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## **LEVERAGING WHO YOU KNOW BY WHAT YOU KNOW: RETURNS TO RELATIONAL AND HUMAN CAPITAL**

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### **Abstract**

This paper investigates the interaction effects of relational and human capital on performance by examining the differential effects of exogenous relational capital shocks on individuals who have general vs. specialized experience. We distinguish between demand side relational capital and supply side relational capital, and theorize that relative to generalists, specialists will suffer less from negative supply side relational capital shocks because of their deeper knowledge and stronger demand side relational capital. Conversely, generalists will gain more from positive supply side relational capital shocks by leveraging them across a more diversified portfolio of activities. We test and find support for these hypotheses in the context of the US lobbying industry. Our study contributes to the literature by demonstrating how interactions between supply side relational capital, demand side relational capital, and specialization have important performance implications.

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## ABSTRACT

This paper investigates the interaction effects of relational and human capital on performance by examining the differential effects of exogenous relational capital shocks on individuals who have general vs. specialized experience. We distinguish between demand side relational capital and supply side relational capital, and theorize that relative to generalists, specialists will suffer less from negative supply side relational capital shocks because of their deeper knowledge and stronger demand side relational capital. Conversely, generalists will gain more from positive supply side relational capital shocks by leveraging them across a more diversified portfolio of activities. We test and find support for these hypotheses in the context of the US lobbying industry. Our study contributes to the literature by demonstrating how interactions between supply side relational capital, demand side relational capital, and specialization have important performance implications.

**Keywords:** Specialization, relational capital, lobbying industry

## INTRODUCTION

Human capital (what you know) and relational capital (who you know) are key differentiators in value creation and capture. Because firms benefit from such capital embodied in their employees (Campbell, Coff and Kryscynski, 2012; Kor and Leblebici, 2005; Gambardella, Ganco and Honoré; 2014; Karim and Williams, 2012), individuals with higher levels of human and relational capital also benefit from greater rent appropriation (Castanias and Helfat, 1991, 2001; Coff, 1997). However, given the inextricable linkages between human and relational capital, isolating their main and interaction effects on performance advantages has been a challenge (c.f. review in Mawdsley and Somaya, 2016). In this paper, we develop and test a theory about the interactions between relational and human capital. Specifically, we investigate the heterogeneous performance effects of relational capital for individuals possessing specialized or generalized human capital.

The interplay of human and relational capital is particularly important in the professional services context, where firms rely almost entirely on their employees' human and relational capital to create and capture value. The breadth and/or depth of knowledge embodied in employees form the basis of superior performance in professional services; however, performance is also vulnerable to exogenous changes in relational capital. For example, positive changes in relational capital not only enhance performance of the focal firm (Somaya, Williamson and Lorinkova, 2008), but also create an exogenous negative shock on relational capital for rival firms (Carnahan and Somaya, 2013). Thus, individuals and firms who rely on relational capital are subject to shocks that alter the value of the relation, and current theory does not provide a compelling answer to how these shocks amplify or ameliorate human capital advantages.

More specifically, prior studies have investigated the effects of specialization (Castanias and Helfat, 1991; Cusódio *et al.*, 2013; Ferguson and Hasan, 2013; Lazear, 2004; Murphy and Zbojnik, 2004; Zuckerman *et al.*, 2003) and relational capital (Burt, 1992; Coleman, 1990; Mawdsley and Somaya, 2016), separately, on performance outcomes. However, fewer studies have explored the ways in which career specialization interacts with relational capital. To address this gap, we examine the following research questions: Are the performance benefits of relational capital higher or lower

for generalists vs. specialists? Do the benefits hinge on whether there is an increase or decrease in relational capital? The answers to these questions are neither theoretically obvious, nor easy to disentangle empirically. Theoretically, plausible reasons exist on each side. On the one hand, it may be that specialists can leverage their deep domain knowledge within dense networks of relational capital for greater benefits. On the other, generalists could leverage their skills across diversified domains and broad networks, resulting in greater performance benefits. Empirically, answering the question requires a research design with clearly separable measures for both human and relational capital, and empirical strategies for addressing selection and omitted variable bias.

We conduct our study in the context of the US lobbying industry. Within this context, lobbyists differ in their degree of specialization, some represent deep knowledge and expertise on one or few issues, while others span across multiple and diverse domains. Also, many lobbyists have prior federal government work experience, which provides them relational capital to the politicians making the critical policy decisions. We theorize that relative to generalists, specialists will suffer less from negative supply side relational capital shocks because of their deep knowledge and stronger demand side relational capital. Conversely, generalists will gain more from positive supply side relational capital shocks by leveraging them across a more diversified portfolio of activities. We test these hypotheses using a research design that exploits exogenous changes in power of US house and senate members as shocks to the lobbyists' supply side relational capital. The unforeseen timing of these events, in conjunction with individual fixed-effects, enable us to isolate the interaction effect of relational capital with degree of specialization.

To briefly preview our findings, consistent with prior studies (Bermiss and Greenbaum, 2015; Blanes i Vidal, Draca, and Fons-Rosen, 2012), we show that relational capital matters in this industry: lobbyists gain revenue when their political connections gain power and lose revenue when their political connections lose power. Supporting our main proposition, we find that specialists are buffered from negative shocks to relational capital and that generalists gain more from positive relational capital shocks. These results are robust to a number of alternative specifications that

address potential sampling, selection and measurement errors, and alternative causal mechanisms at play, such as career dynamics and endogeneity of the degree of specialization.

Our findings contribute to the literature on strategic human capital (Campbell *et al.*, 2012; Mawdsley and Somaya, 2016) and career specialization (Ferguson and Hasan, 2013; Zuckerman *et al.*, 2003; Leahey, 2007). Within the strategic human capital literature, relational and human capital (firm and industry specific knowledge) have both been highlighted as critical resources, but their separate and interactive effects have not been examined. Our research design allows us to disentangle these, and additionally show the complementarities between relational capital and human capital. In doing so, we show that gains in supply side relational capital may serve as a “general purpose technology” that provides greater returns when it can be utilized in diverse domains of knowledge (Conti, Gambardella and Novelli, 2016). At the same time, losses in supply side relational capital may be offset by deeper demand side relational capital and knowledge specificity. Our work also contributes to the literature on career specialization. Prior studies have noted the effects of specialization on human capital (Ferguson and Hasan, 2013; Heintz *et al.*, 1993) and identity (Padgett and Ansell, 1993; Zuckerman *et al.*, 2003), but few studies have identified conditions under which specialization may yield lower or higher benefits. We contribute to the current debate on the benefits of specialization vs. generalization (Merluzzi and Phillips, 2016) to show that an important conditioning factor relates to the interaction with relational capital. While specialization can buffer against losses in relational capital under negative shocks, generalization enhances the gains from positive shocks. The managerial implications of our study then relate to how firms and individuals can craft better strategies through the interplay between “what you know” and “who you know.”

## **THEORY**

Individuals create value by exploiting prior investments in both human and relational capital. Harking back to Becker (1962), human capital is defined by knowledge and expertise gained through education, training and experience. Scholars have distinguished between various dimensions of knowledge—including specificity and tacitness—and have examined the effects of these dimensions on individual and organizational performance (Coff, 1997; Ferguson and Hasan, 2013; Miller, Zhao,

and Calantone, 2006). Relational capital stems from mutual trust among individuals, chiefly due to prior interactions, and results in superior access to resources held by others (Kale, Singh, and Perlmutter, 2000; Nahapiet and Ghoshal, 1998; Portes, 1998)<sup>1</sup>. An important difference between human and relational capital is that while human capital resides within and is owned by the focal individual, relational capital is subject to the choices and circumstances of others. That said, relational capital has been linked positively to performance due to client ties (Burt, 1992; Gabbay and Zuckerman, 1998; Podolny and Baron, 1997; Somaya *et al.*, 2008) and team relationships. While the two types of capital are conceptually distinct, their inextricable linkages often create challenges in discerning their individual and interactive effects. For example, many of the papers in Mawdsley and Somaya's (2016) review of the literature on employee mobility and performance outcomes call on both human and relational capital but many are not able to empirically distinguish their individual effects. Some of the work aggregate human and social capital effect (e.g. Corredoira and Rosenkopf, 2010; Groysberg *et al.*, 2008; Phillips, 2002); others invoke characteristics of one while theorizing about the other (e.g., Campbell *et al.*, 2012; Somaya *et al.*, 2008). Empirically, the linkages also imply potential confounding of measures. For example, Singh and Agrawal (2011) show that performance benefits attributed to enhanced learning among colleagues (a relational capital concept) in the knowledge spillovers literature (Rosenkopf and Almeida, 2003; Song, Almeida, and Wu, 2003) are really a result of mobile inventors continuing to build on their own prior knowledge (a human capital concept). As a result, Mawdsley and Somaya (2016) note that "The joint occurrence of different types of human and relational capital in mobile employees creates significant challenges for distinguishing between alternative mechanisms by which mobility affects organizations, and many research opportunities remain in clarifying and understanding the interactions between these mechanisms" (p. 91).

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<sup>1</sup> Following Mawdsley and Somaya (2016), we use relational capital over the closely associated concept of "social capital." It more closely aligns with the strategic management literature, and it focuses on dyadic relations between individuals or organizations, while social capital is a more generic concept that can relate to benefits due to membership in social groups or networks (Portes, 1998).

More generally, we address the need to clearly isolate human and relational capital, and to examine potential interactions among the two. In order to do so, we focus our attention on *specificity of knowledge and skills* as an important dimension of human capital, and *supply enhancing relationships* as an important dimension of relational capital.

### **Specificity of Knowledge**

The decision to be a generalist or specialists has important implications for an individual's depth of knowledge, skills, and (Castanias and Helfat, 1991; Lazear, 2004; Zuckerman *et al.*, 2003; Leung, 2014). There are advantages to both generalization and specialization, and not surprisingly, the findings on which one is more important are mixed. Human capital theorists have noted that specialization allows individuals to develop deep skills and expertise in a specific area, which are more valued in modern economies (Parsons, 1972; Becker, 1962; Rosen, 1983). Specialization also creates a clarity of identity (Zuckerman *et al.*, 2003; Leung, 2014), which acts as a signal of quality in labor markets (Becker and Murphy, 1992). Combining the two mechanisms, Ferguson and Hasan (2013) suggest that specialization is advantageous at every career stage: it signals ability early on, and creates long lasting benefits through the accumulation of skills and expertise. Other work, however, has demonstrated an advantage to generalization stemming from the need for coordination and communication, and bridging across distinct domains of knowledge (Cremer, Garciano, and Prat, 2007; Cusódio *et al.*, 2013; Ferriera and Sah, 2012; Lazear, 2004; Murphy and Zabojsnik, 2004). For example, Cusódio *et al.* (2013) and Murphy and Zabojsnik (2004) find that CEOs with generalist backgrounds are paid more than those with specialist backgrounds.

The mixed evidence on returns to specialization suggests that the effects hinge on moderating factors. Merluzzi and Phillips (2016) find that when institutional and market conditions ameliorate the need for signals, specialization results in a wage discount. Similarly, as individuals progress in their career generalists may outperform specialists (Zuckerman *et al.*, 2003; Murphy and Zabojsnik, 2004). Castanias and Helfat (2001) propose that generalists may be more valued in deregulated and mature industries. Ferriera and Sah (2012) relate advantages of generalization to greater complexity and hierarchies, because it increases the premium for coordination.

Most of the above moderating factors relate to market or institutional factors that amplify or diminish the value of specialized or generalized knowledge possessed by individuals. Not examined, however, is whether individual specific factors, such as their relational capital, may moderate the relationship between specialization and performance. We turn to this next building block in our theory by examining how relational capital interacts with an individual's level of specialization to affect performance.

### **Demand and Supply Side Relational Capital**

In contrast to the literature on specificity of knowledge, the studies of relational capital suggest an overwhelmingly positive effect of being connected to others. As noted above, relational capital results from individuals' investments, through prior interactions, in building mutual trust and goodwill, resulting in preferential access to resources through these connections (Adler and Kwon, 2002; Burt, 1992; Coleman, 1988; Kale *et al.*, 2000; Nahapiet and Ghoshal, 1998)<sup>2</sup>.

Relational capital drives value creation and results in superior career outcomes due to both demand- and supply side factors. On the demand side, employees' relational capital with clients enhances profitability for the firm that the individual works for (Broschak, 2004; Canales and Greenberg, 2015). Because client ties can also be ported to other firms (Bermiss and Greenbaum, 2016; Carnahan and Somaya, 2013), the increased derived demand for such employees can translate into increased likelihood of retention and promotion (Krackhardt and Hanson, 1993). Relational capital can also directly impact an individual's demand in labor markets through superior job referrals (Fernandez, Castilla, and Moore, 2000; Granovetter, 1973, 1985; Lin, Ensel, and Vaughn, 1981). On the supply side, relational capital with co-workers and with key suppliers and complementors enables gains through differentiation and cost efficiencies. For example, prior interactions with colleagues results in greater relational capital, which has been associated with

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<sup>2</sup> The term relational capital within strategy literature is widely used by scholars studying alliances. Even though it is at the firm level of analysis, the mechanisms relate to interactions among managers and thus their relational capital. This literature discusses how relational capital serves to facilitate assurances against opportunistic behavior, and improve coordination and communication (Agarwal, Croson and Mahoney, 2010; Gulati, 1999; Kale *et al.*, 2000). Given that our focus is on individuals' relational capital and the effects on their performance, we reference this literature inasmuch as it relates to the underlying mechanisms impacting strategic labor markets.

enhanced productivity (Groysberg and Lee, 2009; Tsai and Ghoshal, 1998; Uzzi, 1997), and enhanced team mobility and entrepreneurship (Agarwal *et al.*, 2016; Ganco, 2013; Campbell, Saxton, and Banerjee, 2014). While not studied as extensively in the context of strategic labor markets, relational capital with key suppliers and complementors in the value chain also enables individuals to leverage them as resources (Bertrand, Bombardini, and Trebbi, 2014; Krause, Handfield, and Tyler, 2007).

In summary, scholarly work on relational capital points to unambiguously positive performance effects. As noted above, though, interactions between relational and human capital for performance consequences have not been examined, to the best of our knowledge. Before we turn to this issue, we note the following boundary conditions. One, our focus is on professional services, because firms and individuals in these industries provide and capture value chiefly through their human and relational capital. Doing so enables us to focus on individual level capital and performance relationships, but also draw implications for firm level consequences, given the high correlation of performance across the levels of analyses within professional services. Two, given our research design's ability to leverage external shocks to *resource access* through relational capital, we theorize about the effects of supply side relational capital shocks, though we also incorporate demand side relational capital as a potential mechanism that enhances or buffer these effects. As described in detail in the empirical context section, we examine the impact on lobbyists with prior employment connections with politicians when these politicians gain or lose power in affecting policy decisions. Thus, the supply side relational capital we examine relates to the ability to deliver positive outcomes to clients, through the leverage of relational capital with politicians *as a resource*. We believe this to be a feature of our study, given paucity of research on exogenous changes to supply side relational capital shocks. Our study complements work that has focused on client ties as demand side relational capital (Bermiss and Greenbaum, 2016; Carnahan and Somaya, 2013; Somaya *et al.*, 2008), and work on team relationships, which while supply side, represents an endogenous and strategic interplay between human and relational capital (Agarwal *et al.*, 2016).

### **Negative Supply Side Relational Capital Shocks and Specificity of Knowledge**

Consistent with the literature on relational capital, a negative supply side shock should result in a decrease in performance (Bertrand *et al.*, 2014; Blains i Vidal *et al.*, 2012; Carnahan and Somaya, 2013). In addition to this main effect, we argue that specialization buffers against negative shocks to supply side relational capital. The sources of this insurance are twofold, relating first to deeper domain expertise, and second to deeper embeddedness that result from knowledge specialization.

First, deeper domain expertise not only relates to higher levels of productivity by itself (Becker 1985; Rosen 1983), but may also offset losses in supply side relational capital by providing compensatory value. All else equal, specialists have a closer fit to the resources needs of the clients they serve relative to generalists, and this information advantage translates to greater efficiencies and probabilities of positive outcomes (Baker, 1984; Bertrand *et al.*, 2014; Eccles and Crane, 1988). Not only does specialized knowledge still retain value in the presence of a negative supply side relational shock, the set of potential alternatives to specialists is more limited than the potential alternatives to generalists, given higher costs of acquiring deep domain knowledge (Ferriera and Sah, 2012; Rosen, 1983). Therefore, even though the supply side relational capital adversely affects the overall resource fit, the marginal cost of replacing a specialist will be higher than that of a generalist.

Second, just as specialization leads to deeper knowledge, it also leads to deeper embeddedness with buyers within the area of specialization (Uzzi, 1997)<sup>3</sup>. Embedded ties, in contrast to purely arms-length ties, foster trust (Uzzi, 1996), encourage commitment (Dwyer, Schurr, and Oh, 1987), enhance attachment (Seabright, *et al.*, 1992), establish obligations (Burt, 1992; Coleman, 1990; Granovetter, 1985), and minimize opportunistic behavior (Granovetter, 1985). Specialists are more likely to be deeply embedded relative to generalists because of their greater intensity of effort and focus with each client (Bermiss and Greenbaum, 2015; Tyler and Stanley, 2001), and are better situated to realize the benefits that stem from longer lasting exchange relationships (Bermiss and Greenbaum, 2015; Broschak, 2004; Rogan, 2014; Seabright *et al.*, 1992).

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<sup>3</sup> Note that Uzzi (1997)'s arguments for embeddedness as a liability in the face of a negative demand-side relational capital shocks are consistent with our logic, because the mechanisms at play relate to increased inter-dependence.

In sum, given a greater likelihood of demand side embeddedness, specialists draw stronger attachment and commitment, which buffers them from the deleterious consequences of a negative supply side relational capital shock (Granovetter, 1985; Seabright *et al.*, 1992).

Together, deeper domain knowledge and embeddedness of specialists allows better knowledge flows between the buyer and supplier, which promote value creation (Dyer and Singh, 1998; Ferriera and Sah, 2012; Rogan, 2014; Uzzi, 1999). These flows become a valuable source of competitive advantage for specialists, and make them rarer and more inimitable. The ability to tailor products and services to specific needs (Eccles and Crane, 1988; Baker, 1984), and the relationship-specific investments afforded by embeddedness (Uzzi and Lancaster, 2004; Dyer & Singh, 1998; Rogan 2014), in conjunction, thus buffer specialists from negative supply side relational capital shocks more than generalists.

***H1:** Individuals with higher levels of specialization will be less adversely affected by negative shocks in supply side relational capital than individuals with higher levels of generalization.*

### **Positive Supply Side Relational Capital Shocks and Specificity of Knowledge**

In addition to direct benefits of positive shocks (Bertrand *et al.*, 2014; Somaya *et al.*, 2008), we predict that generalists are better poised to exploit positive shocks to their supply side relational capital than specialists. A positive supply-side relational capital shock serves as an infusion of a general purpose resource that has broad demand-side applications. This implies that although there may be high fixed-costs to acquiring the supply-side relational capital, the marginal cost of deploying it is low, given its relatively non-rival nature and potential fungibility across multiple domains of knowledge (Agrawal, Cockburn, and McHale, 2006)<sup>4</sup>. Supply side relational capital, like many other intangible assets, does not obey Teece's (1980: 226) "law of conservation" because it is both

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<sup>4</sup> Relational capital is not perfectly non-rival. There is a limit to the number of possible connections as well as the number of benefits one is allowed to extract from a relational tie. However, on the continuum from perfectly rival to perfectly non-rival, relational capital is less rival than most other resources.

indivisible (Montgomery, 1994)<sup>5</sup>, and it may be used in several non-competing sub-markets without significantly reducing its value (Montgomery and Wernerfelt, 1992). Thus, there exists the potential to increase its utilization through expansion into new markets and segments, much like a general purpose technology shock (Bresnahan and Gambardella, 1998). However, the ability to expand into new markets and acquire new exchange partners may not be homogeneously distributed (Conti, Gambardella and Novelli, 2016). Rather, there can be a threefold limitation due to the degree of specialization, stemming from knowledge, identity, and network position.

Just as a firm's scope is limited by its resources (Breschi, Lissoni, and Malerba, 2003; Penrose, 1959), an individual's scope is limited by his knowledge domain. Generalists' knowledge and information applies to a broader set of sub-markets. While a generalist's knowledge may be relatively shallow in any one domain, their breadth may allow them to be considered a satisfactory supplier in a larger number of sub-markets, even if not the best supplier in any of them (Ferreira and Sah, 2012; Lazear, 2004). The broad knowledge base of generalists allows for better leveraging of a positive supply side relational capital shock. Relatedly, specialists are constrained from expanding into new sub-markets because they lack the requisite presence and identity (Padgett and Ansell, 1993; Phillips, Turco, and Zuckerman, 2013; Zuckerman et al., 2003). Although generalists may be discounted in any one sub-market (Zuckerman, 1999), they are less likely to face identity-based limits to market entry (Phillips et al., 2013). Finally, because generalists span a greater number of sub-markets, they are likely to be more centrally located in the network of potential buyers. Network centrality has been linked to power (Brass, 1992), career success (Lin, Ensel, and Vaughn, 1981; Marsden and Hurlbert, 1988), mobility (Podolny and Baron, 1997), and resource acquisition (Tsai, 1998). Higher centrality enables both leverage of existing ties (Gulati, 1995) and creation of new ties (Tsai, 2000).

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<sup>5</sup> Notably, relational capital meets Teece's (1980, 1982) qualification that the resource should be indivisible because personal connections are difficult to transfer to others. Further, there are significant contracting problems with intangible assets like relational capital (Caves, 1982; Wernerfelt and Montgomery, 1988).

For all the above reasons, we predict that generalists will be better utilize positive relational capital shocks than specialists; not only given their existing presence in more sub-markets, but also because they are better able to identify and exploit market opportunities where their relational capital can be deployed.

***H2:** Individuals with higher levels of generalization will benefit to a greater extent from positive shocks in supply side relational capital than individuals with higher levels of specialization.*

## EMPIRICAL CONTEXT AND RESEARCH DESIGN

### The U.S. Federal Lobbying Industry: Brief Description

Lobbying is the process through which individuals and/or interest groups influence decision makers in the legislative or regulative process, and has an impact on trillions of dollars of public policy activity every year. As a professional services industry, US Federal lobbying accounted for \$3 billion in 2014 alone, with more than 12,000 lobbyists working either in one of the 2,000 lobbying firms, or serving as in-house lobbyists for interest groups or firms.

Several features make the lobbying industry a favorable setting to study the interaction effects of relational and human capital on performance. First, as with other professional services contexts, the lobbying industry relies chiefly on individuals' human and relational capital (Bertrand *et al.*, 2014). Second, there is a strong positive correlation between individual and firm level measures of human/relational capital and performance. Third, it is possible to relate the specificity of domain knowledge to distinct issue areas issues covered by congressional committees in the Senate and the House. These well-defined demarcations enable a clean, reliable and continuous measure of specialization. Fourth, it is feasible to link relational capital measures to individual lobbyists, and differentiate between both supply side relational capital—connections to politicians in key decision making roles (Bertrand *et al.*, 2014; Blanes i Vidal *et al.*, 2012)—and demand side relational capital—ties to client organizations seeking lobbying services (Bermiss and Greenbaum, 2015). Fifth, the Lobbying Disclosure Act (LDA) requires registration and public disclosure of all lobbying activities, both in terms of dollars and number of lobbying contracts. Finally, as described in greater detail

below, the lobbying industry enables a research design that can leverage multiple individual-level exogenous shocks to supply side relational capital (Blanes i Vidal *et al.*, 2012).

### **Knowledge Specificity and Relational Capital in the Lobbying Industry**

As noted above, the lobbying industry is demarcated into 78 distinct issues. Classification of the issue areas is pre-defined by the Secretary of the Senate and the Clerk of the House of Representatives. The differentiated interests across distinct domains implies that lobbyists can choose among varying degrees of specialization (Lapira, Thomas, and Baumgartner, 2014). The characteristics of the lobbying industry require both general and specific knowledge. General knowledge relates to information regarding legal and legislative processes, and familiarity with how decisions are made by policy makers (Salisbury *et al.*, 1989); such knowledge is fungible across all domain areas of expertise (Blanes i Vidal *et al.*, 2012). The need for specificity arises from lobbyists serving as intermediaries of knowledge, providing issue expertise for time-constrained politicians and serving as representatives for specific interest groups, thereby creating value in the legislative process for both legislators and interest groups (Salisbury *et al.*, 1989; Bertrand *et al.*, 2014). As discussed in greater detail in the variable definitions section, this enables us to compute a Herfindahl-Hirschman index for the extent of specialization.

Given their role as information intermediaries between policy makers and interest groups, lobbyists' have both supply and demand side relational capital. Important in this context is the *revolving door* phenomenon, where federal public employees leave their congressional staff positions to become lobbyists; Blanes i Vidal *et al.* (2012) report that more than 56 percent of lobbying firm revenues can be attributed to revolving door lobbyists, and that almost 70 percent of the top 50 lobbyists had some type of federal experience. Thus, prior connections through work experience to current policy makers constitute an important source of supply side relational capital. On the demand side, lobbyists' prior experience with client organizations provides them with both relational and structural embeddedness (Bermis and Greenbaum, 2015).

### **Research Design: Exogenous Supply Side Relational Capital Shocks**

We now turn to how the empirical context maps on to the ideal research design for testing our hypotheses regarding the differential performance effects of positive and negative supply side relational capital on generalists and specialists. In an ideal research design, one would first randomly assign the values of HHI among lobbyists to test the effect of generalists/specialists on performance. However, the random assignment on specialization can be relaxed, as we are not making causal claims on the effect of specialization on performance. In fact, we allow for changes in the level of specialization over time, exploiting within person variation in the level of specialization. Second, one would need to analyze the impact of relational capital changes on performance by identifying changes in relational capital that are exogenous with respect to performance. Specifically, exogenous changes in relational capital should a) not be affected by lobbyists (reverse causality), b) not be easily anticipated by lobbyists nor by potential clients. Lastly, in order to test the differential effects of relational capital change by level of specialization, the shocks should be c) orthogonal to lobbyist's characteristics, not selectively impacting either generalists or specialists.

If political connections are key relational assets, their value will vary based on the position and power of the connected politician. We exploit incidences where the value of relational capital exogenously increases/decreases due to changes in the position of politicians who are connected with revolving-door lobbyists. We do so by tracking (a) politicians' assignment to (positive shock) and from (negative shock) powerful Congressional committees, and (b) appointments to committee chair (positive shock), and exit from a congressional seat (negative shock).

Among over 40 standing committees in both chambers in Congress, the four most influential committees are the Finance and the Appropriation Committees in the Senate, and the Ways and Means and the Appropriation Committees in the House (Blanes i Vidal *et al.*, 2012; Duso, 2005). These committees pass appropriation bills for federal spending and draft tax legislations. Sixty-five percent of lobbying reports are associated with these two committees, which reflects both the gravity of issues covered and the number of legislative activities conducted. Thus, the ascension (descent) of a connected politician to powerful committees directly impacts the value of the focal lobbyist's relational capital and serves as a positive (negative) shock. These shocks to lobbyist's

supply side relational capital conform to the exogeneity requirements of an ideal experiment (See Table 1). Specifically, assignments to powerful committees can neither be affected nor be anticipated by lobbyists. These assignments represent complex interactions of vacancies, seniority, electoral votes, and trade-offs across seats in committees. Further, the shocks should not selectively impact generalists or specialists. The four committees cover a broad range of issues because they often entail budgetary and taxation concerns.

To ensure robustness of our measure of relational capital changes, we consider other shocks as well. Committee chair positions are key congressional leadership positions with significant agenda-setting power (Evan, 1996). Committee chairs organize and allocate work among subcommittees, establish procedures and cover other administrative matters of the committee (Schneider and Koempel, 2012). These positions provide access to current leaders of Congress and receive substantial media coverage. For positive shocks in relational capital, we track connected politician's selection to a committee chair for any of 40 standing congressional committees. This shock is also arguably exogenous, satisfying the three criteria that we have noted above. However, we do not identify an alternative measure for the negative shock based on a politician stepping down from a chair position. Both parties restrict committee chairs to serve no more than three consecutive terms, making it relatively easy for lobbyists to anticipate and thus violating the exogeneity condition. In addition, stepping down from a chair position does not necessarily mean a weakening of political power, as the politician may move to other powerful committees. For the negative shock to relational capital, we use an identification strategy similar to Blanes i Vidal *et al.* (2012): we measure the value of a connection by tracking if the lobbyists' connected politicians lose seats in Congress. While the exits due to retirements may be easier to anticipate, many of them are results of unexpected failure in the re-election campaigns. There is also no reason to believe that changes in congressional members power is correlated with the specialization of their former staffers, therefore satisfying the third criterion of not selectively impacting generalists or specialists.

## **Data Sources and Sample**

The LDA mandates that both lobbyists and employers of lobbyists register with the Secretary of the Senate and the Clerk of the House of Representatives. More importantly, the law requires lobbying firms and organizations that hire in-house lobbyists to file semiannual lobbying reports. Each report lists the amount lobbied for each client (for lobbying firms) or total lobbying-related expenses (for organizations with in-house lobbyists), information on which issue area and bills are related to the lobbying activity, and which chambers of Congress or federal agencies were contacted by the lobbyists. These reports are aggregated in a database by the Center for Responsive Politics, which is one of our key data sources. We also draw on data compiled by Blanes i Vidal *et al.* (2012) using Lobbyist.info database published by Columbia Books and LegiStorm databases, data on campaign contributions from the Federal Election Commission, and data on congressional committees from the Senate Office of Public Records (SOPR) and Office of the Historian of the House of Representatives.

We constructed a sample of lobbyists who participate in the U.S. federal lobbying industry between 1999 and 2008. Each variable is observed in semiannual basis as LDA requires disclosure of the lobbying activities within the period. Our pooled sample includes 195,530 lobbyist-period observations with 25,179 unique lobbyists in the panel of 20 semiannual periods. Given our focus on supply side relational capital shocks, we further focus on *revolving door lobbyists*, lobbyists with prior congressional staff experience. Following Blanes i Vidal *et al.* (2012), we restrict our sample to ex-congressional staffers who have worked for a Senate or a House Representative prior to the entry into the lobbying industry. Our estimation sample then has a total of 1,109 revolving door lobbyists, spanning 10,777 observations in 20 semiannual periods.

### **Dependent Variables**

The main dependent variable of interest is natural log of the lobbyist's *Lobbying revenue* reported in semiannual lobbying disclosure reports. Lobbying revenue is calculated by aggregating the dollar amount of lobbying contracts in which each lobbyist is involved in each time  $t$ . In our revolving door lobbyist sample, mean revenue is \$863,948 and median revenue is \$420,000. Given

the highly skewed distribution (the top decile of lobbying revenue in the sample is \$2,140,000, more than five times larger than the median revenue), we use a natural logarithmic scale.

In supplementary analyses, we examine underlying mechanisms related to demand side relational capital. In these analyses, our key dependent variable is *Number of client ties*, measured as the number of different lobbying cases from different clients assumed by the lobbyist in that period, as an alternative dependent variable in all our models. As an alternative measure of lobbying performance, the number of client ties nicely complements lobbying revenue due to a potential trade-off between the amount of contract and the number of contracts with different clients. Some lobbyists, including in-house lobbyists, focus on few clients with larger contract whereas others make multiple small contracts with many clients. Testing our hypothesis across the two performance measures allow us to capture such trade-offs. For more direct tests of the mechanisms, we also created several variants of client tie and revenue measures: *the number of client ties retained*, *the number of new client ties added*, *logged retained tie revenue*, and *logged new issue revenue*. Among all of the client ties a lobbyist has, we separated the clients retained from new clients added to the lobbyist's client account. We measured *Number of clients retained* by counting the clients who were represented by the lobbyist in the past. *Number of new clients* was measured as a count of new client ties added at time t. Similarly, we decomposed revenue into revenue from existing client base and new clients. *Retained tie revenue* was calculated by taking natural log of revenue generated from retained ties. We also created *new issue revenue*, natural log of revenue from issue domains that are new to the lobbyist.

## **Independent Variables**

### ***Shocks on supply side relational capital***

We created four dummy variables that capture changes in supply side relational capital. As discussed above, our two key shock variables were constructed using connected politicians' assignments into and out of four powerful committees in Congress. The negative shock, *Loss of power* is coded 1 for observations after the first period that a connected politician is no longer assigned to one of the powerful committees and 0 otherwise. The positive shock, *Gain of power* is equal to 1 for when a politician connected to a lobbyist is first assigned to one of the powerful committees and for the

entire duration till exit from the committee, and equals 0 otherwise. We only consider politicians who are newly assigned to powerful committees in the sample period. Two additional shock variables are also created based on loss of office, and appointment to committee chair. For the negative shock, *Loss of connection* is coded 1 for observations after a politician connected to a lobbyist leaves office and 0 otherwise. These exits of connected politicians are largely due to defeats at reelection or voluntary retirement. A total of 253 lobbyists in our sample were affected by the exits of politicians, three short from the number of events Blanes i Vidal *et al.* (2012) used. We excluded the three cases in which connected politician exited the House to become a Senator. A positive shock, *Gain of chair*, is coded 1 for the years when a politician connected to a lobbyist is selected as a chair of a standing committee in either the Senate or the House and 0 otherwise. We only consider the events where a non-chair politician newly becomes a chair during our sample period. The number of events for each shock is presented in Table 2.

### ***Level of specialization***

We calculated the Herfindahl-Hirschman Index (HHI) to measure the specialization of individual lobbyist in terms of cumulative lobbying revenue generated in each general issue area.

$$HHI_{it} = \sum_{m=1}^{78} \left( \frac{S_{imt-1}}{S_{it-1}} \right)^2$$

where  $S_{it-1}$  is cumulative lobbying revenue for lobbyist  $i$  until period  $t-1$ ,  $S_{imt-1}$  represents cumulative lobbying revenue for lobbyist  $i$  for the specific issue area  $m$  until period  $t-1$ , and 78 denotes the number of pre-defined issue areas. By construction, the HHI can vary from 0 to 1; larger numbers indicating a higher specialization.

### **Control Variables**

Our key control variables include a set of variables that capture various aspects of human capital and relational capital accumulated in the course of a lobbyist's career. Other than political connections, human capital that the lobbyists accumulate in the industry may serve a key value-creating function in the lobbying industry (Bertrand *et al.*, 2014). Post-entry human capital can be decomposed into industry-specific and firm-specific human capital. We control for *years of experience*

*in lobbying* to gauge the level of experience that capture industry-specific human capital. To capture firm-specific human capital, we included *tenure in lobbying firm (in years)*, measured as the number of periods a lobbyist worked in the current lobbying firm. To take into account the career dynamics of individual lobbyists, we included the *number of job moves*, a cumulative measure of number of job mobility events the lobbyist has experienced.

Client ties, as noted above, represent critical demand side relational capital and a key source of competitive advantage in professional service industries. Prior studies have found client ties to be strongly correlated with performance (e.g., Somaya *et al.*, 2008). We control for *Cumulative # of clients* by counting the number of unique clients a lobbyist had until the period  $t-1$ . Further, while we base our shocks to supply side relational capital on prior employment experience, lobbyists may secure preferential access to politicians in other ways. One important path for doing so is through campaign contributions (Ansolabehere, Snyder, and Tripathi, 2002; Bertrand *et al.*, 2014). Bertrand *et al.* (2014) argue that campaign contributions reflect preexisting ties and the desire to access a politician. We create a dummy variable *PAC contribution tie* coded 1 if a lobbyist has made a Political Action Committee (PAC) contribution to a politician in the previous election, and 0 otherwise.

Lobbying as an in-house lobbyist may be systematically different from the experience of lobbyists in lobbying firms. We control for whether a lobbyist works for a lobbying firm or as an in-house lobbyist. *Lobbying firm* is a dummy variable coded 1 if the lobbyist has filed a lobbying report as a member of a lobbying firm within a semiannual period and 0 otherwise. Time-fixed effects are essential in the sense that they capture the cyclical nature of politics. For example, we generally see that lobbying revenue surges when a new congress starts and decreases as the end of a term approaches. We included time-fixed effect for each semiannual period in our sample. Lastly, we included lobbyist fixed-effect to control for any time-invariant lobbyist characteristics that are not observed in the data. For example, fixed-effect models allow us to control for human capital a lobbyist has accumulated prior to entering the lobbying industry. In addition, lobbyist fixed-effect also captures characteristics of the connected politicians, such as party affiliation and whether they are a Senator or a Representative, which is highly time invariant.

## RESULTS

We report descriptive statistics of the sample in Table 3. Table 4 presents the results for our main analyses. All models include year and individual fixed-effects and cluster standard errors by connected politician. Model 1 (Table 4) is a baseline regression of lobbying revenue on the control variables. Among the controls, tenure in a lobbying firm is positively associated with the revenue. The positive association of experience in the industry and performance is likely absorbed by tenure in a lobbying firm as the two variables are highly correlated (0.7129) as seen in Table 3. The cumulative number of clients and PAC contribution tie both have positive and significant coefficients, as we would expect. In addition, the negative and significant coefficient on the lobbying firm dummy indicates that in-house lobbyist receive more revenue than those working for a lobbying firm. Model 2 adds the measure of specialization (HHI of issues covered), one of our main independent variables of interest. The coefficient suggests that an increase in the level of specialization by one standard deviation is correlated with about a 25 percent decrease in revenue.

Models 3 through 6 (Table 4) test Hypothesis 1 using two different shocks to lobbyists' relational capital. Model 3 demonstrates that lobbyists witness an approximately 36 percent decline in revenue when there is a *Loss of Power* of their connected politician. In line with Hypothesis 1, Model 4 indicates that the negative effect on revenue is mitigated as the level of specialization increases. Figure 3 plots the marginal effects for each level of specialization (higher HHI correspond to higher levels of specialization) when there is a negative shock. One can see the stark differences in percent declines in revenue, ranging from a low of 60% to zero change as HHI increases. These results are corroborated in Models 5 and 6, using the second measure of negative shock: the exit of a connected politician from Congress. Therefore, we find support for Hypothesis 1 across both negative relational capital shocks (exit from a powerful committee and exit from Congress).

Models 7 through 10 (Table 4) investigate the impact of positive relational capital shocks. Models 7 and 8 examine the impact of a connected politician's *Gain of Power* on lobbying revenue. Model 7 demonstrates that lobbyists experience a 29 percent increase, on average, in lobbying revenue due to this positive shock. Supporting hypothesis 2, Model 8 indicates that the effect of a

positive relational capital shock is significantly amplified for generalists. Figure 4 plots the marginal effects for each level of specialization (lower HHI correspond to higher levels of generalization) when there is a positive shock. The percent increases in revenue after a positive shock ranges from 40% to 10 % as HHI increases, with loss of statistical significance within the 95% confidence interval for HHI greater than 0.5. The effects of a positive shock is corroborated with the alternative measure (Appointment to chair of standing committee) as well (See Models 9 and 10), providing additional support for Hypothesis 2.

### **Supplementary Tests**

We now turn to some additional tests which examine factors that relate to differential changes in performance for generalists vs. specialists after the shocks. Recall that we conjectured that part of the buffering effect of specialization in the presence of a negative shock related to specialists' embedded relationships with clients. In Table 5, we examine main and interaction effects of negative shocks and specialization on client ties by conducting panel fixed-effect negative binomial regressions for all reported models. We investigate whether specialists lose fewer clients than generalists after negative supply side relational capital shocks (both measures) by repeating the analysis of Table 4 using an alternative dependent variable – the number of client ties. Models 1 through 3 demonstrate that, on average, lobbyists have fewer client ties after a negative shock to their relational capital. However, Models 2 and 3 demonstrate that specialists lose fewer client ties than generalists following a negative relational capital shock. To test that specialists are better able to maintain existing ties after a negative relational capital shock, we regress the number of ties retained on our variables of interest. Models 4 and 5 demonstrate that indeed, specialization enhances the retention of existing clients in the face of negative relational capital shocks. Models 6 and 7 suggest that specialists are also better able to maintain revenues from existing clients.

Next, we investigate the factors relating to generalists' realization of higher revenue gains after a positive shock. The negative coefficient of HHI in the main effects regressions on the number of client ties in Table 5 already reveals that generalists have more existing ties on average than specialists. This broader scope of activities implies that even if the positive shock can be

leveraged equally by lobbyists varying in their specialization towards their existing client base, on aggregate, generalists will gain more revenue than specialists. Additional tests reported in Table 6 examine interactions between specialization and positive shocks on number of clients and domains of knowledge. Models 1 and 2 examine the effects on the total number of client ties, and the negative coefficient of the interaction terms confirm that generalists have more client ties due to a positive shock than specialists. Models 3 and 4, reveal, interestingly, that both generalists and specialists are equally likely to gain new clients after a positive shock (while the interaction term is negative, it is not significant at conventional levels of significance). However, Models 5 and 6 show strong differences in revenue gains that stem from venturing into new domains of knowledge. Generalists are able to leverage the positive shock for revenues that stem from diversification into new issues much more than specialists. Taken together, the models in Table 6 imply that generalization allows lobbyists to garner positive returns not because they are able to attract more new clients per se, but because they are both leveraging it over a large base of clients, and by diversifying revenue streams from more domains of knowledge.

### **Robustness Checks: Alternative Specifications and Explanations**

Our empirical design allows us to address several inference problems that typically threaten the empirical identification. In particular, for reasons noted above, changes in supply side relational capital are reasonably exogenous. Given that these shocks are orthogonal to time-invariant characteristics of our focused sample of revolving-door lobbyists, we are also able to hold relatively constant the relational capital with which each lobbyist in our sample is endowed. A limitation of our study is that we do not have a clean identification strategy for specialization. However, with the additional assumption that lobbyists are not able to perfectly predict and adjust their specialization strategy to relational capital shocks, we are able to exploit individual fixed-effects to identify the interaction terms. In other words, if the timing of power changes for connected politicians is not correlated with the level of specialization of their former staffers, then the coefficient estimates for the interaction terms of our regressions should be unbiased. Although our empirical design is able

quell many concerns related to reverse causality and omitted variable bias, there are residual concerns that we attempt to address below (See also summary in Table 8).

## DISCUSSION AND CONCLUSION

Human and relational capital contribute positively to both individual and firm outcomes (Burt, 1992; Coleman, 1990; Mawdsley and Somaya, 2016). Within human capital, specificity of knowledge has been a key variable of interest, with scholars finding evidence for performance benefits in both specialization (Castanias and Helfat, 1991; Leung, 2014; Zuckerman *et al.*, 2003) and generalization (Cremer *et al.*, 2007; Cusódio *et al.*, 2013; Murphy and Zabochnik, 2004), and for factors that may moderate these relationships (Castanias and Helfat, 2001; Merluzzi and Phillips, 2016; Murphy and Zabochnik, 2004; Zuckerman *et al.*, 2003). Within relational capital, the performance benefits are unequivocal, and scholars have noted that the benefits may stem from both demand and supply relations. Within this robust literature, our study contributes theoretically by investigating an unaddressed issue: how might specialization and relational capital interact for performance outcomes? To address this issue, we theorized that specialists and generalists are impacted differently by positive and negative shocks to their supply side relational capital. Integrating insights from both strategic human capital, career specialization, and relational/social capital literature, we posited that specialization is an advantage in the face of negative shocks to supply side relational capital because specialists possess more specialized knowledge and are more embedded in their client-side relationships. However, specialization is not wholly advantageous. Generalists are able to gain more from positive supply side relational capital shocks because of their diverse knowledge broad client-side networks. We find support for both propositions in the US lobbying industry, where we are able to finely measure each lobbyist's level of specialization based on the issues for which they lobby. Furthermore, the setting allows us to exploit exogenous changes in the power of politicians to identify the causal effects of supply side relational capital on revolving-door lobbyists. Finally, a battery of supplementary analysis and robustness tests allows us both dwell deeper into factors that are at play for the performance consequences, and alternatives that may be safely ruled out as potential explanations.

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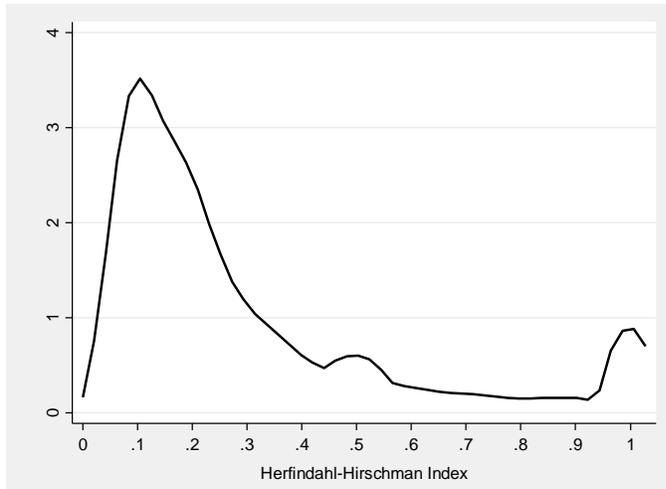
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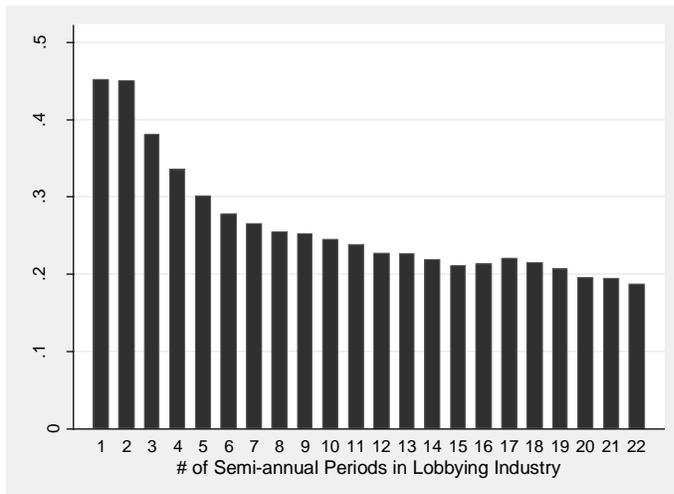
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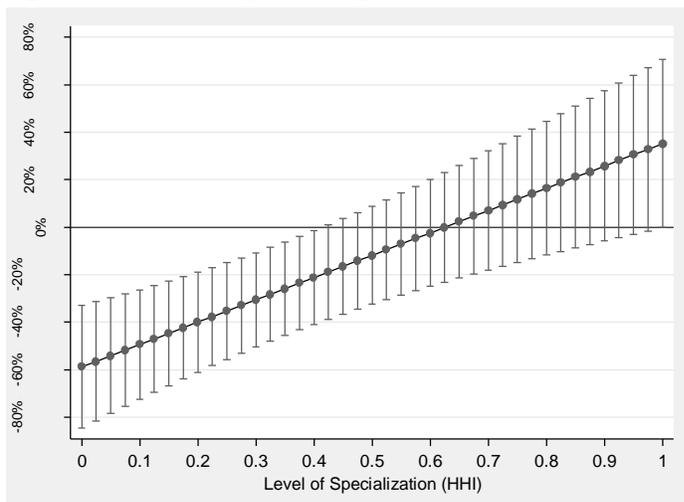
**Figure 1. Kernel Density Estimates of Herfindahl Hirschman Index (HHI)**



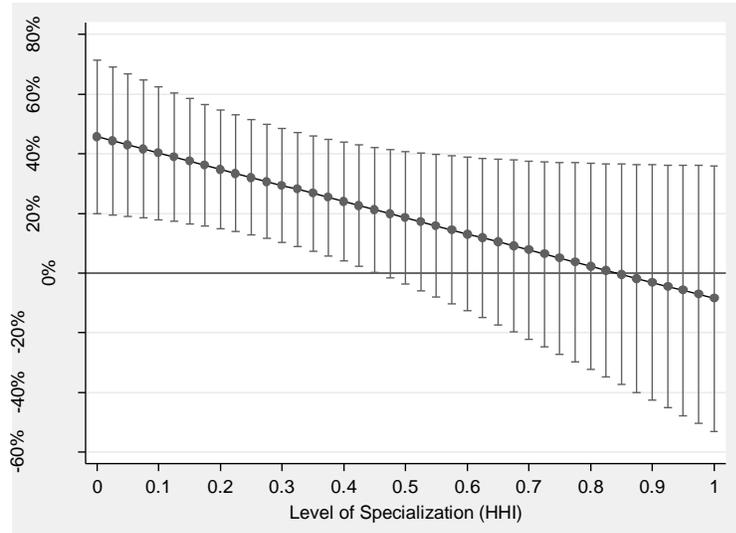
**Figure 2. Mean HHI for Tenure in Lobbying Industry**



**Figure 3. Percentage Changes in Revenue due to Loss of Power by Level of Specialization**



**Figure 4. Percentage Changes in Revenue due to Gain of Power by Level of Specialization**



**Table 1. A Comparison of an Ideal Design and Study Design**

Variable of Interest	Ideal Experiment	Our Design
<b>Generalist/ Specialist</b>	Randomly assign random values of HHI among lobbyists.	We allow for changes in the level of specialization over time. Exploits within person variation in the level of specialization. Our identification of the interaction terms (Relational capital shock X Specialization) depends on the assumption that specialization is not correlated with the timing of shocks and that lobbyists are not able to perfectly foresee and react to the shocks.
<b>Changes in relational capital</b>	An exogenous shock in the level of relational capital with a) no reverse causality and b) no anticipation of events	Assignments to powerful committees cannot be affected or anticipated by lobbyists because a) committee assignment rules are complex and flexible taking into account for preferences, seniority, background, election margin, and the importance of the member's district, b) securing a seat in a powerful committee would mean giving up a seat in another committee that they previously have served, and c) few vacancy arises in powerful committees usually as a result of changes in the party's share in Congress and unexpected electoral outcomes.
<b>Differential effects of relational capital change by generalist/ specialist</b>	Shocks orthogonal to specialists or generalists. Relational capital shocks should not selectively impact specialists or generalists.	All 78 issues are affected when a politician is assigned to a powerful committee. 65.1 percent of lobbying reports between 1999 and 2008 co-occur with the two issues exclusively covered by the powerful committees.

**Table 2. Number of Shocks on Relational Capital**

Variables	# of Lobbyists Affected	# of Observations
Loss of Power	93	654
Loss of Connection	253	2,006
Gain of Power	165	960
Gain of Chair	92	283

**Table 3. Descriptive Statistics and Pearson Correlations<sup>a</sup>**

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. LN Revenue	12.907	1.3414	1									
2. # of Client Ties	10.253	11.945	0.6595	1								
3. Loss of Power	0.0606	0.2387	0.0292	0.0412	1							
4. Gain of Power	0.0903	0.2867	0.0121	-0.0145	-0.0801	1						
5. Specialization (HHI)	0.2992	0.2694	-0.3742	-0.2159	-0.0761	0.0483	1					
6. Years of Experience in Lobbying	3.9253	2.6520	0.1463	0.0982	0.1720	-0.0644	-0.2632	1				
7. Tenure in Lobbying Firm (in years)	2.3647	2.3216	0.1018	0.1059	0.1462	-0.0681	-0.1491	0.7129	1			
8. Cumulative # of Job Moves	1.7774	1.0494	0.1213	0.0956	0.0498	0.0092	-0.1842	0.4514	-0.0013	1		
9. Cumulative # of Clients	24.79	28.784	0.5482	0.7331	0.1394	-0.0371	-0.2926	0.4403	0.2822	0.3071	1	
10. PAC Contribution Tie	0.4563	0.4981	0.2032	0.1641	0.0106	-0.1043	-0.1368	0.0970	0.0323	0.1026	0.1783	1
11. Lobbying Firm	0.8988	0.3015	-0.0629	0.2432	0.0324	-0.0059	0.0148	-0.0258	0.0791	-0.1248	0.1681	0.0763

a. N =10,777

**Table 4. Fixed-Effect Estimates of Lobbyist's Revenue<sup>a</sup>**

DV: LN Revenue	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
<b>Years of Experience</b>	-0.0548*** (0.0154)	-0.0347* (0.0155)	-0.0368* (0.0155)	-0.0350* (0.0156)	-0.0301+ (0.0156)	-0.0281+ (0.0156)	-0.0310* (0.0156)	-0.0314* (0.0156)	-0.0348* (0.0155)	-0.0337* (0.0156)
<b>Tenure in Lobbying Firm</b>	0.0485*** (0.0095)	0.0422*** (0.0095)	0.0433*** (0.0095)	0.0429*** (0.0095)	0.0435*** (0.0095)	0.0419*** (0.0095)	0.0421*** (0.0095)	0.0420*** (0.0095)	0.0422*** (0.0095)	0.0417*** (0.0095)
<b># of Job Moves</b>	-0.0079 (0.0251)	-0.0375 (0.0252)	-0.0378 (0.0252)	-0.0357 (0.0252)	-0.0369 (0.0252)	-0.0385 (0.0252)	-0.0408 (0.0252)	-0.0422+ (0.0252)	-0.0375 (0.0252)	-0.0379 (0.0252)
<b>Cumulative # of Clients</b>	0.0125*** (0.0010)	0.0130*** (0.0010)	0.0133*** (0.0010)	0.0134*** (0.0010)	0.0131*** (0.0010)	0.0133*** (0.0010)	0.0130*** (0.0010)	0.0130*** (0.0010)	0.0130*** (0.0010)	0.0129*** (0.0010)
<b>PAC Contribution Tie</b>	0.1728*** (0.0325)	0.1678*** (0.0325)	0.1663*** (0.0325)	0.1639*** (0.0325)	0.1735*** (0.0325)	0.1718*** (0.0325)	0.1671*** (0.0325)	0.1693*** (0.0325)	0.1672*** (0.0325)	0.1676*** (0.0325)
<b>Lobbying Firm</b>	-0.4717*** (0.0478)	-0.4697*** (0.0478)	-0.4758*** (0.0478)	-0.4783*** (0.0478)	-0.4683*** (0.0478)	-0.4705*** (0.0478)	-0.4799*** (0.0479)	-0.4803*** (0.0479)	-0.4694*** (0.0478)	-0.4688*** (0.0478)
<b>Specialization (HHI)</b>		-0.9579*** (0.0853)	-0.9662*** (0.0853)	-0.9883*** (0.0856)	-0.9700*** (0.0854)	-1.0069*** (0.0863)	-0.9393*** (0.0855)	-0.8885*** (0.0875)	-0.9599*** (0.0854)	-0.9254*** (0.0865)
<b>Loss of Power</b>			-0.3617*** (0.0699)	-0.5597*** (0.0935)	0.8810** (0.2761)					
<b>Loss of Power X Specialization</b>										
<b>Loss of Connection</b>					-0.2537*** (0.0474)	-0.3796*** (0.0639)				
<b>Loss of Connection X Specialization</b>						0.4746** (0.1620)				
<b>Gain of Power</b>							0.2901*** (0.0738)	0.4566*** (0.0964)		
<b>Gain of Power X Specialization</b>								-0.5420** (0.2017)		
<b>Gain of Chair</b>									0.0423 (0.0707)	0.2489* (0.1088)
<b>Gain of Chair X Specialization</b>										-0.5908* (0.2365)
<b>Year Fixed-effects</b>	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
<b>Lobbyist Fixed-effects</b>	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
<b>N</b>	10777	10777	10777	10777	10777	10777	10777	10777	10777	10777
<b>R squared</b>	0.0528	0.0754	0.0801	0.0819	0.0805	0.0820	0.0781	0.0794	0.0754	0.0765

a. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, + p<0.10. Standard errors clustered by connected politicians.

**Table 5. Test of Mechanism: Negative Relational Capital Shocks<sup>a</sup>**

DVs	Model 1: # of Client Ties	Model 2: # of Client Ties	Model 3: # of Client Ties	Model 4: # of Ties Retained	Model 5: # of Ties Retained	Model 6: Retained Tie Revenue	Model 7: Retained Tie Revenue
Years of Experience	0.0229*** (0.0037)	0.0268*** (0.0037)	0.0257*** (0.0037)	0.0449*** (0.0041)	0.0433*** (0.0041)	0.4549*** (0.0156)	0.4674*** (0.0156)
Tenure in Lobbying Firm	0.0293*** (0.0044)	0.0277*** (0.0044)	0.0284*** (0.0044)	0.0545*** (0.0047)	0.0548*** (0.0047)	0.3392*** (0.0095)	0.3375*** (0.0095)
# of Job Moves	0.0008 (0.0108)	-0.0035 (0.0107)	-0.0001 (0.0107)	-0.0011 (0.0121)	0.0003 (0.0120)	0.0227 (0.0252)	0.0293 (0.0252)
Cumulative # of Clients	0.0023*** (0.0004)	0.0026*** (0.0004)	0.0023*** (0.0004)	0.0006 (0.0004)	0.0004 (0.0004)	0.0112*** (0.0010)	0.0109*** (0.0010)
PAC Contribution Tie	0.0768*** (0.0156)	0.0767*** (0.0156)	0.0798*** (0.0156)	0.0777*** (0.0176)	0.0761*** (0.0177)	0.0334 (0.0325)	0.0466 (0.0325)
Lobbying Firm	1.5055*** (0.0338)	1.5062*** (0.0338)	1.5097*** (0.0338)	1.1388*** (0.0368)	1.1387*** (0.0368)	-0.0703 (0.0478)	-0.0555 (0.0478)
Lagged Revenue	0.0000*** (0.0000)	0.0000*** (0.0000)	0.0000*** (0.0000)	0.0000*** (0.0000)	0.0000*** (0.0000)		
Specialization (HHI)	-0.3283*** (0.0454)	-0.3594*** (0.0457)	-0.3537*** (0.0467)	-1.0318*** (0.0606)	-1.0597*** (0.0625)	-1.8404*** (0.0856)	-1.8716*** (0.0863)
Loss of Power		-0.3641*** (0.0456)		-0.2818*** (0.0525)		-0.8632*** (0.0977)	
Loss of Power X Specialization		0.4941*** (0.1425)		0.6615*** (0.1791)		0.1149 (0.2820)	
Loss of Connection			-0.1347*** (0.0288)		-0.0571+ (0.0333)		-0.4583*** (0.0639)
Loss of Connection X Specialization			0.1547* (0.0789)		0.3725*** (0.0964)		0.4037* (0.1620)
Year Fixed-effects	Y	Y	Y	Y	Y	Y	Y
Lobbyist Fixed-effects	Y	Y	Y	Y	Y	Y	Y
N	10766	10766	10766	10757	10757	10777	10777
Log Likelihood	-23795.29	-23757.79	-23783.26	-21366.57	-21373.36	-	-
R squared	-	-	-	-	-	0.0636	0.0625

a. Standard errors reported in parentheses \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, + p<0.10.

**Table 6. Test of Mechanism: Positive Relational Capital Shocks<sup>a</sup>**

DVs	Model 1: # of Client Ties	Model 2: # of Client Ties	Model 3: # of New Tie Added	Model 4: # of New Tie Added	Model 5: New Issue Revenue	Model 6: New Issue Revenue
Years of Experience	0.0227*** (0.0037)	0.0229*** (0.0037)	-0.0881*** (0.0066)	-0.0878*** (0.0066)	-0.0664*** (0.0156)	-0.0674*** (0.0156)
Tenure in Lobbying Firm	0.0291*** (0.0044)	0.0291*** (0.0044)	-0.0487*** (0.0101)	-0.0486*** (0.0101)	-0.2424*** (0.0095)	-0.2429*** (0.0095)
# of Job Moves	-0.0015 (0.0108)	0.0005 (0.0108)	-0.0120 (0.0203)	-0.0080 (0.0203)	-0.0938*** (0.0252)	-0.0876*** (0.0252)
Cumulative # of Clients	0.0024*** (0.0004)	0.0023*** (0.0004)	0.0075*** (0.0007)	0.0074*** (0.0007)	-0.0069*** (0.0010)	-0.0070*** (0.0010)
PAC Contribution Tie	0.0771*** (0.0156)	0.0765*** (0.0156)	0.0125 (0.0303)	0.0091 (0.0303)	0.0057 (0.0325)	0.0010 (0.0325)
Lobbying Firm	1.4950*** (0.0338)	1.5043*** (0.0338)	1.3980*** (0.0575)	1.4042*** (0.0575)	0.5474*** (0.0479)	0.5589*** (0.0478)
Lagged Revenue	0.0000*** (0.0000)	0.0000*** (0.0000)	-0.0000*** (0.0000)	-0.0000*** (0.0000)		
Specialization (HHI)	-0.3045*** (0.0467)	-0.3089*** (0.0459)	-0.2198** (0.0744)	-0.2216** (0.0728)	3.5108*** (0.0875)	3.4053*** (0.0865)
Gain of Power	0.2414*** (0.0492)		0.2240* (0.0870)		0.7121*** (0.0964)	
Gain of Power X Specialization	-0.2111+ (0.1157)		-0.1262 (0.1867)		-1.4261*** (0.2017)	
Gain of Chair		0.1460** (0.0508)		0.2221* (0.0946)		0.2738* (0.1088)
Gain of Chair X Specialization		-0.4290** (0.1451)		-0.3374 (0.2350)		-0.7809*** (0.2365)
Year Fixed-effects	Y	Y	Y	Y	Y	Y
Lobbyist Fixed-effects	Y	Y	Y	Y	Y	Y
N	10766	10766	10709	10709	10777	10777
Log Likelihood	-23781.9091	-23790.2796	-14461.1477	-14462.6191	-	-
R squared	-	-	-	-	0.0104	0.0102

a. Standard errors reported in parentheses \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, + p<0.10.

**Table 8. Alternative Explanations and Robustness Checks**

<b>Alternative Explanation</b>	<b>Concerns</b>	<b>Robustness Checks</b>
1. Career dynamics	Lobbyists tend to become generalists over time. If generalists are affected by shocks more than specialists because they were more experienced and embedded, the result may be a reflection of such career dynamics.	<ul style="list-style-type: none"> <li>• Results robust to a sub-sample analysis with observations in the later stage in each lobbyist's career.</li> </ul>
2. Firm effect	Becoming a specialist or a generalist may be a function of firm's strategic decision.	<ul style="list-style-type: none"> <li>• Results robust to firm fixed-effects models.</li> <li>• Results robust to a sub-sample analysis excluding in-house lobbyists.</li> </ul>
3. Sampling bias and measurement error	Left-censoring of data on lobbying issues prior to 1998 leads to the miscalculation of the HHI.	<ul style="list-style-type: none"> <li>• Results robust to a sub-sample analysis with lobbyists who are not left-censored.</li> </ul>
4. Survivor bias	Right-censoring of lobbyists occurs because lobbyists whose revenue falls under a threshold do not appear in the data.	<ul style="list-style-type: none"> <li>• Results robust to a sub-sample analysis with lobbyists who were active throughout the sample period.</li> <li>• Results robust to an analysis with an imputed balanced panel for right-censored observations.</li> </ul>
5. Confounding effects among shocks	Loss of power may be due to loss of connection. The effect of two negative shocks may be confounded.	<ul style="list-style-type: none"> <li>• Results robust to analysis which controls for presence of other shocks.</li> <li>• Results robust to lobbyists who are not affected by another shock.</li> </ul>