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*Experience Spillovers across  
Corporate Development Activities*

by  
Maurizio Zollo  
Jeffrey J. Reuer  
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## **Experience Spillovers across Corporate Development Activities**

Maurizio Zollo  
Strategy and Management Department  
INSEAD  
Boulevard de Constance  
77305 Fontainebleau Cedex, France  
Tel.: (33) 1 60 72 44 74  
Fax: (33) 1 60 74 55 00  
E-mail: maurizio.zollo@insead.fr

Jeffrey J. Reuer  
Fisher College of Business  
Ohio State University  
2100 Neil Avenue  
Columbus, Ohio 43210  
Tel.: (614) 292-3045  
Fax: (614) 292-7062  
E-mail: reuerj@cob.ohio-state.edu

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## **Experience Spillovers across Corporate Development Activities**

This study develops a theoretical explanation for the existence of positive, as well as negative, experience spillovers across corporate development activities. We suggest that the similarity in two activities influences both the sign and magnitude of experience spillovers. The argument is used to understand how alliance experience influences the performance of acquisitions in the US commercial banking industry. The empirical evidence indicates that the spillover effect of alliance experience on acquisition performance is a function of the decisions made in the post-acquisition phase regarding the level of integration and the replacement of top management. We also find a U-shaped relationship between alliance experience and acquisition performance, suggesting the presence of negative spillovers across corporate development activities at low experience levels.

## INTRODUCTION

The problem of understanding how organizations develop competence has taken a center-stage position in the discourse among organizational theorists as well as strategic management scholars on the evolution and performance of organizations. In the former field, this research builds on a long-standing tradition interested in the study of cognitive barriers to individual and collective learning (March & Simon, 1958; Cyert & March, 1963; Levitt & March, 1988) as well as the supporting behavioral processes (Weick, 1979, 1995; Argyris & Schon, 1978). In the strategic management literature, the study of collective learning has a more recent history and provides new explanations for the creation and protection of competitive advantage (Henderson & Clark, 1990; Kogut & Zander, 1992; Grant, 1996; Teece, Pisano, & Shuen, 1997). These literatures have seen some convergence in evolutionary economics (Nelson and Winter, 1982), which draws upon both behavioral and economic traditions to explain the development of organizational competence through the creation and evolution of routines.

One common, underlying assumption in these streams of research is that learning processes in one specific type of organizational activity operate independently from learning processes in other domains. The literature on the learning curve phenomenon provides a case in point in that learning and incremental performance improvements are explained by the accumulation of experience in the focal activity (Yelle, 1979; Dutton & Thomas, 1984; Epple, Argote, & Devadas, 1991). More recent and refined versions of this argument have been applied to product development and quality improvement processes (Clark & Fujimoto, 1991; Mukherjee, Lapre, & Van Wassenhove, 1998). This work has identified some important contingencies influencing organizational learning processes, including the

degree of cognitive effort expended by teams to uncover causal linkages between action and performance (Weick, 1995) or the identification and correction of errors in the execution of the activity (Argyris & Schon, 1978). However, whether the explanatory mechanism is based on experience accumulation, process routinization, retrospective sense-making, or error detection and correction, the primary locus of learning is closely connected to the processes related to a single activity, which is seen in isolation from other organizational activities and their learning processes.

While these assumptions may be appropriate for initial theory building purposes, this paper intends to contribute to our current understanding of how organizations learn and evolve by challenging the assumption of separable and independent learning processes and by submitting a set of predictions on the nature of experience spillovers. Organizational activities are not learned in a vacuum, and the experience gained in related activities may have either negative or positive effects on the performance of the focal one. For instance, in their work on the myopia of learning, March and Levinthal (1993) describe the hazards of increasing specialization in a particular knowledge domain. In such circumstances, the experience gained in one organizational activity may inhibit learning in another. By contrast, Cohen and Levinthal's (1990) theory of absorptive capacity may be read from a multi-activity perspective, suggesting that organizations having developed superior knowledge in a specific area may be more capable of expanding the span of their competence into related domains. This allows for the existence of positive learning externalities across activities.

Two fundamental questions emerge from these preliminary observations. First, does experiential learning in one organizational activity positively or negatively affect the performance of other activities? Second, and even more importantly, under what

conditions are experience spillovers across organizational activities likely to be positive or negative?

This paper addresses these questions in the context of external corporate development processes, acquisitions and alliances in particular. This empirical context is interesting and appropriate for studying capability development processes for several reasons. First of all, compared to operational and other administrative activities, acquisitions and alliances are relatively infrequent and heterogeneous, conditions which can effectively obstruct experiential learning processes (March, Sproull & Tamuz, 1991). Moreover, performance metrics are difficult to develop and use for both alliances and acquisitions (e.g. Anderson, 1990), and these processes are subject to high levels of causal ambiguity. Further, research interest on experience accumulation in alliances (Barkema, Shenkar, Vermeulen, & Bell, 1997; Simonin, 1997; Anand & Khanna, 2000a) and acquisitions (Pennings, Barkema, & Douma, 1994; Haleblian & Finkelstein, 1999) is growing, yet the evidence on positive intra-activity experience effects is mixed, and there is no evidence on experience spillovers. Finally, acquisitions as well as alliances require significant resource commitments and are of relevance to the performance and survival of organizations (Manne, 1965; Amihud & Lev, 1980; Jensen & Ruback, 1983; Singh & Montgomery, 1987; Singh & Mitchell, 1996; Reuer & Koza, 2000).

In the present study, we focus on the performance of acquisitions and examine the roles played by intra-activity (i.e. acquisition-related) experience accumulation as well as inter-activity (i.e. alliance-related) experience effects. In the next three sections, we provide background theoretical material and develop hypotheses on experience effects within and across corporate development activities. We first introduce the notion of experience spillovers and develop a theoretical argument,

based on the degree of similarity among activities, to explain both the sign and the magnitude of the spillovers. In the corporate development context, we use these concepts to identify two features of the focal acquisition – the integration of the target firm and the replacement of top management personnel – which might influence the effects of prior alliance experience on the performance of the focal acquisition. A following section discusses the research design, and the subsequent one provides results for a sample of acquisitions and alliances in the U.S. commercial banking industry. Results derived from models of long-term accounting and stock price performance reveal that alliance experience does impact acquisition performance, although in a complex, non-linear fashion. Furthermore, the findings demonstrate that the impact of alliance experience on acquisition performance is contingent upon the way the focal acquisition is managed during the integration phase. A section on the study's implications for research on collective learning processes concludes.

## **LEARNING ACROSS ORGANIZATIONAL ACTIVITIES**

In order to describe how learning transfers across organizational activities, we first introduce the notion of experience spillovers, and then propose a way to think about how actors attempt to determine the degree of applicability of prior experience to the focal task. Finally, we discuss the likelihood of erroneous generalization and the theoretical linkage between the similarity of activities and the type of spillover effects to be expected.

In developing these arguments, we will refer to concepts drawn from cognitive psychology because that is where these problems have been studied at the individual level of analysis. We will also highlight, though, the limitations in the applicability of some of these notions to the organizational level, as well as to the empirical context of

acquisitions and alliances. Evolutionary economics, which focuses instead on the organizational routine, and therefore on group-level learning processes, as the relevant unit of analysis is therefore the principal perspective taken in developing the theoretical arguments and predictions.

### **Experience Spillovers**

Experience spillovers can be defined as the impact of the experience accumulated in the execution of activity  $j$  on the performance of activity  $i$  (i.e.,  $S_{ij}$ ). More formally, they can be modeled as the partial derivative of performance of the focal activity  $i$  with respect to the experience accumulated in activity  $j$ . The starting point of our analysis is the observation that experience spillovers can assume a positive or negative sign. The case of positive experience spillovers is typically more intuitive and follows from the general applicability of basic skills to different activities. For example, learning to ride a bicycle may facilitate learning to drive a car because the individual learns rules and norms of traffic circulation (i.e., declarative knowledge) as well as how drivers act and react to others on the roads (i.e., procedural knowledge), and this learning applies to both activities.

The case of negative spillovers might be less obvious, however, yet examples can be found in prior research. For instance, negative spillovers have been studied in cognitive psychology under the label of negative transfer effects at the individual level (see Gick and Holyoak, 1987 for a review). It is an established result that many cognitive activities can produce negative transfers of prior learning to new tasks. In their study of organizational routines, Cohen and Bacdayan (1994) show how individuals who accumulate experience in a card game played with a given set of rules will be at a disadvantage vis-à-vis novices when the rules are altered slightly. This suggests that experience can be a liability in a new context, even with minor

differences between the old and the new activity. They argue that differences in the resilience of declarative memory, where factual knowledge is stored, and procedural memory, where skilled actions are stored, account for this phenomenon. The latter is “less subject to decay, less explicitly accessible, and less easy to transfer to novel circumstances” (1994: 557). As a consequence, individuals replicate skilled actions in new contexts that are mistakenly taken to be similar to the ones in which the procedures were initially developed.

While there is anecdotal evidence of the negative (Leonard-Barton, 1992) or positive (Brown & Eisenhardt, 1997) consequences of routinized behavior in organizations facing rapidly changing environments, only recently has the problem been approached from a learning standpoint based on research in cognitive science. Haleblian and Finkelstein (1999), for example, show that the relationship between prior acquisition experience and acquisition performance is U-shaped, which they attribute to the presence of negative *intra-activity* transfer effects at low levels of experience due to the high heterogeneity of acquisition processes and the hazards of erroneous generalizations. Only after a threshold level of experience is reached, does performance improve with experience.

The identification of negative transfer effects within a single organizational activity is important, but not applicable to the broader problem of understanding the interdependencies of learning processes across multiple activities. Even more importantly, research is needed to identify specific theoretical conditions affecting the sign and magnitude of experience spillovers. We argue below that one of these conditions might be the quality of the cognitive representation relative to the degree of applicability of past experience to the current activity.

### **Similarity and Experience Applicability**

Several classes of explanations have been advanced in cognitive psychology to study transfer effects in individual learning processes. Chief among them is the notion of similarity between the learned activity and the one to which learning is applied.<sup>1</sup> In its simplest form, the idea goes back to Thorndike's (1903) theory of identical elements, and has been formalized more recently (Hesse, 1966; Tversky, 1977) to generate a first approximate hypothesis: the larger the number of components two activities have in common, the larger the likelihood of positive transfer effects. In order to understand the likelihood of negative transfer effects, however, similarity across activities does not suffice. It is necessary to introduce the possibility of errors in the cognitive representation of similarity, and distinguish between "perceived" and

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We intend to build on these concepts and study the relationship between the degree of similarity between two organizational activities and the perception of applicability of past experience in one activity to the execution of the other. We argue that the discrepancy between the perceived and the actual degree of applicability of prior experience is not invariant to the degree of similarity in the decisions required to execute the two activities. In cases of very high or very low levels of similarity, decision-makers will find it relatively easy to decide whether or not to transfer their accumulated experience in another activity. By contrast, at medium levels of

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<sup>1</sup> Other important elements that are beyond the scope of the paper include the type of knowledge being transferred (e.g., motor or cognitive skills, declarative or procedural memory, etc.); the existence and strength of rules identifying the task (Holland, Holyoak, Nisbett, & Thagard, 1986); the existence, number, order, and type of cues or examples to refer to in the learning (Gick & Holyoak, 1983; Cheng *et al.*, 1986) and transfer processes (Reed, Ernst, & Banerji, 1974; Hayes & Simon, 1977); and the learner's background knowledge (Bransford & Franks, 1976; Larkin, McDermott, Simon, & Simon, 1980).

<sup>2</sup> In a related vein, Holyoak (1985) theorized about the distinction between structural elements, or elements of the two activities causally or functionally tied to outcomes or goal attainment, and surface elements, or elements only loosely tied to outcomes or goal attainment. Erroneous generalizations, and therefore negative transfer effects, occur when knowledge is transferred between two activities with similar surface elements but different structural ones.

similarity, such judgments are likely to be more difficult, and the likelihood of making an error in applying past experience to the focal activity reaches its maximum (see Figures 1 and 2 for an illustration).<sup>3</sup>

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Insert Figures 1 and 2 about here  
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### **The Link between Similarity and Experience Spillovers**

Based on the discussion above, Figure 3 summarizes the theoretical linkage between the degree of dissimilarity across the two activities and experience spillovers.<sup>4</sup> As we discuss below, we posit that experience spillovers are positive at low levels of dissimilarity, and then decline and turn negative as dissimilarity increases. Finally, experience spillovers asymptotically approach zero as dissimilarity reaches high levels.

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Insert Figure 3 about here  
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At low levels of dissimilarity, experience spillovers are apt to be positive. When the activities under consideration are very similar, experiences accumulated in one activity can be effectively transferred and applied to manage the other. A second reason for positive spillovers lies in the lower cognitive efforts needed to transfer knowledge from one activity to another in this region. The need for cognitive

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<sup>3</sup> It is to be noted that the opposite type of error, where perceived applicability is lower than actual applicability, is also possible. In this case, opportunities to apply relevant knowledge from related experiences are foregone because of a “pessimistic” representational error. In this paper, we concentrate on the “optimistic” bias because it has been studied more extensively (Cohen and Bacdayan, 1994; Gick and Hollyhock, 1985) and is a more serious type of error leading to actual disutilities as opposed to opportunity costs for the foregone opportunities. In any case, Figure 2 would not differ even in the case of a pessimistic bias, as the representation error should reach a maximum at intermediate levels of similarity where ambiguities are the greatest.

<sup>4</sup> The use of the opposite notion of “dissimilarity” is due simply to ease of representation. Dissimilarity has a natural starting point at 0 (i.e. the two tasks are identical) and proceeds towards infinity, which facilitates its drawing in a pair of Cartesian axes.

abstraction of generally applicable principles and for discrimination among them of the transferable ones is likely to fall well within the limits of decision-makers' cognitive processing capacities (March & Simon, 1958; Cyert & March, 1963; Halford *et al.*, 1993).

As dissimilarity increases, however, experience spillovers are likely to decline and eventually become negative. Erroneous generalizations and negative transfer effects, in fact, are frequent because at this intermediate level of similarity it becomes much harder to correctly identify the lessons from past experiences that are applicable to the context at hand. Thus, in Cohen and Bacdayan's (1994) terms, the resilience of procedural memory leads to the application of established procedures to activities posing different execution requirements. The challenges surrounding both cognitive abstraction and discrimination increase in this region. The adverse effects of path dependence also become more likely as firms replicate past behaviors to activities sharing some similarities (Leonard-Barton, 1992; Szulanski & Winter, 1998). The rate at which experience spillovers decline and the degree of dissimilarity at which they become negative might depend on many factors, including the discriminatory skills of managers (Lyles, 1988) and their investments in attention (Ocasio, 1997), which reduce generalization errors.

Finally, at the highest levels of dissimilarity, we expect that the magnitude of experience spillovers will asymptotically approach zero. In this region, the activities can be considered to be independent, learned in isolation from one another. As a consequence, cognitive efforts to abstract and discriminate are not needed and are avoided by actors because opportunities for learning across activities are minimal. It is also worth noting that the fact that experience spillovers are expected to asymptote to zero and that the likelihood of generalization errors falls after reaching a maximum

at intermediate levels of similarity imply that experience spillovers turn from positive to negative as the dissimilarity in activities increases, as opposed to simply declining monotonically with constantly positive values.

### **EXPERIENCE SPILLOVERS ACROSS CORPORATE DEVELOPMENT ACTIVITIES**

In the empirical portion of this paper, we apply the above concepts to the context of firms' external corporate development activities. Specifically, we focus on the performance of acquisitions and the roles acquisition experience and alliance experience play in influencing acquisition performance. Using the theoretical arguments developed above, we identify dimensions common to the management of alliances and acquisition processes in order to determine the expected size and magnitude of the spillover effects of alliance experience on acquisition performance.

In order to establish that experience spillovers between alliances and acquisitions are plausible, it is necessary to compare the two activities in order to identify their similarities and differences and to locate the activities along the continuum in Figure 3. Table 1 compares and contrasts acquisitions and alliances along both content and process dimensions.

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Insert Table 1 about here  
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Along the content dimension, the two activities share several common features. Both acquisitions and alliances are instruments for the execution of multiple corporate strategies, including product-market diversification and the expansion into new geographic markets (Kogut & Singh, 1988; Pennings, Barkema, & Douma, 1994; Chang & Singh, 1999). Similarly, research over the years has emphasized that both modes of external corporate development may allow a firm to access, and at least

partially control, the resources upon which the firm depends (e.g., Pfeffer & Nowak, 1976; Pfeffer & Salancik, 1978; Davis & Stout, 1992). More recently, scholars have argued that acquisitions and alliances can also allow firms to explore new knowledge domains as well as exploit existing capabilities and resources (e.g., Koza & Lewin, 1998; Capron, 1999; Bower, 2001).

These similarities notwithstanding, acquisitions and alliances also exhibit several noteworthy differences. They represent alternative governance mechanisms affording different levels of control and coordination. Many studies have suggested that firms use acquisitions as well as various forms of alliances in a selective fashion based on information asymmetries, *ex post* transaction costs, and firm resources (e.g., Balakrishnan & Koza, 1993; Eisenhardt & Schoonhoven, 1996; Hennart & Reddy, 1997; Anand & Khanna, 2000b). Similarly, applications of real options theory to the corporate development setting have suggested that alliances confer greater follow-on growth opportunities and the ability to expand sequentially, whereas acquisitions require more extensive up-front commitments (Kogut, 1991). The transitional nature of alliances also follows from their narrower scope and time horizon relative to acquisitions (e.g., Borys & Jemison, 1989).

On the process side, many of the initial steps characterizing acquisitions and alliances share a number of similarities. For both acquisitions and alliances, strategic planning processes may engender a search for transaction partners. Similarly, the idea to acquire or collaborate can be proposed by external entities (e.g., investment banks, consultancies, etc.) or championed by division level managers. Both acquisitions and alliances involve negotiations and evaluation processes, and both activities are supported by corporate functions such as corporate development, human resources, information technology, and communications.

Indeed, our initial fieldwork reported below indicated that both acquisitions and alliances are coordinated by the same people in the commercial banks we studied. The personnel coordinating acquisitions and alliances tended to be corporate development staff, but in the smallest institutions the CEO or CFO was directly responsible for overseeing external growth initiatives. Thus, although knowledge about the management of acquisitions and alliances can accumulate in individual managers as well as in other groups throughout the organization, it is at the corporate level where organizational routines related to these processes are most likely to form and develop.<sup>5</sup> In addition, through formal interventions (i.e., managing time, questioning others, and sharing information), these corporate-level personnel can stimulate and enhance the integration of knowledge “owned” by individuals in different functional areas, thereby bringing it to a collective level (Okhuysen & Eisenhardt, 2001).

On the other hand, these process similarities coexist with several important differences. For example, the deal-making process for acquisitions tends to be characterized by a formal due diligence phase, which is often absent in the alliance setting. This is a consequence of not only the greater resource commitments inherent in M&A activity, but also of the up-front specification of the integration approach. By contrast, alliance structures tend to be more fluid in nature, reflecting partners’ ability to re-evaluate and adapt their cooperative arrangement over time (Doz, 1996).

In this paper, we focus on two key dimensions of the post-agreement phase – structural integration and resource replacement – which are of relevance for both

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<sup>5</sup> Recent practitioner guidelines for developing capabilities for managing acquisitions and alliances are consistent with this focus. For instance, GE Capital’s approach to the management of acquisition processes relies on the creation of stable, specialized functions for the coordination of integration processes (Ashkenas, DeMonaco, & Francis, 1998). Similarly, Booz-Allen Hamilton’s study of alliance management recommends that firms adopt centralized alliance functions (Harbison & Pekar, 1997).

processes. These two decisions are important because they address similar requirements to establish operational linkages between the two firms as soon as the deal is completed. As we discuss below, however, alliances and particularly acquisitions can vary substantially with respect to the way they are handled along these two dimensions. The fact that acquisitions and alliances share so many similarities, but also can differ in important respects, can give rise to significant ambiguities surrounding the optimal management of the post-agreement phase and therefore creates the potential for generalization errors.

The first dimension has to do with the *level of integration* across the two organizations deemed necessary in order to accomplish the desired objectives. For each of the functional activities relevant to the success of the project, it will be necessary to decide the extent to which they will be carried forward by one of the two organizations independently, or by the two jointly in a coordinated fashion. The level of integration is seen as a key aspect of managing acquisitions (Haspeslagh & Jemison, 1991; Pablo, 1994; Shanley, 1994; Larsson & Finkelstein, 1999). As hybrid organizational arrangements, alliances are generally subject to lower levels of integration (Borys & Jemison, 1989; Williamson, 1991), yet the literature similarly highlights the tradeoffs that firms face between alliance autonomy and higher levels of coordination (Killing, 1983; Harrigan, 1985; Mjoen & Tallman, 1997; Kumar & Seth, 1998).

The second dimension relates to the *level of replacement* of pre-existing resources. Such decisions can apply to various types of resources, such as brands, physical assets, managerial and technical resources, and so on. Because acquired units are fully internalized from an ownership standpoint, this dimension is of particular relevance to acquisitions (Cannella & Hambrick, 1993; Hambrick &

Cannella, 1993; Krishnan, Miller, & Judge, 1997), but it also applies to alliances in which partners have to, or desire to, do without certain resources that were allocated to activities now performed in collaboration. For instance, firms may use vertical alliances to outsource existing value-chain activities or may use cooperative agreements to pool resources, thereby creating redundancies which need to be eliminated (Hennart, 1988; Doz & Hamel, 1998).

The next step is to compare the two activities along the two dimensions of integration and resource replacement. Concerning the level of integration, alliances will tend to cluster at the lower end of the scale, whereas acquisitions will tend to vary across the continuum, from high structural autonomy to full integration within the acquiring organization. By the same token, alliances are expected to vary primarily in the low to medium ranges on the dimension of resource replacement, whereas acquisitions can reach high degrees of replacement, particularly in restructuring or turnaround situations. In terms of Figure 3, these observations and the descriptions above on the similarities between acquisitions and alliances suggest that, depending on how these activities are managed in the post-agreement phases, the degree of dissimilarity is expected to vary from low to intermediate levels, which corresponds to the declining portion of the experience spillover curve. Of particular interest for the theory developed above is that in this region the experience spillover can take on either a positive or a negative sign.

Three cases taken from our empirical context of commercial banking illustrate the diversity with which acquisitions are managed along the two dimensions and the consequences for the predicted sign and magnitude of experience spillovers (see Figures 4 and 5).

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Insert Figures 4 and 5 about here  
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In case A, which might be likened to the typical approach taken by the US banking industry in the 1980s, the focal acquisition is managed at low levels of integration and replacement. With few exceptions, acquired banks were typically not integrated, information systems were not converted, top management teams were rarely replaced, and product lines were not standardized. Our fieldwork indicated that the same acquirers that are now integrating their acquisitions did not do so during the 1980s because of lower pressures to derive efficiency gains, lower acquisition capabilities and therefore greater perceived integration risks, and acquired firms' expectations to remain independent prior to the legitimization of more aggressive integration approaches following the S&L crisis. All of this translates into a relatively low level of dissimilarity between the focal acquisition and the stock of prior alliance experiences. As such, the experience spillover from past alliances to the focal acquisition is likely to be positive.

In case B, which compares with the way Banc One managed its acquisitions before 1995,<sup>6</sup> the focal acquisition is managed using medium integration and low resource replacement. Banc One had created a highly sophisticated, routinized, and codified integration process whereby information systems were converted but not centralized; human resources were "affiliated," or extensively trained and socialized; but product lines were not standardized. A large amount of decisional autonomy was left to the top management team of the acquired entity, which was never replaced and was actually often co-opted at the corporate level of the acquiring organization. As of 1995, Banc One's organization chart listed 81 CEOs, one for each of the local

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<sup>6</sup> See the Harvard Business School case "Banc One, 1993"

franchises. Correspondingly, the theory developed above suggests that the spillover effect will be lower than in case A and possibly close to zero.

In case C, which can be exemplified by the way Nationsbank (now Bank of America) manages its acquisitions, and represents the direction towards which Banc One evolved its integration practices after 1995, the focal acquisition is managed at high integration and replacement levels. Nationsbank centralizes information systems and standardizes product lines, and is aggressive in terms of substituting top managers and keeping a tight control of the integration process from the corporate headquarters, with limited decision input from the target's management. Here the dissimilarity between alliance processes and the focal acquisition is at the highest levels, and the experience spillovers would consequently be lower than in the other cases, and may well turn to be negative.

## **RESEARCH HYPOTHESES**

### **Intra-Activity Experience Effects**

The first direct experience effect that is of relevance is the standard intra-activity learning process, whereby the accumulation of prior experience has a positive impact on the performance of the focal activity. The literature on the learning curve phenomenon (Yelle, 1979; Dutton & Thomas, 1984; Epple, Argote, & Devadas, 1991; Mukherjee, Lapre, & Van Wassenhove, 1998) builds on the basic intuition that organizations improve the performance of their production activities through repetition. The evolutionary economics approach (Nelson & Winter, 1982; Winter, 1987, Nelson, 1995; Cohen, Burkhart, Dosi, Egidi, Marengo, Warglien, & Winter, 1996) suggests that it is not repetition alone, but also marginal adjustments to pre-

existing routines that cause performance improvements. Based on these arguments, we specify the following hypothesis, for the sake of completeness:

**Hypothesis 1:** The greater the firm's prior acquisition experience, the better the performance of the focal acquisition.

Testing for the presence of experience effects in the acquisition context is interesting because several factors may be in operation that mitigate the potential benefits of prior experience. Acquisitions are infrequent, heterogeneous, and causally ambiguous activities and, therefore, positive experience effects cannot be taken for granted and ultimately are an empirical matter. In fact, while the empirical evidence for experiential learning in the manufacturing domain is overwhelming, in the corporate development context this is hardly so. Experience effects in acquisitions have been subject to few empirical tests, and this work has yielded inconsistent results. Some findings are consistent with learning curve theory (Fowler & Schmidt, 1989; Bruton, Oviatt, & White, 1994), while other studies have failed to find significant effects (Lubatkin, 1987; Baum & Ginsberg, 1997). Recently, Halebian and Finkelstein (1999) found a non-linear, U-shaped relationship between the two constructs, which they attributed to negative transfer effects at low levels of acquisition experience. We also examine whether nonlinearities are present in the acquisition experience-performance relationship.

### **Inter-Activity Experience Spillovers**

Based on the theory developed earlier, the sign of the spillover effect of alliance experience on acquisition performance in general may be either positive or negative. Due to the many similarities between acquisition and alliance processes reviewed above, a positive experience spillover may be expected. Simple application of learning-by-doing arguments might suggest a positive experience spillover in general, and empirical support for this prediction would offer evidence for

the existence of a general corporate development capability. However, we have also suggested that the dissimilarity between many alliances and acquisitions can be significant, partly due to the low levels of integration and resource replacement in alliances and the greater heterogeneity of acquisitions along these two dimensions. The large body of evidence that firms selectively use alliances over acquisitions in well-defined contexts (Kogut & Singh, 1988; Balakrishnan & Koza, 1993; Hennart & Reddy, 1997) also indicates that knowledge obtained in managing alliances may not be suitable for the acquisitions context. Given these contrasting arguments and our interest in explaining the experience spillover effect for different types of acquisitions, predictions regarding the spillover effect in general are stated using the following alternative hypotheses:

**Hypothesis 2a:** The greater the firm's prior alliance experience, the *better* the performance of the focal acquisition.

**Hypothesis 2b:** The greater the firm's prior alliance experience, the *worse* the performance of the focal acquisition.

### **Predictors of Experience Spillovers**

If acquisition performance is modeled as a function of alliance experience (i.e.,  $\text{Performance} = \beta_0 + \beta_1 \text{Alliance experience} + \text{other covariates}$ ), the experience spillover, defined to be  $\beta_1$ , can in turn be specified to be a function of other variables based on the theory developed earlier. For instance, Figures 4 and 5 suggest that the level of integration could be one potential factor determining the sign of the experience spillover effect of alliance experience on the performance of the focal acquisition. If the experience spillover is stated to be a function of integration (e.g.,  $\beta_1 = \gamma_0 + \gamma_1 \text{Integration}$ ), then integration can be viewed as a moderating variable in the first performance model (e.g.,  $\text{Performance} = \beta_0 + (\gamma_0 + \gamma_1 \text{Integration}) * \text{Alliance experience} + \text{other covariates} = \beta_0 + \gamma_0 \text{Alliance experience} + \gamma_1 \text{Integration} * \text{Alliance}$

experience + other covariates). The same approach can be used to model resource replacement as a factor moderating the alliance experience – acquisition performance relationship.

**Level of integration.** Figure 4 suggests that alliances and acquisitions will often differ with respect to their integration levels. Whereas alliances involve low to modest levels of integration, acquisitions are more heterogeneous. For instance, the centralization of shared functions in alliances is problematic because the collaborators maintain separate legal status and interests, engendering problems of *ex post* hold-up and moral hazard (Williamson, 1991; Hart, 1995).

By contrast, integration levels in acquisitions can run the full gamut from very low levels to very high levels. Thus, using Haspeslagh and Jemison's (1991) typology of acquisitions, preservation acquisitions will generally tend to resemble alliances more so than absorption acquisitions will. We expect, therefore, that lessons learned in prior alliances will be less helpful, and may even be harmful, if transferred to an absorption acquisition, whereas alliance experience will be more beneficial for acquisitions involving lower levels of integration. As such, the spillover effect of alliance experience on acquisition performance is predicted to be negatively related to the integration of the focal acquisition:

**Hypothesis 3:** The lower the level of integration for the focal acquisition, the greater the impact of prior alliance experience on the performance of the focal acquisition.

**Level of resource replacement.** A second dimension of the post-agreement phase relevant to the management of acquisitions and alliances is the degree to which pre-existing resources in the two organizations are retained. Chief among these resources is the top management team, which represents the locus of some of the key competencies in the organization (Finkelstein & Hambrick, 1996). Cannella and Hambrick (1993) show that the degree of top management replacement has strong and

negative implications for acquisition performance. In the alliance context, the degree of resource replacement will, comparatively speaking, be lower than in the average acquisition. Collaborators' abilities to influence the personnel decisions of each other are limited and, even in the event of changes due to the collaboration, replacement of personnel is apt to be small given the scope and boundaries of the collaborative agreement. Thus, based on logic similar to the arguments underlying H3, alliance experience will tend to be more useful for focal acquisitions in which the acquirer seeks to retain top management in the target. Conversely, alliance experience will be less useful or even counterproductive to acquisitions managed in a more aggressive mode with respect to the pre-existing human resources of the acquired unit.

**Hypothesis 4:** The lower the level of resource replacement for the focal acquisition, the greater the impact of prior alliance experience on the performance of the focal acquisition.

## METHODS

### Sample and Data Collection

The hypotheses developed above were tested by investigating acquisitions and alliances taking place in the U.S. commercial banking industry. For several reasons, this industry setting was deemed attractive for the purposes of our study. First, the commercial banking industry has undergone a period of significant consolidation, owing in part to regulatory changes that allow firms to cross state lines to become regional or national players (Spong & Shoenhair, 1992). These developments have created attractive conditions for survey research as they have brought about a sufficiently large population of observations in a relatively compact time frame. Also, the focus on a single industry improves the homogeneity of observations as sampled firms experienced relatively uniform environmental conditions. Second, the

relevance of acquisitive growth in the commercial banking industry facilitated field work and survey participation. As the economic importance of acquisitions has risen in this industry, questions surrounding the development of external growth capabilities and experience spillovers across different types of corporate development activities have taken on practical as well as theoretical importance. Third, this industry has been the industry most active in acquisitions in the 1990s. Thus, although the generalizability of the empirical evidence awaits extensions into other service and non-service sectors, the results apply to a large and relevant portion of the M&A phenomenon in recent years.

The research design involved three phases. In the first phase, fieldwork was conducted at twelve banks that were active acquirers in order to develop a greater understanding of acquisition practices in the commercial banking industry. Based on interviews of 45 decision-makers during this first stage, a large-sample, survey-based study of acquisition practices and performance followed. In-depth pre-testing of the survey, combined with the salience of the topic to industry participants, ensured the highest possible response rate and coverage of acquisition activity (Fowler, 1993; Groves, Cialdini, & Couper, 1992). The large-sample study was conducted on the 250 largest bank holding companies in the U.S., which collectively represent over 95 percent of the industry's assets. The smallest institution in the target population had total assets of approximately \$400 million, implying that its acquisitions are apt to be rare and small in size, and that further extensions of the survey frame to even smaller banks would have likely garnered sparse and less comparable observations. The final phase of the research design involved augmenting the dataset containing primary information with archival data on alliance participation, accounting performance, and financial performance.

The survey consisted of two main parts – an acquisition history profile and an acquiring bank questionnaire (see data appendix). The first portion of the survey listed all of the acquisitions conducted by the bank. Basic information about each acquisition was also gathered in the acquisition history profile, such as asset size, the degree of market relatedness, pre-acquisition profitability, level of integration, and top management team replacement. The acquiring bank questionnaire provided information on characteristics of the acquisition process, including information on decision support tools such as integration manuals, systems conversion manuals, product mapping models, and training packages.

Of the 250 bank holding companies contacted, 70 did not experience an acquisition after 1985 and 16 were acquired. Of the remaining 164 banks, responses were obtained from 51 banks, corresponding to a 31.7 percent response rate. This response rate was considered satisfactory given the seniority of respondents and the complexity of the survey. The survey was sent to the best possible respondent identified through a round of phone calls that preceded the mailing. Specifically, the respondents included the manager responsible for corporate development or for the M&A group (25 cases), the coordinator of post-acquisition integration processes (this figure existed in 14 of the institutions surveyed), the CFO (9 cases), or the CEO (3 cases). The fieldwork indicated that these individuals were responsible for coordinating both acquisition and alliance activities. Respondents were motivated to complete the questionnaire by the opportunity to benchmark their acquisition practices with those of other firms in the industry, and were assured that their individual responses would be kept strictly confidential.

Responding firms had completed 577 acquisitions, or 11.3 on average. 159 of the target firms were publicly traded, and 418 were privately held. Standard mean

comparison tests for non-response bias indicated that responding organizations were not different from the original set of 250 bank holding companies in terms of return on assets, return on equity, or efficiency ratios, yet respondents tended to be larger in terms of total assets ( $p < 0.05$ ). Four of the 51 responding institutions had to be excluded from the analysis due to incomplete responses. The final sample was further reduced because accounting data were available on a consistent basis from 1985 onwards, and many of the banks were first listed in the late 1980s and early 1990s and thus did not have financial returns data available in the CRSP data files.

## **Measures**

We calculated two measures of the acquiring bank's performance implications of an acquisition that serve as the dependent variables for the multivariate analyses, one based on accounting data and one based on financial data. Rhoades (1994) reviews forty bank merger studies and finds that roughly half used accounting or financial measures, and only one study used both. Thus, one of the strengths of the research design is the combined use of accounting and financial data to examine acquisitions and their performance drivers. Both measures offer unique strengths and weaknesses, but their combined use provides an opportunity to examine the robustness of our findings for different aspects of organizational performance.

*Acquisition accounting performance* was measured as the difference between the return on assets (ROA) of the acquiring bank three years after the acquisition relative to one year prior to the acquisition. Accounting data for acquired banks cannot be gathered directly as acquired bank performance is consolidated into the acquiring bank's financial statements. In order to control for market conditions, the acquiring bank's ROA is first adjusted based on the performance of its rivals in the same geographic market (e.g., New England, North Atlantic, South Atlantic,

Midwest, South, Rocky Mountains, and Pacific). Performance changes for the acquiring bank were then measured as follows:

$$(1) \quad \text{Acquisition accounting performance} = (ROA_{i,t+3} - ROA_{m,t+3}) - (ROA_{i,t-1} - ROA_{m,t-1}),$$

where  $ROA_{i,t+3}$  and  $ROA_{i,t-1}$  are the return on assets for acquiring firm  $i$  in years  $t+3$  and  $t-1$ , respectively, where  $t=0$  corresponds to the acquisition year, and  $ROA_{m,t+3}$  and  $ROA_{m,t-1}$  are the average return on assets for banks in the same geographic area of the acquiring bank in years  $t+3$  and  $t-1$ , respectively. Accounting data were obtained from Compustat, Compact Disclosure, and Moody's from 1985 to 1997 as data coverage was reduced significantly for years prior to 1985. Given the construction of the dependent variable, the focus of the analysis is on acquisitions completed between 1986 and 1994. After accounting for this measure's construction and missing data for other variables, the sample size was reduced to 150 acquisitions.

*Acquisition financial performance* was measured as the acquiring firm's cumulative abnormal returns three years following the acquisition.<sup>7</sup> Following Ikenberry, Lakonishok, and Vermaelen (1995), cumulative abnormal returns were calculated relative to a size and market-to-book (MTB) based benchmark. Acquisition financial performance is computed as the difference between the acquiring firm's stock return and the return in the equal-weighted size- and MTB-ranked portfolio to which the firm belongs. The use of the firm size and market-to-book criteria is based on recent asset pricing research by Fama and French (1992, 1993, 1996) that highlights the value of multi-factor asset pricing models that

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<sup>7</sup> In order to test the robustness of the results to the time window chosen, additional models were estimated using two- and four-year time windows (results available from the authors). The interpretations for the direct effects did not change. Regarding experience spillovers, the interaction between alliance experience and replacement is negative in both models ( $p < 0.05$  for the two-year model and  $p < 0.001$  for the four-year model), and the parameter estimate for the interaction between alliance experience and integration is negative, though it does not reach statistical significance.

incorporate these two criteria rather than just the market return variable appearing in the traditional capital asset pricing model. Every month this portfolio is rebalanced, and the classification of each bank in the (Size x MTB) matrix is re-evaluated each month. Specifically, using data on all companies that are traded on the New York Stock Exchange and the American Stock Exchange and that have accounting data available in Compustat, one hundred benchmark portfolios were constructed based on the cross-product of ten size deciles and ten MTB deciles. Stock returns data for this performance measure were obtained from the universe of firms in the Center for Research in Security Prices (CRSP) data files.

To determine each firm's experience levels with alternative corporate development activities at the time of the focal acquisition, we measured the firm's prior acquisitions and alliances with other banks. *Acquisition experience* was computed as the number of acquisitions completed by the acquiring firm before the focal acquisition. The acquisition history profile portion of the questionnaire provided a list of all of the acquisitions completed by the responding institution since its founding or since a merger of equals. The oldest acquisitions in the data set were completed in 1968 by Banc One and Crestar Bank.

In a parallel fashion, *alliance experience* was measured as the number of alliances completed by the acquiring firm prior to the focal acquisition. Data on alliances formed by responding firms were obtained from the Securities Data Corporation (SDC) data files. Alliances in this industry typically involve the cross-selling of products by accessing each other's client bases as well as the development of new products such as mutual funds or e-bills. There are also various alliances for back-office functions (e.g., commercial banking systems, check and lockbox processing services, stock transfer services, global custody services, cash management

services, and invoice factoring). Our measure of alliance experience counts alliances from 1986 onwards since SDC data are not available in a reliable fashion for preceding years.<sup>8</sup> Because we have detailed survey data on post-acquisition decisions, our models focus on testing the spillover effects of alliance experience on acquisition performance rather than vice-versa.

The hypotheses developed above also suggest that characteristics of the focal acquisition and the firm's corporate development experience levels with acquisitions and alliances interact to shape the performance of the focal acquisition. We examined two features of the focal transaction, integration and replacement of top management, in testing for these interaction effects. *Integration* was measured on a single scale from 0-3, where 0 corresponds to no integration; 1 to a minor degree of integration; 2 to a major degree of integration; and 3 to complete integration of the acquired firm within the acquiring bank (Datta & Grant, 1990; Shanley, 1994). The scale was the answer to a question on the degree to which procedures were aligned, information systems were converted, and products were standardized. Similarly, *replacement* was measured on a four-point scale: 0 corresponds to retention of the entire management team of the acquired bank, 1 to minor top management changes, 2 to many changes in top management personnel, and 3 to complete replacement of the acquired bank's top management team (Cannella & Hambrick, 1993; Krishnan, Miller, & Judge, 1997).

**Control variables.** To account for heterogeneity in acquiring banks and to ensure the robustness of results, we included a number of control variables that are likely to have some bearing on acquiring firms' performance levels and also may

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<sup>8</sup> This implicit shortening of the time window is consistent with Benkard's (2000) notion of organizational forgetting, which suggests that the most recent alliances will be more relevant. Future studies in industries with more frequent alliance usage could investigate alternative time windows or weighting schemes to examine experiential learning and experience spillovers in the corporate development setting.

relate to the variables of primary interest. *Relative acquisition size* was measured as the size of the acquired firm relative to the size of the acquiring bank, stated as a percentage based on total assets (Datta, 1991). This variable was incorporated as a control since comparatively small acquisitions are less likely to have a material effect on acquirers' accounting profits or market valuations. Small firms acquiring relatively large banks may also bear larger post-acquisition integration costs.

A second control at the transaction level was the quality of the acquired resources. The pre-acquisition performance of the acquired firm is likely to influence the way the acquisition is managed in the integration phase as well as the performance of the acquisition itself. For instance, a restructuring or turnaround approach will tend to be needed for the acquisition of poorly performing firms, whereas a learning approach will be necessary for the acquisition of firms with superior performance. Recent M&A literature emphasizes the performance benefits available to acquirers that are able to redeploy internal resources to target firms in horizontal acquisitions (Capron, 1999). *Resource quality* was measured through respondents' assessments of target banks' performance prior to acquisition on a five-point scale: -2 (the target was in bankruptcy), -1 (it was a poor performer), 0 (it was an average performer), 1 (it was a good performer), and 2 (it was an outstanding performer). This scaling for the variable provided a natural anchor point of zero for average performers. For 67 observations, ROA data was available for the target firms, and the correlation between this variable and the subjective measure of resource quality was 0.26 ( $p=0.003$ ).

The third and final control at the transaction level was the relatedness between the acquirer and target firm. In the strategic management field, resource relatedness has been viewed as a key antecedent to acquisition performance, yet empirical evidence on the relatedness-performance relationship has been mixed (Chatterjee,

1986; Lubatkin, 1987; Barney, 1988; Singh & Montgomery, 1987; Seth, 1990).

Given the importance of geographic location as a key competitive factor in this industry and given the rationalization of branch networks in the process of creating value through efficiency enhancement, it is important to control for the degree of geographic overlap as a proxy for resource relatedness (Healy, Palepu, & Ruback, 1992). The sample consists of acquisitions that are either perfectly horizontal (i.e., a bank buys a competitor located in the same geographic area, known as an “in-market” transaction in banking jargon) or market extension (“out-market”) transactions. *Market relatedness* was thus measured as 1 for in-market transactions and 0 for out-market acquisitions. Given that the sample consists of banks acquiring other banks, the variance in product market relatedness, another dimension of relatedness highlighted in prior strategy research, is limited by design.

We also sought to account for heterogeneity in firm characteristics that can influence the performance of acquisitions and might relate to the evolution of corporate development capabilities.<sup>9</sup> To address the acquiring firm’s resources and possible confounding effects of other acquisitions on accounting or financial returns, we introduced controls for the acquirer’s size and the number of acquisitions surrounding the focal transaction. *Acquirer size* was measured as the acquirer’s total assets in billions of dollars for the year before the acquisition. The variable *simultaneous acquisitions* was computed as the number of acquisitions completed during the same year as the focal acquisition. Given that some firms in the sample completed multiple acquisitions, a potential problem is that estimates’ standard errors might be biased downwards because of firm-specific heteroscedasticity (Moulton,

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<sup>9</sup> Since the sample of acquisitions occur over several years, we also re-specified the model by incorporating year effects. However, the results provided no indication that year effects explain variance in firms’ accounting and financial performance (F=1.8, n.s. for the accounting performance model; and F=1.9, n.s. for the financial performance model).

1986). In the models using accounting and financial returns, however, the null hypothesis of homoscedastic error terms could not be rejected based on White's (1980) test ( $p=0.17$  and  $p=0.49$ , respectively).

Finally, since firms may develop acquisition capabilities not only through learning-by-doing, but also by articulating and codifying knowledge on different phases of the acquisition process in a more systematic manner (Kogut & Zander, 1992; Nonaka, 1994; Zollo, 1998), we incorporated a control for the degree of codification of knowledge specific to the acquisition process. *Codification* was measured as the number of acquisition-specific tools existing at the time of the acquisition (e.g., documents and manuals including: due diligence checklist, due diligence manual, systems conversion manual, affiliation/integration manual, systems training manual, and products training manual; quantitative models including: financial evaluation, staffing models, product mapping, training/self-training packages, and project management).

Construct validity checks were performed on measures of integration, replacement, relatedness, and resource quality using multiple-item scales developed and applied to a sub-sample of 57 acquisitions. Multiple-item scales were not possible in the acquisition history profile for the full sample because of the large number of transactions on which respondents needed to provide information. More detailed, eight-page questionnaires for each acquisition were completed by a sample of responding firms that were representative of the full sample on the basis of all of the single indicators in the acquisition history profile.

We assessed the Cronbach alphas of each multiple-item scale, the correlation between the measure used in the study and the sum of the Z-scores of multiple items, and the correlation between the measure used in the study and the main factor

extracted from the multiple items. All of the constructs were validly represented by the measures used in the first survey, with the exception of the control for resource relatedness, as the dummy for geographic market overlap did not map well onto the broader notion of similarity among acquiring and target firms' organizational resources. The Cronbach alpha for a narrower version of the relatedness construct, which included only two scales related to geographic overlap and similarity of customer profiles was 0.63. The correlation between the measure used and the sum of Z-scores was 0.52 ( $p < .01$ ), and the correlation between the measure used and the main factor was 0.52 ( $p < .01$ ). In the case of the scale for top management replacement, the Cronbach alpha for the 9 items used was 0.826, the correlation between the measure used and the sum of Z-scores was 0.61 ( $p < .01$ ), and the correlation between the measure used and the main factor extracted was 0.55 ( $p < .01$ ). For the degree of integration, the Cronbach alpha for the 15 items used was 0.95, the correlation between the measure used and the sum of Z-scores was 0.52 ( $p < .01$ ), and the correlation between the measure used and the main factor extracted was 0.54 ( $p < .01$ ). Finally, the Cronbach alpha for the 11 items used to proxy resource quality was 0.85, the correlation between the measure used and the sum of Z-scores was 0.46 ( $p < .01$ ), and the correlation between the measure used and the main factor was 0.48 ( $p < .01$ ).

### **Model Specification**

The primary model specification used to test the hypotheses on experiential learning and experience spillovers is as follows:

$$(2) \text{ Performance} = \beta_0 + \beta_1 \text{Integration} + \beta_2 \text{Replacement} + \beta_3 \text{Acquisition exp.} + \beta_4 \text{Alliance exp.} + \beta_5 \text{Acquisition exp.} * \text{Integration} + \beta_6 \text{Alliance exp.} * \text{Integration} + \beta_6 \text{Acquisition exp.} * \text{Replacement} + \beta_7 \text{Alliance exp.} * \text{Replacement} + \text{controls} + \epsilon.$$

This model is estimated separately using accounting and financial performance data. If experience spillovers are defined as the partial derivative of

acquisition performance with respect to alliance experience, the model defines experience spillovers as a function of the focal acquisition's integration and replacement levels. Algebraically, the experience spillover can be defined as  $Performance = \beta_0 + \beta_1 \text{Acquisition experience} + \beta_2 \text{Alliance experience} + \text{controls} + \epsilon$ , where  $\beta_2 = \gamma_0 + \gamma_1 \text{Integration} + \gamma_2 \text{Replacement}$ . Multiplicative terms using acquisition experience are included to reflect the possible benefits of intra-activity experience on the performance implications of post-acquisition decisions.

Because corporate development experience levels and features of the focal acquisition (i.e., integration and replacement) enter the model multiple times as direct effects and interaction terms, z-scores for these variables were used in an attempt to alleviate multicollinearity. The maximum variance inflation factor (VIF) for all of the variables for the models presented is 6.8, which is below the rule of thumb cutoff of ten used to indicate multicollinearity problems (Neter, Wasserman, & Kutner, 1985).

## RESULTS

Table 2 presents descriptive statistics and bivariate correlations. 7.5 percent of the observations had no prior M&A deals, 29.3 percent had 1-5, and 22.4 percent had 6-10, and 40.8 percent more than ten prior acquisitions. Alliances were comparatively infrequent, with 68.4 percent of the observations having no prior alliances, 15.3 percent entering one alliance, and only 16.3 percent forming more than one alliance prior to the focal acquisition. Firms acquired banks outside of their geographic markets roughly 38 percent of the time, and they tended to do so to purchase high quality targets ( $p < .001$ ).

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Insert Table 2 about here  
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Several data patterns are worth noting for the variables characterizing the post-acquisition processes. For 72 percent of the observations, the acquirer integrated the target completely, yet the replacement variable attained its maximum for only 40 percent of the observations. The replacement variable also took on its minimum value for 40 percent of the observations, with the remaining density (i.e., 20 percent) occurring at intermediate levels. Integration levels and top management replacement were lower for targets with better pre-acquisition performance (both  $p < .001$ ) and for out-market transactions (both  $p < .001$ ), but firms completing simultaneous acquisitions sought greater integration and lower levels of top management change (both  $p < .001$ ). The 0.42 correlation between integration and replacement indicates that they are related post-merger integration decisions rather than independent, and also that they are appropriately treated as separate constructs.

Finally, the descriptive findings suggest several implications of more deliberate learning and experiential learning. Firms that codified knowledge on acquisition processes tended to purchase higher quality targets and tended to integrate acquired units more intensively without replacing top management personnel in the acquired unit (all  $p < .001$ ). Firms codifying knowledge about acquisition processes also tended to have greater acquisition and alliance experience levels (both  $p < .001$ ). It is worth noting that whereas firms with acquisition experience tend to integrate targets more closely ( $p < 0.01$ ), there is no evidence that firms with greater alliance experience integrate targets or replace top managers more or less than firms with less alliance experience.

In order to compare our models with prior research on experiential learning in the corporate development context, Table 3 presents accounting and performance models for the direct effects of acquisition and alliance experience on acquisition

performance. Models I and III present models restricting the influence of acquisition and alliance experience to linear effects, and Models II and IV allow for nonlinear effects. The results for accounting and financial performance models are robust. Contrary to H1 on the absolute effects of experience accumulation, the models indicate that acquisition experience does not have a direct, linear effect on acquisition performance. To examine if this finding is a result of the way in which we measured acquisition experience, we also examined a measure of acquisition experience that captures the time from the first acquisition, and the same insignificant finding was observed. If anything, alliance experience rather than acquisition experience enhances the performance of acquisitions ( $p < 0.05$  in Model III), providing partial support for H2a. Thus, the results do not provide strong evidence for a generalized corporate development capability; acquisition performance is not advanced by the accumulation of prior acquisition experience, and only modest evidence exists that positive experience spillovers are at work in the form of an alliance experience – acquisition performance relationship.

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Insert Table 3 about here  
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Consistent with Haleblan and Finkelstein (1999), we find evidence for a U-shaped relationship between acquisition experience and performance. The firms' acquisition experience levels range from zero to 45, with an average of 11.3, and model II indicates that acquisition performance increases with experience only after the firm has completed 22 transactions. This can be interpreted as a consequence of negative transfer effects due to the high degree of heterogeneity among activity experiences and causal ambiguity. Inexperienced investors may apply knowledge obtained from prior acquisitions to future ones that appear to be similar on the

surface, yet are fundamentally different. Continued experience accumulation mitigates these negative transfer effects as firms begin to discriminate between the lessons learned in past experience that can or cannot be applied to the current acquisition.

Moreover, we find evidence for negative transfer effects not only *within* a certain type of corporate development activity, but also *across* activities. Taking the partial derivative of model II with respect to alliance experience indicates that acquisition performance declines and then increases after the firm has formed more than one alliance. Although this finding indicates the general relevance of negative transfer effects for firms attempting to transfer learning across activities, the hypotheses developed on experience spillovers suggest that the applicability of alliance experience depends on the characteristics of individual acquisitions.

Table 4 provides the results of the multiple regression analyses used to test these hypotheses. Models I-IV estimate the model against the accounting performance measure, whereas models V-VIII do so for the financial performance measure. All the models provide satisfactory explanatory power and are significant at the 0.001 level. Models I and V test the direct effects of acquisition and alliance experience on accounting and financial performance, respectively. Models II-IV and VI-VIII present tests of interaction effects between corporate development experience levels and the features of the focal acquisition for the accounting and performance measures, respectively. A comparison of Model IV with Model I suggests that the interaction terms are jointly significant in explaining the variance in accounting performance ( $F=3.62$ ,  $p<0.01$ ), and a comparison of Model VIII with Model V indicates that the interaction terms are jointly significant in explaining the variance in

acquirers' financial returns ( $F=6.01$ ,  $p<0.001$ ). As before, the results for accounting and financial performance models are robust.

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Insert Table 4 about here  
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Consistent with predictions (H3), the interaction effect between alliance experience and integration is negative ( $p<0.01$  in accounting performance Models II and IV, and  $p<0.05$  in financial performance Models VI and VIII). Alliance experience is more beneficial to acquisitions that are managed on an autonomous basis, whereas the performance implications of alliance experience are worse when the focal acquisition is subject to higher levels of integration. The four models containing an interaction between acquisition experience and integration suggest exactly the opposite is true for acquisition experience ( $p<0.01$  and  $p<0.05$  in accounting performance Models II and IV, and  $p<0.001$  in financial performance models VI and VIII). Such experience is more helpful for acquisitions managed with higher levels of integration.

The multivariate results similarly indicate a negative interaction effect between alliance experience and resource replacement in the focal acquisition ( $p<0.10$  in accounting performance models III and IV, and  $p<0.05$  in financial performance models VII and VIII). These results provide support for hypothesis 4. Alliance experience is more helpful when the acquirer seeks to retain the management team in the target, whereas the spillover effect of alliance experience on acquisition performance worsens for acquisitions involving more aggressive replacement of target personnel. In one of the four models introducing an interaction term between acquisition experience and replacement, a positive interaction effect is observed instead ( $p<0.05$  in Model VII).

In order to examine the robustness of our results to alternative definitions of alliances and to assess the degree to which the effects vary across different types of alliances, additional analyses were performed concerning the banks' partners and the governance design of the collaborations. We developed separate alliance experience measures for alliances with other banks and for alliances with other non-banking firms. Hierarchical F-tests indicated that the effects of alliance experience are the same across these two classes of partners (i.e.,  $F=1.83$ , n.s. for the model using accounting returns data; and  $F=0.50$ , n.s. for the model using financial returns data).

We also considered whether the effects of inter-activity experience depend on whether the alliance was structured as an equity alliance rather than a non-equity alliance, since the governance mechanisms of the former more closely resemble the governance mechanisms underlying acquisitions (Williamson, 1991). Hierarchical F-tests again indicated that the effects did not differ across these two classes of alliances (i.e.,  $F=0.55$ , n.s. for the model using accounting returns data; and  $F=2.00$ , n.s. for the model using financial returns data). These tests suggest that it is appropriate to pool equity and non-equity alliances in studies of experience spillovers, at least in the context of commercial banking.

Finally, the control variables deserve some comment. Relative acquisition size, acquirer size, and simultaneous acquisitions do not appear to influence acquisition performance after accounting for other acquisition and firm attributes. Simultaneous acquisitions have a negative effect on financial performance in Models VI and VIII, but the effects are not significant for the other specifications. The direct effect of top management replacement is negative and robust to alternative model specifications (Cannella & Hambrick, 1993; Krishnan, Miller, & Judge, 1997). Integration relates positively to acquisition performance, which likely reflects the

need to rationalize operations to achieve scale economies and the desire to obtain revenue enhancements through cross-selling activities (Datta & Grant, 1990; Shanley, 1994). Consistent with the view that acquiring firms may gain by redeploying resources to their acquired units rather than benefiting from the inverse flow of resources or learning (e.g., Capron, 1999), the acquirer's performance is negatively related to the quality of the target's resources. Market relatedness does not have an impact on acquisition performance except for one of the eight specifications ( $p < 0.05$  in Model VI). Finally, providing evidence that firms can develop acquisition capabilities through the codification of knowledge specific to the acquisition processes, the parameter for the codification variable is positive and significant, suggesting that deliberate forms of organizational learning are more effective than the simple accumulation of acquisition experience in the development of organizational capabilities specific to corporate development activities. This result is consistent with recent work on dynamic capabilities that explores the relative effectiveness of deliberate learning processes versus implicit, learning-by-doing mechanisms (Zollo & Winter, forthcoming). They suggest that knowledge articulation and codification processes can be particularly helpful for tasks that are infrequent, heterogeneous, and causally ambiguous, all of which are characteristic of the context under study in this paper.

## **DISCUSSION**

The question that spurred the present study can be framed in terms of learning in a multi-activity setting: how do organizations develop competence in one activity from the execution of others? More specifically, how does experience accumulated in

one activity influence the performance of another? And under what conditions does the experience spillover take on a positive or negative sign?

In broad terms, these questions have been touched upon in various ways in different literatures. Cohen and Levinthal's (1990) notion of absorptive capacity, for example, might be read as favoring the existence positive experience spillovers. Similarly, the concept of dynamic capabilities (Teece, Pisano & Shuen, 1997) reflects an optimistic perspective about the existence of a "higher order" capability enabling organizations to develop competence in different knowledge domains.

On the other hand, several cautionary notes exist regarding the transfer of knowledge across different activities and the development of generalized capabilities. For instance, evidence from cognitive psychology (Gick & Holyoak, 1983, 1987; Holyoak & Thagard, 1995) and evolutionary economics (Cohen & Bacdayan, 1994) shows that the transfer of knowledge across different activities might be detrimental to performance. Even in the case of intra-activity transfers of knowledge across space (Kogut & Zander, 1992; Zander & Kogut, 1995; Szulanski, 1997) or across time (e.g., Haleblan & Finkelstein, 1999), the probability of success is hampered by a host of factors, ranging from characteristics of the knowledge being transferred to firm- and transaction-specific attributes.

In an effort to examine *inter-activity* transfers of learning, this paper builds on received literature in cognitive psychology and evolutionary economics to propose a new approach to study experience spillovers as a non-linear function of the degree of similarity between activities. We apply these ideas to study the evolution of organizational competence in the context of external corporate development processes: corporate acquisitions and strategic alliances. We find evidence for the existence of non-linear, U-shaped inter-task experience effects as well as intra-task

experience effects. Thus, negative transfer effects are apparent both within and across activities at low levels of experience, and positive intra- and inter-activity experience effects are evident only at higher levels of experience. These results hold for both financial and accounting measures of the performance implications of acquisitions. The evidence is also consistent with recent findings by Haleblan and Finkelstein (1999), who examine negative transfer effects within a single type of activity (i.e., acquisitions).

One explanation for our findings relates to the characteristics of the activities themselves. In contrast to operational activities to which learning curve arguments have generally been applied, both acquisitions and alliances are infrequent, heterogeneous, and causally ambiguous events. Distilling wisdom on what works and what does not work in managing these processes is, therefore, expected to be particularly challenging (March, Sproull, & Tamuz, 1991). Moreover, the likelihood of erroneous generalizations will be significant for inexperienced, as well as more experienced, but not “expert”, organizations (Levitt & March, 1988).

A key contribution of this study consists of the development and testing of a contingent theory of learning across organizational activities. Our arguments suggest that the spillover effect of alliance experience on acquisition performance may be positive or negative, depending on the degree of similarity between the two activities. The development of organizational routines specific to the handling of alliance processes would be beneficial to the performance of the focal acquisition if the latter was managed in ways that resemble the typical handling of alliances, *viz.* with low to modest structural integration and resource replacement levels. However, when acquisitions are managed with higher levels of integration and replacement, alliance experience can adversely affect the performance of the focal acquisition. In contrast

to prior studies on experiential learning in isolated activities, our findings illustrate the value of conceptualizing organizational learning as the product of interdependent experience accumulation processes.

The present findings might also explain why the empirical results on intra-activity experience effects in the context of acquisitions (Lubatkin, 1987; Fowler & Schmidt, 1989; Bruton, Oviatt & White, 1994; Pennings, Barkema, & Douma, 1994) and alliances (Barkema, Shenkar, Vermeulen, & Bell, 1997; Anand & Khanna, 2000a) have provided mixed evidence. Learning in these contexts might not necessarily happen in a linear and, even more importantly, independent way. Given the high levels of causal ambiguity that characterize these activities, prior experience in other, related activities might have important effects on the firm's ability to learn the focal task.

Finally, the findings suggest reason for caution for both scholars and managers who take the existence of a general, "higher order" corporate development capability for granted. This presumption is especially problematic when acquisitions are managed at relatively high levels of structural integration and with an aggressive approach in replacing the acquiree's pre-existing resources, as is often the case in the banking sector. However, in other industry contexts such as high-tech sectors, in which the value creation criteria call for integration decisions more in line with the way alliances are typically handled (i.e., with greater decisional autonomy and with the retention of existing human resources), the development of a higher-order capability might be more likely. However, in other industry settings it is also plausible that the personnel managing acquisitions and alliances may differ more than what our fieldwork in the commercial banking industry indicated, thereby weakening the strength of potential inter-activity learning effects. Finally, given that our analysis

focuses on horizontal acquisitions, future research could explore acquisitions motivated by product market diversification purposes.

In addition to the obvious limitations in generalizing from the present findings, several opportunities exist for extensions to this study. For instance, we focused on external modes of corporate development (i.e., acquisitions and alliances) rather than on internal, or organic, growth. Also, the direction of the learning spillover tested is only from alliance experience to acquisition performance. Future research might consider the spillover effects of acquisition experience on alliance performance and the question of symmetry in experience spillover effects. It is also worth noting that we did not characterize individual alliances and, therefore, we did not directly measure the degree of similarity between the focal transaction and the stock of prior alliances. By doing so, studies may directly examine the effects of experience heterogeneity as well as the novelty of the focal transaction in relation to prior experiences in intra- and inter-activity contexts.

There might also be a significant difference in the relative effectiveness of the mechanisms underlying the development of collective competence in the two activities. One might conjecture, for example, that alliances might be learned relatively more effectively through tacit experience accumulation, whereas acquisitions might be understood and refined better through knowledge articulation and codification processes. Research is needed to examine the roles played by experience accumulation and knowledge codification across different types of corporate development activities.

Finally, other important extensions to the present study might apply a multi-activity learning perspective to different types of organizational phenomena. Most research on experiential learning has taken place in operational contexts, and

opportunities exist to explore experience spillover effects in administrative contexts such as corporate and geographic diversification. Work in directions such as these may contribute to our understanding of the channels and limits of intra-organizational evolutionary processes, in which experience spillovers across related activities might play an important role.

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## DATA APPENDIX

Respondents completed an acquisition history profile and an acquiring bank questionnaire. Key items from these two questionnaires are presented below.

### Acquisition History Profile

Bank Acquired	State	Year	Price <sup>1</sup>	Assets <sup>2</sup>	In /Out Market <sup>3</sup>	Resource Quality <sup>4</sup>	Replacement <sup>5</sup>	Integration <sup>6</sup>
1								
2								
...								
N								

<sup>1</sup> Price paid in \$ millions

<sup>2</sup> Total assets purchased in \$ millions at the time of the agreement to purchase

<sup>3</sup> Whether the acquisition was in the same geographic market (In) or not (Out)

<sup>4</sup> Type of bank acquired: -2 if bankrupt, -1 if poor performer, 0 if average, 1 if good performer, and 2 if outstanding

<sup>5</sup> The extent to which the executive leadership of the acquired bank has been changed after the acquisition: 0 if no substantial change, 1 is some changes, 2 if many changes, and 3 if virtually all the top management team was changed.

<sup>6</sup> The extent to which the systems, procedures, and products were aligned or centralized: 0 if few or no features were integrated; 1 if selected systems, procedures, and problems were integrated; 2 if many but not all systems, procedures, and products were integrated; and 3 if all systems, procedures, and products were completely integrated.

### Acquiring Bank Questionnaire

The acquiring bank questionnaire provided information on the acquiring institution, the acquisition process, post-acquisition integration strategy, and performance metrics. Data from this questionnaire were used to calculate knowledge codification, which was measured using the following questions:

<b>Documents/Manuals</b>	<b>No</b>	<b>Yes</b>	<b>When?</b>
Due Diligence check-list			19 _____
Due Diligence manual			19 _____
Systems conversion manual			19 _____
Affiliation/integration manual			19 _____
Systems training manual			19 _____
Products training manual			19 _____
Other _____			19 _____

#### **Quantitative Models (computer-based)**

Financial evaluation	19 _____
Staffing models	19 _____
Product mapping	19 _____
Training/Self-training packages	19 _____
Project management	19 _____
Other _____	19 _____

**TABLE 1**  
**Content and Process Comparisons of Acquisitions and Alliances**

	Similarities	Differences
Content	<ul style="list-style-type: none"> <li>• Both are tools for implementing product or geographic diversification strategies</li> <li>• Both are responses to resource dependence challenges</li> <li>• Both may be used to explore new knowledge domains</li> <li>• Both may be used to exploit existing resources and capabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Acquisitions represent hierarchical governance, whereas alliances are hybrid governance structures</li> <li>• Acquisitions require more extensive up-front commitments, whereas alliances confer options to expand sequentially</li> <li>• Alliances are more focused in terms of firms' objectives, time horizons, and resource requirements</li> </ul>
Process	<ul style="list-style-type: none"> <li>• Both processes originate in firms' strategic planning efforts as well as in more opportunistic actions</li> <li>• Both involve external search processes for transaction partners</li> <li>• Both entail negotiations and evaluation processes</li> <li>• Both processes are supported by corporate functions (e.g., Corporate Development, HR, IT, Communications, etc.)</li> <li>• Both involve significant investments in the post-formation, transition phase</li> </ul>	<ul style="list-style-type: none"> <li>• Acquisitions involve more far-reaching due diligence and negotiations processes than alliances</li> <li>• Post-formation phases in alliances are more likely to involve re-evaluation and adaptation</li> <li>• The scope for structural and cultural integration tends to be greater in acquisitions than alliances</li> <li>• The scope for resource redundancies and replacement tends to be greater for acquisitions than alliances</li> </ul>

**TABLE 2**  
**Descriptive Statistics and Correlation Matrix<sup>a</sup>**

Variable	Mean	S.D.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. Acquisition accounting performance	-.005	.37	---										
2. Acquisition financial performance	.03	.28	.36***	---									
3. Relative acquisition size	6.07	11.41	-.01	-.00	---								
4. Resource quality	-.01	1.06	-.09	-.17*	.05	---							
5. Market relatedness	.62	.48	.07	.20**	-.08	-.20***	---						
6. Acquirer's size	23.12	23.01	.12*	-.00	-.08	-.07	.18***	---					
7. Simultaneous acquisitions	3.58	2.83	.21***	.04*	-.22***	.05	.14**	.48***	---				
8. Codification	4.88	3.66	.14*	.11	-.05	.17***	.03	.43***	.36***	---			
9. Integration	2.63	.70	.16**	.11	-.09	-.22***	.40***	.10 <sup>†</sup>	.17***	.08 <sup>†</sup>	---		
10. Replacement	1.75	1.28	-.22***	-.14*	.02	-.31***	.35***	-.06	-.21***	-.11*	.42***	---	
11. Acquisition experience	11.27	10.16	.03	.11	-.09 <sup>†</sup>	.03	.17***	.50***	.51***	.45***	.12**	-.05	---
12. Alliance experience	.31	.66	.02	.19*	-.01	.06	.12*	.35***	.35***	.31***	.05	.09	.26***

<sup>a</sup> <sup>†</sup> p<0.10; \* p<0.05; \*\* p<0.01; \*\*\* p<0.001.

**TABLE 3**  
**Corporate Development Experience and Acquisition Performance<sup>b</sup>**

Variable	Accounting Performance		Financial Performance	
	I	II	III	IV
Intercept	-.20 (.10)*	-.23 (.18)	-.06 (.09)	.05 (.13)
Relative acquisition size	.00 (.00)	.00 (.00)	.00 (.00)	-.00 (.00)
Resource quality	-.08 (.03)	-.09 (.03)	-.09 (.03)	-.06 (.03)
Market relatedness	.12 (.08)	.12 (.08)	.09 (.07)	.15 (.06)
Acquirer's size	-.00 (.00)	-.00 (.00)	-.00 (.00)	-.00 (.00)
Simultaneous acquisitions	.00 (.01)	.00 (.01)	.00 (.01)	.01 (.01)
Codification	.03 (.01)	.03 (.01)	.01 (.01)	.02 (.01)
Integration	.11 (.04)	.14 (.06)	.16 (.05)	.08 (.05)
Replacement	-.18 (.04)	-.12 (.03)	-.17 (.03)	-.09 (.02)
Acquisition experience	-.03 (.04)	-.02 (.01)	-.03 (.03)	-.03 (.01)
Acquisition experience squared	---	.00 (.00)	---	.00 (.00)
Alliance experience	.00 (.03)	-.48 (.19)	.05 (.03)	-.26 (.17)
Alliance experience squared	---	.22 (.09)	---	.18 (.09)
Model F	4.89***	5.19***	6.93***	6.92***
R-squared	.26	.32	.48	.49
N	150	150	101	101

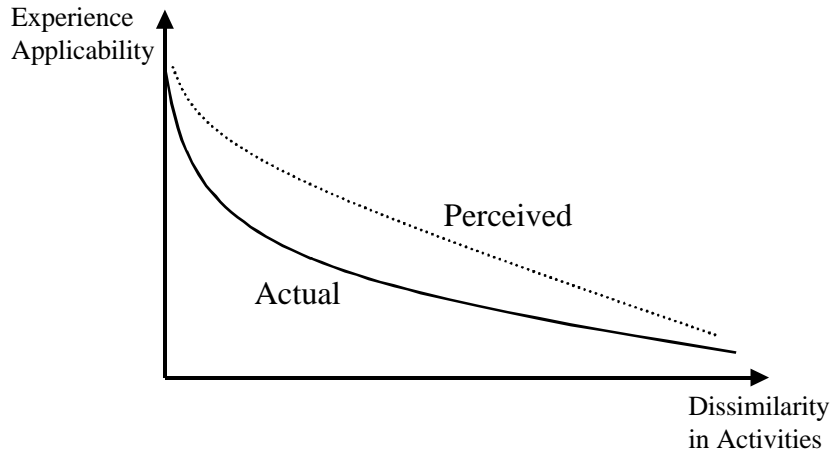
<sup>b</sup> Standard errors appear in parentheses. <sup>†</sup> p<0.10; \* p<0.05; \*\* p<0.01; \*\*\* p<0.001.

**TABLE 4**  
**Experience Spillovers Across Corporate Development Activities<sup>c</sup>**

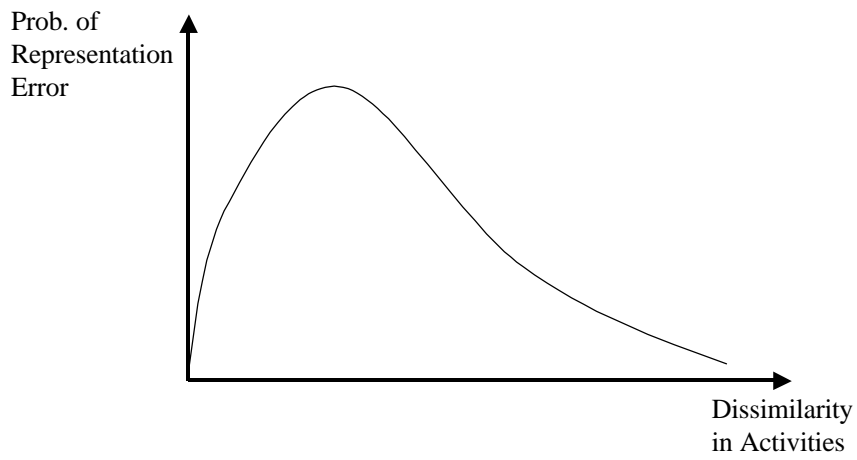
Variable	Accounting Performance				Financial Performance			
	I	II	III	IV	V	VI	VII	VIII
Intercept	-.20* (.10)	-.21* (.10)	-.26* (.10)	-.23* (.11)	-.06 (.09)	-.10 (.09)	-.04 (.09)	-.08 (.10)
Relative acquisition size	.00 (.00)	.01 (.00)	.00 (.00)	.01 (.00)	.00 (.00)	-.00 (.00)	.00 (.00)	-.00 (.00)
Resource quality	-.08* (.03)	-.06* (.03)	-.08* (.03)	-.06* (.03)	-.09*** (.03)	-.09** (.03)	-.09** (.03)	.09** (.03)
Market relatedness	.12 (.08)	.04 (.08)	.09 (.08)	.03 (.08)	.09 (.07)	.11* (.06)	.03 (.06)	.09 (.06)
Acquirer's size	-.00 (.00)	.00 (.00)	-.00 (.00)	.00 (.00)	-.00* (.00)	-.00 (.00)	-.00 (.00)	-.00 (.00)
Simultaneous acquisitions	.00 (.01)	-.01 (.01)	-.00 (.01)	-.02 (.02)	.00 (.01)	-.03* (.01)	-.00 (.01)	-.04* (.02)
Codification	.03* (.01)	.03** (.01)	.03* (.01)	.03* (.01)	.01 (.01)	.03** (.01)	.01 (.01)	.04** (.01)
Integration	.11* (.04)	.16** (.05)	.13** (.04)	.16** (.05)	.16** (.05)	.07* (.04)	.17** (.04)	.07 <sup>†</sup> (.04)
Replacement	-.18*** (.04)	-.20*** (.04)	-.20*** (.04)	-.22*** (.04)	-.17*** (.03)	-.23*** (.03)	-.20*** (.03)	-.25*** (.04)
Acquisition experience	-.03 (.04)	-.07* (.04)	-.05 (.03)	-.08* (.04)	-.03 (.03)	-.06* (.03)	-.03 (.03)	-.07* (.03)
Alliance experience	.00 (.03)	.03 (.03)	-.01 (.03)	.01 (.03)	.05* (.03)	.11* (.04)	.04* (.02)	.11** (.04)
Acquisition experience* Integration	---	.17** (.06)	---	.17* (.07)	---	.19** (.05)	---	.24** (.06)
Alliance experience* Integration	---	-.12** (.04)	---	-.11** (.04)	---	-.14* (.07)	---	-.18* (.07)
Acquisition experience* Replacement	---	---	.05 (.03)	.01 (.03)	---	---	.04* (.02)	-.02 (.03)
Alliance experience* Replacement	---	---	-.06 <sup>†</sup> (.03)	-.06 <sup>†</sup> (.03)	---	---	-.05* (.03)	-.07* (.03)
Model F	4.89***	4.42***	4.53***	4.0***	6.98***	6.93***	7.01***	6.76***
R-squared	.26	.28	.29	.29	.43	.48	.49	.52
N	150	150	150	150	101	101	101	101

<sup>c</sup> Standard errors appear in parentheses. <sup>†</sup> p<0.10; \* p<0.05; \*\* p<0.01; \*\*\* p<0.001.

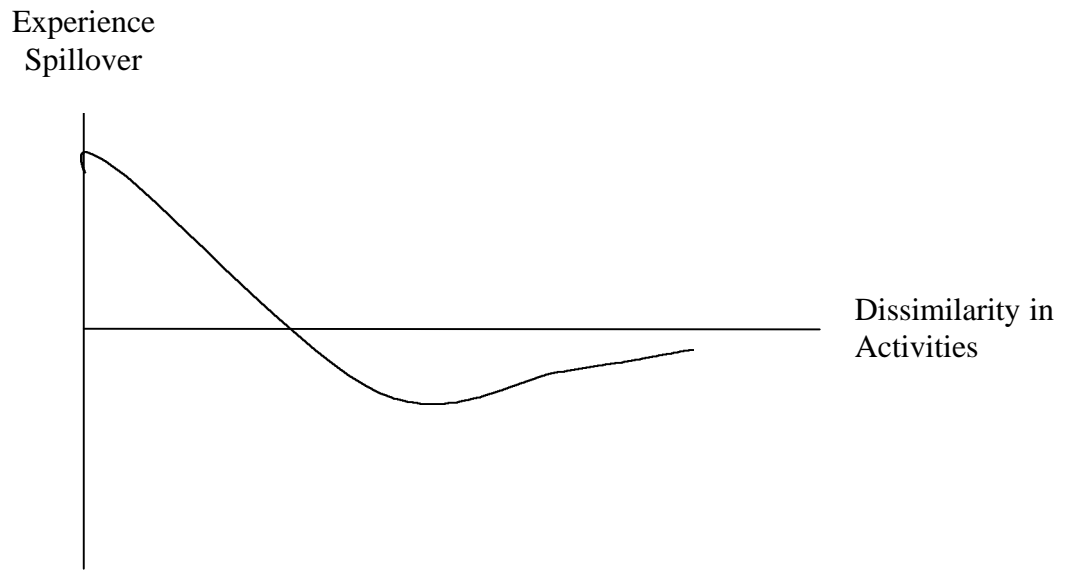
**FIGURE 1**  
**The Applicability of Past Experience**



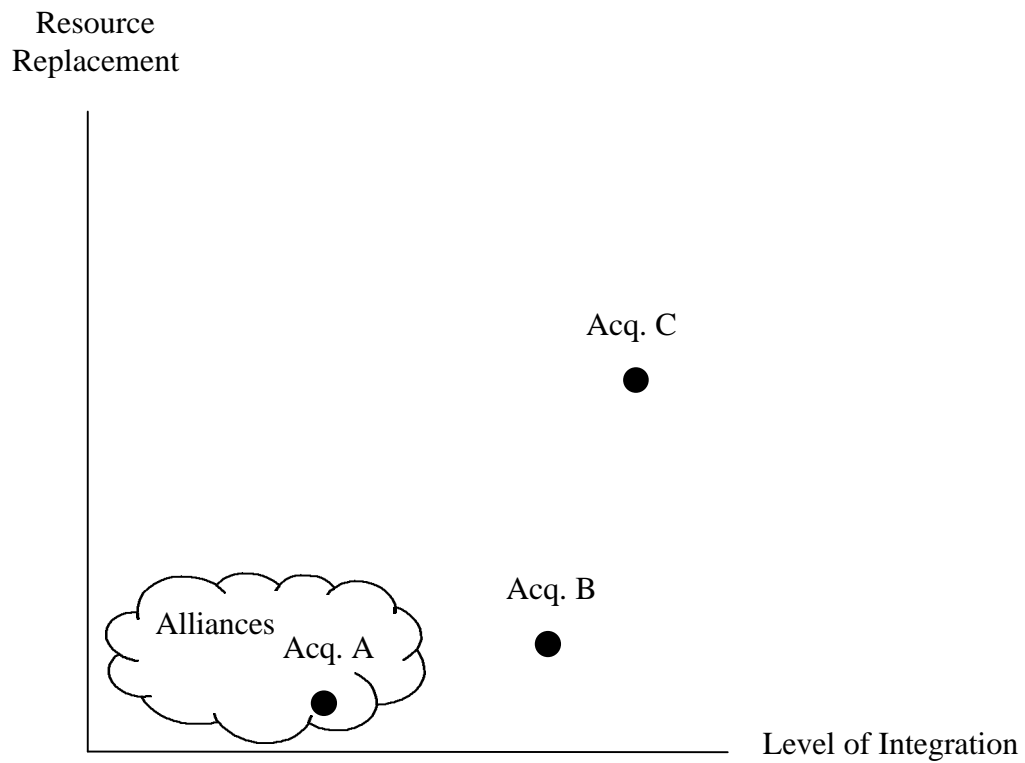
**FIGURE 2**  
**Errors in Cognitive Representation**



**FIGURE 3**  
**Sign and Magnitude of Experience Spillovers**



**FIGURE 4**  
**Mapping the Distance Between Acquisitions and Alliances**



**FIGURE 5**  
**Alliance Experience Spillovers on Acquisition Performance**

