	0.256	0.102**	0.254	0.102**	0.255	0.102**	0.287	0.101**
Group-exit dummy (H1)			2.628	0.135**										
Individual-exit dummy (H1)			0.070	0.145										
Group-avg-joint-exp-to-any (H1A)					0.215	0.079**								
Group-avg-joint-exp-to-new (H2)							0.167	0.081**						
Group-avg-joint-exp-to-inc (H2)							0.107	0.074						
Group-avg-joint-exp-to-same-pr (H3)									0.036	0.017**				
Group-avg-joint-exp-to-diff-pr (H3)									0.019	0.072				
Group-avg-joint-exp-to-inc-same-pr (H4)											0.203	0.165	0.241	0.164
Group-avg-joint-exp-to-new-same-pr (H4)											0.455	0.113**	0.383	0.115**
Group-avg-joint-exp-to-inc-diff-pr (H4)											0.032	0.151	0.026	0.149
Group-avg-joint-exp-to-new-diff-pr (H4)											0.245	0.153	0.239	0.152
Size growth													−0.032	0.013**
Size growth ∗ Group-avg-exp-to-new-same-pr													0.006	0.008
Constant	−2.535	0.497**	−2.595	0.510**	−2.288	0.501**	−1.316	0.683**	−2.214	0.584**	−1.583	0.600**	−1.592	0.594**
Log likelihood	−1,257.62		−1,254.78		−1,254.54		−1,254.53		−1,255.18		−1,251.99		−1,247.19	

Notes. Provincial fixed effects included—518 events; $^{*}p < 0.10$; $^{**}p < 0.05$. Two-tailed tests.

the focal province). In Model 6 we tested Hypothesis 4 by considering the three dimensions simultaneously. Model 7 reports the coefficient estimates after we included the interaction term between the size growth variable and the measure of group exit, which is central to our theoretical reasoning.

The baseline model (Model 1) with all the control variables shows that the creation of the single association in 1966 (NIvRA) significantly increased the risk of dissolution. By contrast, the increase in demand for auditing services following the introduction of the 1971 regulation reduced the dissolution risk, especially after 1984. The pattern of the *Age* variable suggests the existence of a curvilinear effect. The coefficients measuring the impact of ecological dynamics on failure rates—*Birth province, Death province*, *Provincial density at founding, Provincial density*, and *Provincial density*^{2}—are all in the expected direction and statistically significant. These results confirm that the survival chances of the focal firm are mainly dependent on the evolutionary dynamics of local populations.[3] Although the coefficient estimating the effect of exits that do not involve interfirm mobility is positive, it does not reach statistical significance. On the contrary, the coefficient estimate of the variable measuring the impact of losing social capital is positive and statistically significant.

Model 2 presents the estimates measuring the competitive effects of interfirm mobility after we distinguished between individual and group movements. The risk of organizational dissolution is statistically significant when interfirm mobility involves a group of partners rather than individuals. Model 3 refines this finding by replacing the group dummy with a measure of average joint experience of departing members. The positive and statistically significant estimate of the variable *Group-avg-joint-exp-to-any* provides support to our Hypothesis 1B. We then disaggregated this measure according to the nature of the destination firm (incumbent or newly founded) and to its geographic location (within the same province or a different one). Model 4 compares the findings depending on whether the recipient firm is an incumbent or an entrepreneurial firm. Only the coefficient for newly founded organizations is statistically significant, so confirming Hypothesis 2. Model 5 reports the estimates across geographic space. Similarly, the estimates seem to confirm Hypothesis 3: The coefficient of the variable capturing movements within the same province is the only one statistically significant.[4]

In the previous models the three dimensions (individual versus group, incumbent versus start-up, same versus different geographic context) were treated as independent. Thus, they do not inform us about how those dimensions jointly affect organizational survival. Model 6 is meant to aggregate these three dimensions. The coefficient estimates reported in Model 6 suggest a few considerations. First, the effect of migration as a group is stronger than the effect of individual movement. Second, the strongest effects of interfirm mobility on dissolution are related to movements within the same geographic area. Third, for each case the risk of organizational dissolution is much higher when partners leave the focal organization to found a new rival rather than to join an existing rival. In line with Hypothesis 4, the hazard of dissolution is the highest when groups depart to found a new firm located in the same province as the source firm.

Model 7 further corroborates these findings by combining *Size growth* (lagged)—a proxy for good performance—with the *Group-avg-joint-exp-to-new-diff-pr* variable presented in Model 6. Because this interaction term turned out to be nonsignificant, we interpreted this result as an indication that the competitive impact of routines replication is independent of the donor's firm health.

6. Discussion and Conclusions

The analysis of the effects of member exit on organizational survival has spun research on the antecedents and the consequences of this event (for a comprehensive discussion see Pennings and Wezel 2006a). The present study pushes this inquiry by investigating the competitive consequences for the donor firm of interfirm mobility. We limited our theorizing to those exit cases in which a member departs to a peer firm, while controlling for other scenarios representing complete departure from the sector. Being a study of partnerships, we focused on partners, i.e., key members who participate in the governance of their firm. Their exit was framed in terms of higher-order routines replication. Since these routines govern processes of resource acquisition and allocation, it is critical to focus on the conditions facilitating their replication to understand when interfirm mobility increases competitive interdependence among organizations.

Recent research has begun to investigate how such mobility affects the performance of the source firm (Sørensen 1999), the destination firm (Agarwal et al. 2004, Rao and Drazin 2002, Wezel and Saka 2006), or both simultaneously (Phillips 2002), under the assumption that interfirm mobility entails the transfer of routines but without further qualifying the conditions facilitating their replication. We contribute to this body of research in three ways. First, special attention is drawn to the scenario where interfirm mobility translates into the transfer of higher-order routines across organizations, such that the different effect of individual versus collective migrations is exposed. Second, this paper demonstrates how migrations to incumbents are less likely to affect the long-term performance of the donor than are migrations to newly founded firms. Third, this study

shows the relevance of the same historical, socioeconomic, and institutional environment in facilitating successful replication of existing routines (see Stinchcombe 1965, and for a comprehensive review of this article, Lounsbury and Ventresca 2002) and therefore increasing the competitive effects of interfirm mobility. Altogether, this paper builds on the insights of research on spin-offs' behavior (Agarwal et al. 2004, Phillips 2002, Ruef 2005, Burton et al. 2002, Klepper and Sleeper 2005) to uncover conditions under which the spillover of proprietary routines exposes the source firm to unfavorable survival prospects. The loss of proprietary organizational routines occurs most ominously when senior members depart collectively, and especially so when they have spent many years together before leaving.

This paper is concerned with the competitive consequences occasioned by routine replication due to outbound movements, while controlling for the loss of human and social capital. Unlike previous research that does not distinguish between resources and routines, we believe such a distinction to be both theoretically and empirically important. The thrust of the argument is that resources such as social capital are usually attached to individuals and therefore are more likely to be transferred when those individuals move from firm to firm. Moreover, as our qualitative evidence suggests, the presence of anticompete clauses significantly constrains the extent to which individuals' social capital can be transferred, especially when it involves clients who should contractually abide by such clauses. The competitive damage due to partner turnover, thus, cannot be primarily attributed to a loss of clients.

By contrast, routines are not bound to single individuals: Because they originate from repeated interaction among multiple actors inside or outside the firm, their successful replication is a more complex and uncertain phenomenon necessitating a much broader set of conditions to hold. Even though routines are unobserved and this paper—like the kindred papers of Phillips (2002), Klepper and Sleeper (2005), and Pennings and Wezel (2006b) does not measure replication as such, we attempted to measure the impact thereof, net of the effect of losing human or social capital. Needless to say, further empirical research, using more fine-grained data, is needed to validate our claims. Better measures should properly account for the spillover effects due to the loss of human and social capital. Our proxy captures such effects only indirectly. With respect to human capital, we found self-selection not to be at work even though our analysis remains silent on the specific characteristics (e.g., education, skills, or expertise) of departing individuals. While the findings concerning social capital are consistent with existing literature, the way we operationalize this construct only proxies for the effect of external ties (e.g., relations with clients), disregarding that of internal ties—i.e., repeated interaction among partners that stimulate communications and cohesion. Our measure of average joint experience partly captures this effect because it accounts for defecting members' dynamic patterns of interaction. Whether higher-order routines replication or the transfer of internal social capital between firms is responsible for the findings observed is a matter of debate. In our opinion, however, it remains unclear why the transfer of internal social capital should harm the donor's performance—especially when controlling for possible causes of internal disruption. We interpret the findings as pointing to routines replication as the critical mechanism responsible for donor's mortality. Regardless of the specific mechanism at work, a study on the conditions favoring the portability of skills, resources, and routines across organizations should move beyond the individual level of analysis to embrace group dynamics as well.

Our focus on higher-order routine replication also sheds light on the reason why interfirm mobility can be viewed as a source of competitive interdependence. Unlike operating routines that usually attend to an organization's daily activities, higher-order routines govern the processes by which resources are allocated throughout the organization. The leakage of such higher order routines differs markedly from lower order or auditing and other professional routines. The spillover of such lower level routines might in fact be beneficial rather than harmful, as Corredoira (2006) demonstrated, if and when outbound movement involves not managers, but professionals and other employees, i.e., carriers of lower level routines whose mobility is conducive to the strengthening of communities of practice that typically span multiple firms and enhance their professional standards. By contrast, while replication of higher order routines across firms fosters similarity between donor and recipient firms, such convergence drives them toward greater and more intense rivalry. It is their successful replication—not that of operating routines—that ultimately increases the degree of similarity between the donor and the recipient firms. Studying the conditions facilitating higher-order routine replication, therefore, helps understand when interfirm mobility produces competitive consequences. In this respect, it should be noted that the replication of proprietary routines under investigation in this paper is typically not premeditated, even though poaching is usually driven by competitive motives.

Spin-offs are frequently due to turnover of employees who seek an organizational setting outside the parent firm. The presumption is that voluntary (as in the case of partners) out-movement produces consequences quite different from those turnover events brought about by intended and intentional human resources strategies. For example, many firms maintain elaborate job-rotation systems as one of the means of deliberate routine transfer. As for such transfers, consider that many firms—e.g.,

Home Depot, Kinko's, Toyota, Carrefour—base their strategic intentions on routine replication that is usually well-articulated and explicit (see Winter and Szulanski 2001). Intentional transfer also occurs between firms through strategic alliances, outsourcing, guest engineers, and so on. We believe that our study belabors theoretically how such nonpremeditated events involving key players reveal competitive externalities.

In its present form, the study suffers from several limitations. Each limitation, however, can be associated with a specific direction for future research. The contextually dependent replication of routines involves knowledge-intensive firms. Similar mobility consequences can be observed in high-tech industries (e.g., software, biotech, semiconductors—see Klepper and Sleeper 2005) where spin-offs occasion spatial replication of routines. Further research should spell out the mobility implications for manufacturing versus service firms. Partnerships differ from incorporated firms with various levels of limited liability and family-owned or single proprietorships (which we omitted from the present analysis)—see Pennings and Wezel (2006a). How do such varying classes of organizations and their legal or institutional traditions affect the absorption of new higher-order routines? Apart from variations among sectors, within-sector heterogeneity among firms differently exposed to the routine replication risk was observed as well. The present paper does not address this question and treats organizations in a dichotomous way: a newly founded firm or an incumbent. This distinction is premised on the idea that incumbents are already saddled with legacies of routines, i.e., endowed with institutionalized patterns of interaction, chafing against those having an extramural provenance. Accordingly, in the analysis we compared these two classes of firms as a dichotomy. However, existing firms differ along several dimensions that shape their susceptibility to absorption of extramural routines. Accounting for those dimensions amounts to an important refinement and further elaborates on the conduciveness of routine replication across firms. Consider dimensions such as firm size, aspects of organizational demography such as diversity in experience or skill sets, and firm performance prior to outbound movements. Such inquiries push the frontiers of knowledge regarding migration of firm proprietary routines and related spillovers to new levels, but are beyond the scope of this study.

The finding that the effects of interfirm mobility are very much regional hints at geographic niches harbouring organizational routines. The exit of professionals often precipitates jolts, upheavals, and other forms of organizational change and discontinuity. We argued that the equivalence of geographic embeddedness for mobility-based replication is critical, and that one should spell out the nature of location equivalence. We have shown that the effects of mobility and routine replication are most observable if they occur within the same environment—i.e., when donor and destination firms are co-located. Historical, socioeconomic, and institutional differences in the location of the donor and the destination firms matter more than geographic distance per se. Additional specification of the nature of geographic units such as SMSAs and industrial districts should improve the explanatory power of geography and co-location.

Finally, access to individual motivation and cognition for interfirm mobility remain elusive. We have been agnostic about motives that induce individual or collective career-related action. We exposed effects of individual conduct shaping firm and sector-level externalities, even if we did not find any evidence of selectivity among events involving individuals endowed with significant human or social capital (fast-trackers or partners ranking high in their level of industry experience). Additional multilevel information about this individual motivation might, however, contribute to a more comprehensive understanding of the implications of interfirm mobility, routines replication, and organizational survival.

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Endnotes

[1]We opted for this measurement of the construct to keep the test as simple as possible and to show how the loss of a team of partners—rather than that associated to individual mobility—reduces the donor's survival chances independently from its intensity and characteristics, which we further qualify by using other measures. The test carried out by using continuous measures provides, however, comparable results. Because one possible concern has to do with the underlying size distribution, we reran the analysis after controlling for the number of members involved in the event. Moreover, to reduce the impact of outliers, we did so only for those cases in which up to three members exited together (accounting for 68% of all the team events). These additional checks did not alter the findings reported here.

[2]A more complex solution to this problem is to create instruments for all the variables of theoretical interest. This procedure entails the estimation of a survival model where the eight

interfirm variables are replaced with the estimated number of events obtained through eight count models—i.e., instrumented variables. As we found no evident sign of endogeneity while running our robustness checks (see §5), we decided not to use this technical correction.

[3]Analyses not reported here demonstrate that the local ecological effects dominate national effects.

[4]Hypotheses 2 and 3 might be linked to arguments regarding age and structure based on the argument that if the donor and the recipient firms were age equivalent they would also be structurally equivalent and therefore routine transfer between them would be more likely. Such a coincidence was examined by constructing a variable measuring the age difference between donor and recipient firms at the time of an interfirm mobility event. The findings obtained point to an increasing and independent impact of age distance on mortality. In other words, the larger the donor-spin-off age divergence, the stronger the competitive effect of interfirm mobility. Adding this variable to the estimation did not affect the findings' robustness. A peculiar complication involves the donor's age when the recipient firm is a start-up, an issue that we resolved by adding a dummy variable flagging those transfers involving newly founded firms and interacting this variable with the age-difference measure. None of the coefficients, however, turned out to be statistically significant. The same procedure was repeated for the case of geographic destination—i.e., by adding an interaction term between age difference and a dummy variable indicating whether the transfer took place within the same province or a different province. In this case, the dummy suggested the existence of a positive effect on mortality of transfers taking place between equally aged and proximate pairs of firms. The robustness of these results was further tested by adding geographically-split measures. This addition canceled out the previous results, supporting a dichotomous rather than continuous difference between newly founded firms and incumbents in the presence of routines replication. The implication is that high-order routines become imprinted during the early stages of the organizational life cycle (e.g., Baron et al. 1996) rendering incumbents, whatever their age, less amenable to the injection of new (high-order) routines.

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