Paper to be presented at the DRUID 2011

on

INNOVATION, STRATEGY, and STRUCTURE -
Organizations, Institutions, Systems and Regions
at
Copenhagen Business School, Denmark, June 15-17, 2011

CORPORATE POLITICAL ACTIVITY, ORGANIZATIONAL LEARNING AND ABSORPTIVE CAPACITY

Jean-Philippe Bonardi
University of Lausanne
Facuulty of Business and Economics (HEC)
jean-philippe.bonardi@unil.ch

Rick Vanden Bergh

vandenbergh@bsad.uvm.edu

Guy Holburn

gholburn@ivey.uwo.ca

Abstract

Why firms participate in political activities is a topic that has generated much research in management, economics and political science. This literature, however, does not fully account for differences between firms as opposed to between industries, or for the impact of organizational knowledge about the political environment on political strategy. This paper focuses on the ability of firms to learn political knowledge, and on how such knowledge shapes political strategy. We develop a conceptual framework that distinguishes between four types of political knowledge: generic, institution-specific, firm-specific and firm-institution-specific political knowledge. We propose several hypotheses that relate the role of vicarious and experiential learning to the development of the different types of political knowledge. We

find support for our hypotheses in a statistical analysis of the initiation of regulatory proceedings by firms in the U.S. electric utility sector. These findings have important implications for future research on how firms develop political activities, on the knowledge from which nonmarket capabilities originate, and on the integration of market and nonmarket strategies.

Jelcodes:M19,K23

CORPORATE POLITICAL ACTIVITY, ORGANIZATIONAL LEARNING AND ABSORPTIVE CAPACITY

ABSTRACT

Why firms participate in political activities is a topic that has generated much research in management, economics and political science. This literature, however, does not fully account for differences between firms as opposed to between industries, or for the impact of organizational knowledge about the political environment on political strategy. This paper focuses on the ability of firms to learn political knowledge, and on how such knowledge shapes political strategy. We develop a conceptual framework that distinguishes between four types of political knowledge: generic, institution-specific, firm-specific and firm-institution-specific political knowledge. We propose several hypotheses that relate the role of vicarious and experiential learning to the development of the different types of political knowledge. We find support for our hypotheses in a statistical analysis of the initiation of regulatory proceedings by firms in the U.S. electric utility sector. These findings have important implications for future research on how firms develop political activities, on the knowledge from which nonmarket capabilities originate, and on the integration of market and nonmarket strategies.

INTRODUCTION

Why does the propensity to engage in the political process vary across firms? It is often observed that some firms are active participants in lobbying, supporting political election campaigns or organizing special interest coalitions, while other firms place less emphasis on such concerted attempts to shape their policy environment. Existing research on corporate political strategy emphasizes the role of external or industry-level factors in explaining such differences - the concentration of firms within an industry and the costs of collective action (Olson, 1965; Stigler, 1971; Grier et al., 1994), market structure and the existence of industry associations (Weymouth, 2010), the degree of public procurement (Master and Keim, 1985), and the attractiveness of political markets, including the extent of interest group rivalry (Bonardi et al, 2005). What remains relatively unexplored, however, is the variation among firms within the same industry in the level of political engagement. While the broader strategy field literature has a long tradition of examining inter-firm differences in strategy, resources and organizational capabilities, little research has developed these concepts and theories in the context of firm heterogeneity in their political environments.

In this paper we contribute to the political strategy literature by focusing on the role of organizational knowledge about the political environment, based on prior organizational experiences, in explaining firm-level differences in political engagement (Henisz and Delios, 2002). Organizational knowledge enables firms to effectively employ, manipulate and transform various organizational resources into desired outputs (Nonaka, 1991). It may be embedded explicitly or tacitly in entities such as tools, tasks, technologies and people. When replication or transmission are difficult, internally-generated organizational knowledge can serve as the basis for sustained competitive advantage and superior performance in the market place (Nelson and Winter, 1982).

Several previous studies and case-study evidence suggest that firms can learn or develop knowledge of their political environment through experience in dealing with local governments, stakeholders and political actors in a jurisdiction (Suarez, 1998). However, as far as we are aware, no research has provided a theory of the *types* of political knowledge that are valuable for firms or how they are learnt or acquired. This is the purpose of our paper.

As an illustration, consider the example of a 'big box' retail chain store, such as Wal-Mart or Target, which wishes to obtain local municipal council approval to open a store in a new city. What types of political knowledge does a firm need to successfully obtain such approval? And how can they be acquired? At the most basic level firms need to understand the institutional process through which permitting decisions are made: how to initiate an application, what documentation to submit, voting rules on relevant committees and the full council, appeals mechanisms, and so forth. Since retail developments can elicit varying degrees of local opposition, firms must also assess the likely nature and intensity of organized stakeholder action, such as from labor unions, small business associations and competitors, all of which may exert influence, either positive or negative, on the council. In addition, knowledge of the general preferences of individual councilors and city staff towards new retail sites will enable firms to assess the unconditional probability of obtaining a favorable decision. Knowledge of councilor preferences regarding the specific application at hand is also important as market and nonmarket conditions can be heterogeneous even in a single municipality. Especially critical, however, is knowing how to effectively bargain with or obtain the support of pivotal decision-makers, both formal and informal: this requires knowledge of the value that politicians place on additional assets that the firm can provide – such as employment guarantees, local sourcing commitments, funding of charities or community projects, or

electoral campaign contributions – as well as the cost to the firm of making such offers. Identifying and crafting mutually beneficial 'trades' can be a lengthy process of discovery and negotiation as each deal is idiosyncratic. In the case of the opening of a new Target store in Harlem, New York, one observer noted that:

> *"the preparations were extreme: nearly 10 years of calculated philanthropy and schmoozing across Harlem, an effort that Minneapolis-based Target has characterized as smart community relations but critics suggested was akin to bribery. Long before the ribbon-cutting, Target had wooed notable Harlem residents with dinner parties, struck deals to carry exclusive gear designed by neighborhood luminaries, and sponsored prominent charitable projects and events, including the refurbishing of a school library and the sprucing up of a rundown lot near the store on 117th Street."*

New York Times, August 13, 2010

In this paper we combine insights from the literature on knowledge and learning (Dosi and Marengo, 2007; Hayek, 1945) and from the literature on political markets (Bonardi, Holburn and Vanden Bergh, 2006) to develop a unique typology of political knowledge that simplifies the complexity of the example above into two main dimensions, the degree of institution-specificity and the degree of firm-specificity of political knowledge, which we elaborate on below. The main argument we make is that experiential and vicarious learning are central mechanisms, but which play out in different ways for developing different types of institution-specific and firm-specific knowledge. We build on the classic distinction in the learning literature between vicarious learning (in which firms learn new skills by observing others) and experiential learning (in which firms learn from their own direct experience) (Levitt and March, 1988) to propose hypotheses that link prior political experience to firms' engagement in political activities.

We test our hypotheses using data on the initiation of regulatory review processes by firms in the U.S. electric utility sector. Firms in this industry have the ability to request administrative review of their rates, which are regulated, at any point in time. Rate reviews can be lengthy processes, sometimes lasting more than a year before a final

determination is made as to the appropriate level of rates. While firms may propose particular rate levels, the ultimate decision on final rates (which may increase or decrease) lies with the regulatory agency, which creates uncertainty for the initiating firm. Knowledge of the political and regulatory environment gained through experiential and vicarious learning is thus likely to be influential in the firm's decision to engage in a rate review, making this an appropriate setting for our empirical investigation.

LEARNING IN POLITICAL ENVIRONMENTS

Learning can be defined as the process of exercising a judgment, based on an experience or the observation of others' experiences. Experience leads an individual or an organization to select a different view of the causal relationships that determine how events happen ('learning that') and of what should be done ('learning how'), than what would have otherwise been selected (Dosi et al., 2008). This knowledge may then be translated into formal or informal organizational routines and structures. Organizations cope with individuals' rational limitations by building structures that guide behaviors (Simon, 1961; Cyert and March, 1992). Crossan, Lane and White (1999) detail how the learning process begins with new insights or ideas identified by individuals within an organization, how this knowledge is shared, given inter-subjective meaning, adopted for action and finally embodied in the creation of an organizational routine.

Why learning should play an important role in political environments

Dosi and Marengo (2007) argue that "learning may occur in circumstances whereby agents have an imperfect understanding of the world in which they operate due to (a) a lack of information, (b) an imprecise knowledge of its structure, (c) mastery of only a limited repertoire of actions in order to cope with whatever problem they face." All these problems exist in political environments. Participation in political processes is plagued with uncertainties and transaction costs (Dixit, 1998; North, 1990). For example, the

policy preferences of politicians (Mayhew 1974; Keim & Zeithmal 1986), the nature of interest group competition (Wilson 1980), and the efficacy of political tactics (Bonardi, Holburn & Vanden Bergh 2006) are each subject to uncertainty. Thus one would expect firms to value political knowledge and to seek means to develop or acquire it (Henisz and Delios, 2002).

Research on organizational learning in political environments is limited to a handful of articles. Oliver & Holzinger (2008) suggest that firms can learn political knowledge and develop dynamic capabilities to strategically manage their political and regulatory environment. Examples of this can be found in historical and longitudinal case studies of corporate lobbying. Suarez (1998), for instance, showed that pharmaceutical and electronic U.S. companies lobbying on a similar issue over the 1976-1993 period consistently behaved in reference to what they had learnt in the previous period. Martin (1995), studying health care debates in the 1990s found similar patterns, stressing the role of regional and national associations as a repository of what firms had learnt in political arenas through their past experiences. Vogel (1983), in his study of the politicization of the corporate environment, also suggests that firms learn from the opponents that frequently defeat them in political arenas, such as environmental and consumer groups.

Beyond experiential learning, a related stream of research examines how firms can benefit from political knowledge acquired through political connections (Hillman, 2005). Firms that establish close ties with elected politicians - through appointing politically connected board members or senior management - tend to benefit from higher stock prices (Hillman et al., 1999), easier access to capital, lower tax rates, larger market shares (Faccio, 2007), broader diversification opportunities (Mahmood and Mitchell, 2004) and even improved chances of securing government bailout (Faccio, Masulis & McConnell, 2006).

Missing in all this literature, however, is a theory that explains what types of political knowledge are valuable and how different types can be learnt or otherwise acquired.

Types of political knowledge

Following the retail example outlined in the Introduction, we argue that firms' political knowledge can be considered along two dimensions: institution-specificity and firm-specificity. At the theoretical level, the framework we develop below is based on two sets of insights. First, it is based on the literature on knowledge, which suggests that some knowledge can be generalizable to many circumstances, but also that much of the knowledge that is critical for individuals and organizations to make decisions has a very local component, i.e., is conditional to very specific conditions regarding time and space (Hayek, 1945) . In the case of political environments, these specific conditions are likely to be related to the type of institutional system an invidual or a firm will operate in. Institutions differ greatly not only in terms of formal rules, but even more regarding informal rules, such as norms and non-written practices, that take time to learn (North, 1994). These considerations will drive the first important dimension of our framework: the degree of institution-specificity of political knowledge.

Second, our framework also finds its roots in the literature on political markets, which argues that public policy-making can be modeled as the outcome of interactions between demanders (firms, interest groups, activists, etc.) and suppliers (politicians, bureaucrats, regulators, etc.) (Stigler, 1971). From this perspective, firms that develop corporate political strategies have to provide assets (which can be campaign contributions, but which can also be many other types of assets such as specific technologies or workers localized in a geographical area) of value to policy-makers (Bonardi et al., 2005; Hillman and Hitt, 1999). The knowledge that is necessary to be effective in this setting is not only

local knowledge about how to get access to the politicians and regulators involved, but also knowledge about the real value of the specific assets the firm can provide to these policy-makers (Bonardi, 2008). This value depends on many aspects that a firm might not know ex ante –going from what types of economic assets a firm has that can generate political value to the idiosyncratic preferences of the policy-makers for these assets. Knowledge about the political value of a firm's specific set of economic assets therefore has to be discovered and learnt. This will be the basis for the second key dimension in our framework: the degree of firm-specificity of political knowledge.

The degree of institution-specificity of political knowledge. Political knowledge can be either more generic or, conversely, more tailored to a specific institutional environment. Knowledge of the principles about how to organize a grass-roots campaign or how to cultivate interest group coalitions, for instance, is common from one jurisdiction to another. Existing theoretical and empirical literature supports this idea. Holburn & Zelner (2010) argue that firms develop generalizable political knowledge when they deal with their home governments and institutional environments, which can be redeployed in other institutional areas. This implies that part of the political knowledge that firms possess is of a generic nature and can be leveraged in multiple jurisdictions.

On the other hand, part of what firms learn in a political environment is naturally institution-specific. Baron (2001), for instance, details the different information structures that determine the nature of the policy-making game in various institutional settings. The legislative process, for instance, operates quite differently in presidential and parliamentary countries. Understanding how to navigate policy-making in a jurisdiction additionally requires an appreciation of the policy preferences of different parties, including those in formal positions of authority as well as stakeholders, organized interest

groups and other constituents who may be affected by policy outcomes. Firms may find well-organized hostile opponents to their preferred policies in some environments, or more supportive actors in others, both of which can change due to political elections or demographic trends (Keim and Zeithaml, 1986). Gathering information on policy positions and patterns of alliances or coalitions between parties enables firms to determine whether opportunities exist to initiate or lobby for favorable policy changes and the optimal method for affecting change. Similarly, the social capital literature (Adler and Kwon,2002; Mizruchi, 1992) suggests that a firm's political relationships may lead to advantages in the political process.

The degree of firm-specificity of political knowledge. By firm-specific, we mean knowledge of the political value attributed to the firm's business assets, operating practices and strategy. While firms create value for consumers in the market place, they also create benefits, and potentially costs too, for politicians in their jurisdiction, for example through the creation of local jobs, the augmentation of labor force skills and enhanced taxation revenues, each of which can affect politicians' future electoral prospects. Wal-Mart and Target likely have a deep understanding of the firm-specific political impact of locating a store in a new neighborhood and of how to adjust their market-based strategies to achieve political objectives. The literature on the integration of market and nonmarket strategy stresses that what distinguishes a firm from other competitors in the market place is a critical aspect of the design and success of a successful and meaningful political action (Baron, 1995). In that spirit, Bonardi (2008) underlines the importance of leveraging firms' specific technologies and assets as a way to influence public policies. Judging political value, however, can be a difficult exercise, particularly for firms that are inexperienced in a jurisdiction as the following quote illustrates:
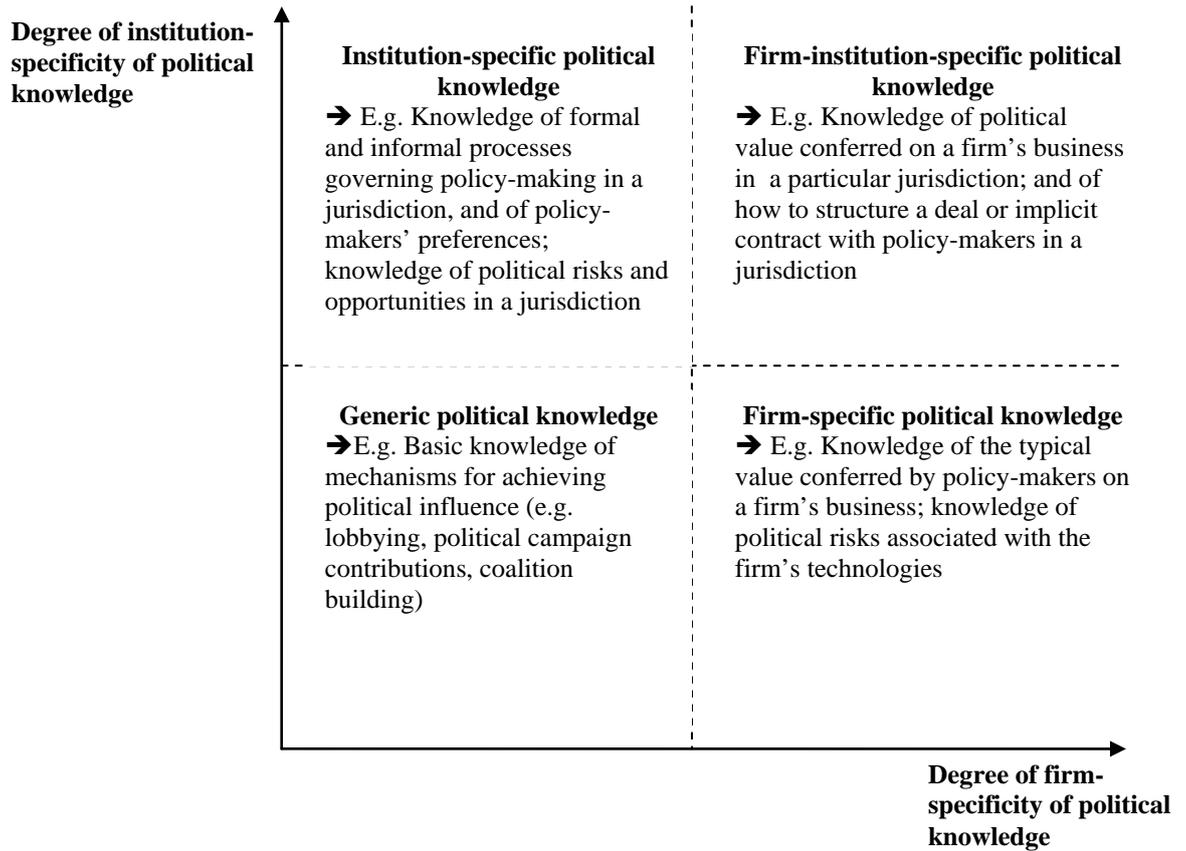
"BHP Billiton Ltd. said it was withdrawing its hostile $38.6-billion offer for Potash Corp., but company officials took the unusual step of outlining why they felt Ottawa's decision was wrong. The Australian company laid out what it called "unparalleled" promises it made on jobs and investment, including commitments to spend $370-million on infrastructure in two provinces, to give five-year employment guarantees at Potash Corp.'s Canadian mines and to move 200 jobs from outside the country to Saskatchewan and Vancouver."

Globe and Mail, November 14, 2010

Four types of political knowledge. Considering these two dimensions simultaneously –each type being a continuum rather than discrete– we obtain four types of a firm's political knowledge, as represented in Figure 1. First, with a low degree of institutional and firm-specificity, is *Generic political knowledge*, such as a framework for assessing generic political risks and opportunities; this may be applied in any jurisdiction and may be acquired in the market from lobbyists or government relations experts. Second, *Institution-specific political knowledge* consists of a high degree of institution-specific knowledge, such as the knowledge of elected politicians' policy preferences on a given topic, or the rules and procedures governing agency decision-making. Third, *Firm-specific political knowledge* reflects an understanding of the political value of the firms' assets or operating practices in a typical environment, for instance the value attributed to local sourcing practices or to paying above minimum-level wages for employees. Fourth, *Firm-institution-specific political knowledge* consists of the knowledge of such firm activities in a particular jurisdiction and reflects the idiosyncratic preferences of local politicians, regulators and stakeholders. .

Insert Figure 1 about here

Figure 1: Types of political knowledge

Degree of institution-specificity of political knowledge

Institution-specific political knowledge
➔ E.g. Knowledge of formal and informal processes governing policy-making in a jurisdiction, and of policy-makers' preferences; knowledge of political risks and opportunities in a jurisdiction

Firm-institution-specific political knowledge
➔ E.g. Knowledge of political value conferred on a firm's business in a particular jurisdiction; and of how to structure a deal or implicit contract with policy-makers in a jurisdiction

Generic political knowledge
➔E.g. Basic knowledge of mechanisms for achieving political influence (e.g. lobbying, political campaign contributions, coalition building)

Firm-specific political knowledge
➔ E.g. Knowledge of the typical value conferred by policy-makers on a firm's business; knowledge of political risks associated with the firm's technologies

Degree of firm-specificity of political knowledge

Note that our argument here is that possessing each of these four types of knowledge is necessary for firms as they develop their political strategy. In the next section we explore and develop testable hypotheses about how these four kinds of political knowledge can be learnt.

LEARNING IN POLITICAL ENVIRONMENTS: HYPOTHESES

Firms may acquire limited political knowledge in the market place, for instance by hiring lobbyists or consultants who have political ties or knowledge of the intricacies of policy-making in a jurisdiction (Kersh, 1986). However, there are limits to using contracts as a method for obtaining such expertise (de Figueiredo and Kim, 2003; de Figueiredo and Tiller, 2001). The challenge for external consultants in brokering 'trades' or agreements with political actors is that effectively doing so requires deep knowledge of the firm's

market-based assets, resources, capabilities and strategy. For instance, while a lobbyist may understand the political value that a legislator places on the construction of a corporate headquarters or new manufacturing facility in the legislator's jurisdiction, he or she is less likely to appreciate the organizational implications or additional cost to the firm of locating there rather than in the optimal location from a market-based calculation. Similarly, accurately valuing potential public policy alternatives depends on the lobbyist understanding the full cost and revenue implications for the firm as well as for its competitive position relative to other firms. Such information asymmetries between a lobbyist and the firm regarding the firm's market based assets and strategy make it difficult for an external lobbyist to identify mutually-beneficial trades with politicians. Contracting for lobbying services thus becomes a challenge when performance may not be easily measured ex post or specified ex ante.

The starting point of our theoretical development then is that organizational learning is a central mechanism for acquiring political knowledge, and that firms can learn either experientially- through learning-by-doing - or vicariously (Levitt and March, 1988). Vicarious learning, which implies that firms learn from the experience of others, has received much attention from organizational theorists and economists in the study of knowledge spillovers (Thornton & Thompson, 2001). Organization theorists contend that firms learn vicariously, imitating or avoiding actions of other firms (Levitt and March, 1988, Huber, 1991, March, 1991; Kim and Miner, 2007). There is robust evidence of such vicarious learning, especially under conditions of uncertainty, across several contexts including acquisitions (Haunschild, 1993; Haunschild and Miner, 1997; Beckman and Haunschild, 2002), market entry (Haveman, 1993; Greve, 1996, 1998; Greve and Taylor, 2000; McKendrick, 2001), chain units' location choices (Baum et al. 2000), entrepreneurial decisions (Lant and Mezias, 1990), and airline performance

(Haunschild and Sullivan, 2002). When facing high uncertainty, firms are more likely to learn from the actions of other firms (e.g., Mezias and Lant, 1994; Haunschild and Miner, 1997; Mezias and Eisner, 1997). For this reason, we expect vicarious learning to play an important role in political environments. Below, we explore how different learning mechanisms can lead to the development of the four types of organizational political knowledge identified earlier.

Learning generic political knowledge

Generic political knowledge is mostly explicit and publicly observable. Because of this, firms are able to learn this type of political knowledge vicariously. As firms observe others engaging in political and regulatory arenas, they are likely to learn about the political intricacy and difficulty of operating in political environments. As suggested by Kim and Miner (2007), firms learn much by observing others struggle, make mistakes and fail. Firms that have developed organizational structures to observe and store these generic characteristics of political knowledge are thus more likely than others to engage in political activities themselves, everything else being equal.

Vicarious learning of generic political knowledge occurs across jurisdictional boundaries – that is, in a firm's local jurisdiction as well as in other regions where it does not conduct business but where peers or competitors are present. By observing how firms manage their political environments elsewhere, a firm can develop rudimentary knowledge of the basics of political strategy. Hence:

H1: Firms are more likely to participate in policy-making processes the more that firms in other jurisdictions have participated in policy-making processes in the past.

Learning institution-specific political knowledge

Vicarious learning in a firm's local jurisdiction enables it to develop institution-specific political knowledge in addition to generic political knowledge. Interactions between other firms and policy-makers in a jurisdiction reveal cues or signals about different aspects of the policy environment: for instance, the willingness of elected politicians to sponsor or resist reform proposals; policy positions of elected and appointed officials on contentious issues; and the degree of organization of supportive or hostile stakeholders. While some aspects of the policy environment may be difficult to observe, others are revealed during periods of engagement between firms and governments. Firms may initiate policy reviews through administrative filings or else trigger public discourse on policy issues in the media and government arenas. Participation by firms, interest group and policy-makers in regulatory or judicial hearings is another source of information pertinent to a jurisdiction. Policy-making processes thus reveal information to firms that provides benefit in terms of configuring political strategies and reducing uncertainties about possible policy outcomes. Hence:

H2: Firms are more likely to participate in policy-making processes the more that other firms in the same jurisdiction have participated in policy-making processes in the past.

Learning firm-specific political knowledge

Many aspects of what firms can leverage in their negotiations with policy-makers relate to the political value of the firm's assets and practices. As a further example, a firm's decision to off-shore specific operations may create economic value for the firm but result in negative political value due to local job losses. The firm's managers responsible for off-shoring may not understand how much political value this might have and for whom. As this example makes clear, some of the unknown and unobservable component of political knowledge is in fact related to firm-specific factors that the firm

has developed for other purposes, but which it might also be able to leverage in other contexts. Because of this, this type of knowledge cannot easily be learnt vicariously. Instead, firms learn through their own experience which of the firm's assets and technologies (or other characteristics) are valuable in the context of a political negotiation.

H3: Firms are more likely to participate in policy-making processes the more they have participated in the past.

Absorptive capacity and learning institution-specific knowledge

In developing the notion of absorptive capacity, Cohen and Levinthal (1990) propose that "*the ability of a firm to recognize the value of new external information, assimilate it and apply it (…) is critical to innovative capabilities*." In our context, we argue that firms become more adept at evaluating the experience of other firms' engagement in the political environment if they themselves have greater levels of prior experience. In other words, in the spirit of our theoretical framework, we suggest that firms are better able to learn new generic and institution-specific political knowledge vicariously when they have a better understanding of the political value of their economic assets, which can be learnt experientially.

As argued in the evolutionary economics literature (Nelson and Winter, 1982), new knowledge often stems from the frequent combination and recombination of the firm's existing stock of knowledge about itself (what the firms knows about its technologies, for instance) and of new information identified (or searched for) in the firm's external environment (Teece, Pisano and Shuen, 1997). In a similar manner, in political environments firms are therefore more likely to develop and learn new knowledge by scanning their external environment (i.e., attempting to learn vicariously) when they already have a better command of the value of their own political stock. With a deeper

knowledge of 'what they have and of how it is valued in political markets', firms are better able to interpret cues and signals in the presence of uncertainty about political actors' intentions, preferences and potential future actions in a particular jurisdiction. Hence:

> *H4: The more a firm has participated in policy-making processes in the past, the more positive is the impact of other firms' participation on the likelihood of a firm participating in policy-making processes.*

EMPIRICAL ANALYSIS

To test our hypotheses we examine participation in regulatory proceedings by the population of firms in the U.S. electric utility sector. Utility costs and profit levels, and the rates they charge to consumers, are regulated under a financial rate-of-return regime by state agencies, Public Utility Commissions, hereafter "PUCs". Utilities are able to file for formal "rate reviews", the administrative process for determining appropriate rates of return, operating and capital costs, and hence rates, whenever they wish. Upon initiation of a rate review, a series of public hearings is held where the utility and competing interest groups present arguments and information supporting their positions about justifiable costs, rates-of-return and rate levels. At the end of this process, which can last up to a year, PUC commissioners make a majority decision that is then implemented, subject to appeal to state courts.[1] Since PUCs have considerable discretion in setting rates there is uncertainty for utilities at the outset of a rate review, making initiation potentially a risky

---

[1] The rate review process is characterized by an intense informational exchange between policy-makers, the utility and other interest groups (Hyman, 2000). Since the provision of information regarding policy consequences and alternatives is a central characteristic of nonmarket strategy (Hillman and Hitt, 1999), the utility's initiation of a rate review is a clear indication of the implementation of such a strategy. At the same time, utilities are likely to engage in other nonmarket activities that complement their regulatory filing with the agency, such as gaining the support of the state governor and legislature (through lobbying, grassroots mobilization, coalition building and financial campaign contributions). Data on state-level electoral campaign contributions from www.followthemoney.org demonstrates that electric utilities are important donors in political campaigns.

move. In this context, we expect that firms with better knowledge of their regulatory and political environment will be better positioned to manage the process of a rate review – to anticipate regulator and interest group reactions to their requests for rate increases, to propose workable compromises, and to identify and mitigate areas of opposition.[2]

Sample

We obtained information on the timing of rate reviews initiated by the population of 190 investor-owned electric utilities during the period 1982 to 1992.[3] This creates a potential sample of 2090 utility-year observations. After eliminating observations due to missing data, we are left with 1712 utility-year observations. The sample includes 595 rate reviews initiated by utilities.

Data and Measures

Table 1 provides descriptive statistics on all the variables used in the models. We discuss each of these variables below.

Insert Table 1 here

Dependent variable

For our dependent variable we observe whether a utility firm, in a given year, decides to initiate a rate review. If the firm initiates a rate review our dependent variable, *Firm initiated rate review*, takes a value of 1. If not, it takes a value of 0. The rate review data, both initiation and allowed rates, come from a private consulting firm, Regulatory Research Associates, that tracks rate review activity across all the states. We cross-

---

[2]We adopt a similar approach of other nonmarket strategy studies. For example Lenway and Rehbein (1991) consider the decision by firms to file with the U.S. International Trade Commission in order to obtain trade protection (see also Schuler, 1996).

[3] These utilities represent those operating in all U.S. states except Alaska and Nebraska. We concentrate on the 1978-1992 period since rate reviews then were initiated by utilities in response to rising costs. After 1992, as costs began to decline, PUCs began to initiate rate reviews with the aim of reducing utility rates. Since our objective is to examine utility strategy, we thus focus on the 1978-1992 period.

checked for accuracy a sample of rate review results with data available in annual volumes of the *National Association of Regulatory Utility Commissions* (NARUC). This same data is used to construct many of the measures discussed below.

Independent variables

Experiential learning: To capture a firm's experience in dealing with policy-makers, we created *Experiential learning* which is equal to the total number of rate reviews a firm has experienced at a given time. We computed this variable for firms starting from 1970, whereas our observations regarding firms initiating rate reviews begin in 1982. Therefore, even for utilities initiating in 1982, we have more than a decade of experience, mitigating potential problems relating to sample truncation. On average a firm had just over 6 rate review experiences during the 1982-1992 time period.

*Vicarious learning***:** To measure how firms develop institution-specific knowledge we created a variable, *Vicarious learning (state)*, that measures the experience of other firms operating in the same institutional environment as the focal firm. We created a second variable, *Vicarious learning (region)*, to identify how firms develop generic political knowledge. This variable measures the performance of other firms' rate review experiences outside of the focal firm's state but within the same geographic region over the previous two year period.[4]Observation of industry peers in other states enables the firm to developgeneric knowledge that is not specific to the firm's key institutional area (i.e. its state) butwhich might nonetheless be relevant in any jurisdiction.

In constructing both of the vicarious learning variables we control for the regulatory performance of the firms. Recent research in vicarious learning (Kim and Miner, 2007) suggests that firms tend to learn more from the extreme performance of their peers than from average performance. So for each year *p* we calculate the average rate-of-return

---

[4]We follow the Inter-University Consortium for Political and Social Research (ICPSR) regional categories.

(MROR$_p$) allowed by all regulators across the entire country. Given this baseline

performance, we compute the absolute value of the difference between firm i's allowed

ROR received during year p (ROR$_{i,p}$) and MROR$_p$. For firms that did not have a rate

review during the year, we assume a value of 0. That is, the focal firm learns nothing from

other firms that did not experience a rate review. Once we construct a firm's performance

for each year, we calculate the two learning variables:

Vicarious learning (state) for focal firm j in year t $= \dfrac{\sum_{i,p} \left| ROR_{i,p} - MROR_p \right|}{}$.

Vicarious learning (region) for focal firm j in year t $= \dfrac{\sum_{k,p} \left| ROR_{k,p} - MROR_p \right|}{}$.

For *Vicarious learning (state)* we sum over all firms i≠j within the same state and for

time period $p \in \{t\text{-}1, t\text{-}2\}$.[5] For *Vicarious learning (region)* we sum over all k firms

outside firm j's state but within the same region and for time period $p \in \{t\text{-}1, t\text{-}2\}$. We thus

assume the focal firm learns more from other firms that have achieved extreme values of

allowed ROR relative to the mean.

Last, these vicarious learning dimensions also need to be distinguished from pure

imitation or opportunistic effects in which firms act simply by emulating the actions of

others (DiMaggio& Powell, 1983). In the case of electric utilities, other firms' rate reviews

may reveal that the regulatory agency is ready to change a firm's allowed ROR. We

attempt to differentiate vicarious learning from emulation by including *Otherfirms

initiating*, which is a dummy variable that is equal to one if other utilities in the state

initiated rate reviews with the PUC in the previous year and zero otherwise.

***Absorptive capacity*:** We construct two measures of a firm's capability to incorporate

learning from other firms and to utilize this knowledge to implement its own political

strategy. *Absorptive capacity (state)* is equal to the product of *Experiential Learning* and

---

[5] We also used performance measured over the previous three and four years. Results were qualitatively similar.

Vicarious learning (state). *Absorptive capacity (region)* is equal to the product of *Experientiallearning* and *Vicarious learning (region).* We hypothesize that the focal firm's own cumulative experience (experiential learning) is moderated positively by learning from other firms experiences.

Control variables

A potential challenge in interpreting the *Experiential learning* variable is that it may reflectthe effects of high performing focal firms. That is, more successful firms may wish to engage with regulatory agencies more often, anticipating more favorable outcomes. Thus, we construct the variable *Recent performance* to measure the performance of the focal firm by calculating the difference between its ROR and the MROR during the period. For the current year t, the focal firm's *Recent performance* is measured over the preceding two years (i.e. $p \in \{t\text{-}1, t\text{-}2\}$) as follows:

Recent performance for focal firm i in year t $= \Sigma_{i,p} (\text{ROR}_{i,p} - \text{MROR}_p)$

We use several variables to characterize the potential opposition that utility firms could face during the regulatory process. *Consumer Advocate* is a measure of the degree of consumer organization in a state. In the U.S. utilities sector 30 states have created consumer advocacy offices charged with the express purpose of representing residential utility consumer interests before state regulatory agencies and courts (Holburn and Vanden Bergh, 2006). Consumer advocates, with public funding and statutory power to participate in rate review procedures, can provide strong opposition to utility requests for rate increases (Fremeth, Holburn and Spiller, 2011). The variable *Consumer Advocate* equals one if a consumer advocacy office existed in a given state in a particular year and zero otherwise. In approximately 60% of state-years in our sample the utility faces opposition from a formal consumer advocate. We use the *Activists* variable to capture the influence of activist organizations in the state. The Sierra Club is the largest environmental NGO in the

U.S. Such groups have historically been particularly active against utilities regarding the siting of new power generation plants and the environmental impacts of existing facilities. To normalize membership levels across the states, we calculate *Activists* as the total number of Sierra Club members divided by the state population (in thousands). Annual information on state membership was provided directly to us by the Sierra Club.

Regulatory environment: We construct a measure of PUC commissioner experience since regulatory experience may partially substitute for financial resources: *PUC Tenure* is equal to the sum of each commissioner's tenure in years divided by the total number of commissioners on the PUC. We expect that more experienced commissioners will have better information and insights regarding utility rate review requests, making them less likely to grant rate increases (Fremeth and Holburn, forthcoming). We also add two measures to capture the relative influence of the regulatory authority over the policy-making process in the state. To compare across regulatory environments we construct *PUC Budget* as the annual budget for the state PUC divided by the state population. Additionally, we capture how PUC resources vary relative to our focal firm using the variable *Utility Revenue/PUC Budget*. Our assumption is that firms with greater relative resources have an informational advantage and are thus more likely to initiate a rate review.[6]

We include an additional institutional variable that may influence the weight that PUCs put on utility versus consumer interests in their ROR decisions. *Elected PUC* is a dummy variable equal to one in states where PUC commissioners are elected and zero otherwise. PUC commissioners are elected by the voting population in 10 states and are appointed by the governor in other states. Prior research suggests that elected PUCs place

---

[6]Information on PUC budgets and commissioner tenure came from annual reports of the National Association of Regulatory Utility Commissioners, *The Book of the States* and the web sites of individual PUCs. Utility revenue data comes from utility filings available through the Energy Information Administration.

greater weight on consumer welfare (Besley and Coate, 2003). Details on commissioner selection were obtained from the *Book of the States*.

We also control for a number of exogenous factors that may affect a utility's decision to initiate a rate review. Interest rates on Treasury securities enter into a PUC's decision on the allowed ROR since these are a benchmark to help measure the cost of capital. *Interest rate change*, measured in percentage points, is the difference between the interest rate on ten year Treasury bills at a given time minus the interest rate at the time of the last rate review. *Change fuel cost* is the percentage change in a utility's average fuel costs (on a per Btu basis) since the last rate review, and is driven mainly by external market forces. Increases in the cost of utilities' fuel purchases form external sources, as occurred during the early 1980s, directly reduce utility profits, thereby increasing the probability that utilities will initiate rate reviews. We also control for the absolute level of fuel costs - since absolute costs are inversely related to profits we expect a positive relationship between absolute costs and the probability that utilities initiate. We measure a*verage fuel cost* as the average price of fuel per Btu purchased by the electric utilities operating within a state. Fuel cost data is published by the *Energy Information Administration*. To control for varying economic conditions across the states, we include a measure of the *Change per capita income* (lagged one year) which is equal to the annual percentage change in per capita income in the state; voter pressure on utility rates may be inversely correlated with recent economic growth trends. We gathered this data from the *Bureau of Economic Analysis*.

Finally, we measure the *Market Share* for a utility as the total megawatt hours (MWh) of electricity provided by the utility divided by the total MWh provided by all utilities in the state. If a utility is a dominant player within a PUC's jurisdiction, then that utility's information is likely to be more valuable to the PUC relative to smaller utilities.

Market share thus measures the influence of the utility relative to other utilities. The *Energy Information Administration* and the *Federal Energy Regulatory Commission* provide data on utility characteristics such as total megawatt generation.

Methodology

To test our hypotheses about how own and others' experiences affect a firm's participation in the policy making process, i.e., to initiate a rate review, we use a probit model of the form:

$$\Delta\pi = X_1\beta_1 + \varepsilon_1 \tag{1}$$

$$INITIATE = 1 \text{ if } \Delta\pi > 0; = 0 \text{ otherwise} \tag{2}$$

In equation (1), $\Delta\pi$ represents the expected change in firm profits that would occur if a rate review was implemented. The firm's decision rule, as specified in equation (2), is to initiate rate reviews only when the firm expects a positive change in profits, where $\Delta\pi$ is a latent variable. X_1 is a vector of variables including learning dimensions and also controls for political, institutional, and socio-economic factors that capture expectations that the PUC will approve an increase in the firm's profits. Our fully specified probit model for firm i at time t is represented by:

P (Initiate$_{it}$|$\boldsymbol{X_{it}}$) =
Φ (α + β_1*Experiential learning + β_2*Vicarious learning state
+ β_3*Vicarious learning region + β_4*Absorptive capacity + $\boldsymbol{\beta'x_{it}}$)   (3)

Where Φ is the cumulative distribution function of the normal distribution and $\boldsymbol{\beta'x_{it}}$ represents the vector of control variables included in the model.

RESULTS

Table 2 shows the results of six probit models. Each of the odd numbered models includes firm fixed effects while each of the even numbered models excludes them. Models (1) and (2) include all the control variables as well as the three learning variables

as main effects, *Experiential learning, Vicarious learning (state)* and *Vicarious learning (region)*. Models (3) and (4) include the interaction term *Absorptive capacity (state)*,and models (5) and (6) include the interaction term *Absorptive capacity (region)*. While our results are fairly robust across all six models (except where we explicitly note below), for purposes of discussion we focus on the results that include firm fixed effects, that is models 1, 3 and 5 in Table 2.

Insert Table 2 about here

To assess the magnitudes of estimated coefficient effects we construct Table 3awhich presents marginal effects for the learning variables (based on Model 1 of Table 2). Since marginal estimates and levels of statistical significance depend on the precise value of the variable in nonlinear models, we present three different scenarios that cover relevant values of the variables. In the Mean scenario, we compute the marginal effects at the mean of each continuous independent variable and at 0 for each binary variable. In the Low and High scenarios we subtract or add, respectively, one standard deviation from the mean for the three continuous learning variables and compute the marginal effects at those values. In each scenario we compute the marginal effect for *Other firms initiating* for a change from 0 to 1. The results, as we describe below, are largely supportive of the first three hypotheses.

Insert Table 3a about here

24

With small changes in *Vicarious learning (region)* the probability of initiating a rate review increases by about 0.2% in the Low scenario but closer to 1% in the Mean and High scenarios. In each scenario the marginal effect is statistically significant at conventional levels. While the magnitude of the effect is relatively small, the qualitative result is supportive of Hypothesis 1: a firm's propensity to engage in the political process is positively related to it acquiring generic institutional knowledge, as gauged by the level of prior rate review experience of peer firms in other jurisdictions. By contrast, small changes in *Vicarious learning (state)* do not have a statistically significant marginal effect on the probability of a firm initiating a rate review. This suggests that firms are less able to gain added insight from other firms engaging in the same political environment due, in part, to the hidden aspects of institution-specific knowledge. While this result is not consistent with Hypothesis 2, the estimated coefficient on *Vicarious learning (state)* is positive and statistically significant in the model with no firm fixed effects (Model 2). Statistical support for Hypothesis 2 is thus not robust.

The results are strongly supportive of Hypothesis 3. In each model and for each scenario the firm's own *Experiential learning* has a positive and statistically significant marginal effect on the probability of initiating a rate review, even while controlling for the initiation decisions of other firms. The magnitude of the marginal effect of *Experiential learning* increases to over 10% in the Mean scenario. That the marginal effect is increasing over low to median levels of experience, and then begins to flatten out, is suggestive of increasing returns at first and constant returns beyond a certain level. Furthermore, these results, viewed in concert with results on the other learning variables, suggest an important interaction effect with vicarious learning. That is, as we move from Low to High levels of experiential learning, the marginal effects become both larger and statistically significant.

We analyze the interaction effects in greater detail below. Beforehand we briefly discuss the results on the control variables.

Table 3b presents estimated marginal effects for the control variables; most have robust coefficient magnitudes and levels of statistical significance across the three models that include firm fixed effects. The mean of *Recent performance* for a utility in our sample is an aggregate 0.5% increase in the allowed rate of return over the previous two year period. The marginal effect of *Recent performance*, while significant at only the 10% level, reduces the probability of the utility engaging in a rate review by somewhat more than 3%.

Insert Table 3b about here

Variables capturing changes in economic conditions are signed as expected. While a *Change in per capita income* appears to increase the probability of initiating a rate review by nearly 80%, the effect is not statistically significant at conventional levels (only at the 15% level). Both *Average fuel costs* and *Change in fuel costs* are positive and statistically significant at the 5% level. A slight increase in *Average fuel costs* for firms operating within the focal firm's state increases the probability of initiating by about 12.5%.   If a marginal *Change in fuel costs* is experienced by the focal firm then the probability of engaging with the regulator increases by less than 1%. These results taken together suggest that the utility expects the regulator to view fuel cost changes as legitimate claims only when these changes are experienced by each of the firms operating in the state but less legitimate if just the focal firm experiences cost increases.

Consistent with the recent 'political markets' literature increases in demand for regulatory policy from opposing interest groups are associated with a reduction in the probability that firms will engage with the regulator (see for example, Bonardi, Hillman &

Keim 2005; Bonardi, Holburn &Vanden Bergh 2006): a marginal increase in the value of *Activists* decreases the probability of a rate review by approximately 21%. With the presence of a *Consumer Advocate*, the probability of initiating a rate review declines by approximately 30%. Both of these demand-side marginal effects are statistically significant at the 1% level, suggesting that lower levels of interest group opposition motivate firms to engage more in political action.

We also find that the variables measuring the attractiveness of the 'supply side' of a political market (i.e. the regulatory environment) are statistically significant and signed as expected. At the margin, as *PUC budget* increases and as *PUC Tenure* increase –which reflect greater resourcesor capability for the regulator to contest firm rate increase requests – the probability of a firm initiating a rate review declines by approximately 10% and 3% respectively. When firms face an *Elected PUC*, the probability of a firm initiating decreases by about 30%. Taken together, these results support extant literature that suggests as the regulatory environment improves from the firm's perspective, firms are more likely to engage in political action (e.g., Bonardi, Holburn and Vanden Bergh, 2006).

Results of interaction effects of learning variables:

In order to test Hypothesis 4 we assess the coefficients on the interaction terms, *Experiential Learning* x *Vicarious Learning* (*region* and *state*). Ai & Norton (2003) and Brambor *et al* (2006) show that the interpretation of reported coefficients from nonlinear models that include interaction terms is not straightforward. As with any coefficient in a nonlinear model, the marginal effect is conditional upon the values of the other covariates in the model. In addition, for variables included in a multiplicative interaction, e.g., *Experiential learning* x *Vicarious learning (state)* here, one must analyze the interaction effect and the standard error of the interaction effect for different relevant values of the covariates. As Zelner (2009: 1337) states,

> "the sign of the interaction term coefficient need not correspond with the direction of the (hypothesized) conditional effect motivating the interaction terms, and the standard error of this coefficient conveys no direct information about the statistical significance of the effect…"

We follow insights from Zelner (2009) and King *et al* (2000) to interpret the results presented in models 3 and 5 in Table 2.[7] The results are strongly supportive of Hypothesis 4 as well as of Hypotheses 1 and 3.

First, consistent with Hypothesis 3, we find support for the expectation that firms' accumulated knowledge, as measured by *Experiential learning*, has a positive and significant impact on the probability of initiating a rate review, regardless of the level of vicarious learning. Utilizing Zelner's simulation algorithm we generate a graphical representation of the probability of initiating a rate review (and its 95% confidence interval) over the range of values of *Experiential learning* conditional upon high and low levels of *Vicarious learning* (Zelner, 2009). Figures 3a and 3b present *Experiential learning* conditional upon high and low levels of *Vicarious learning (state)* and *Vicarious learning (region)* respectively. The shaded region around the predicted probability curve represents the 95% confidence interval. We find that, except at very low levels of *Experiential learning*, the predicted probability is significantly different from zero throughout the range of values. After controlling for other sources of learning we interpret this positive impact of experiential learning as evidence supporting the view that firm-

---

[7]For our model we calculate the change in predicted probability of initiating a rate review for values of both *Experiential learning, Vicarious learning state (region),* and *Absorptive capacity state (region)*. We follow Zelner (2009) and King et al's (2000) simulation technique to estimate the statistical significance of the change in the probability. From equation (3) above, the change in predicted probability ($\Delta\pi$) is equal to the following:

$$\Delta\pi = \pi(\alpha + \beta_1\text{Experiential learning} + \beta_1\Delta\text{Experiential learning} + \beta_2\text{Vicarious learning state} + \beta_3\text{Vicarious learning region} + \beta_4\text{Absorptive capacity} + \beta_4\Delta\text{Absorptive capacity} + \boldsymbol{\beta'x_{it}}) - \pi(\alpha + \beta_1\text{Experiential learning} + \beta_2\text{Vicarious learning state} + \beta_3\text{Vicarious learning region} + \beta_4\text{Absorptive capacity} + \boldsymbol{\beta'x_{it}})$$

for a change in *Experiential learning* (Δ*Experiential Learning*) and where Δ*Absorptive capacity* is represented by Δ*Experiential Learning*Vicarious learning*. The $\Delta\pi$ is calculated for two meaningful values of *Vicarious learning*. Note that β_1, β_2, and β_4 are the estimated coefficients on *Experiential learning*, *Vicarious learning State* (*Region*), and *Absorptive capacity State* (*Region*) respectively as shown in equation (3) and as reported in Model 3 (5) in Table 2. It is helpful to note that even if the estimated coefficient on Absorptive capacity is not significantly different from zero (ie.,β_4=0), the change in probability ($\Delta\pi$) may still be different from zero and statistically significant.

specific knowledge is an important subcomponent of overall political knowledge. In other words, experiencing rate reviews increases firm knowledge of the political value of the assets they possess and of how they can leverage their assets in political or regulatory negotiations.

Insert Figures 3a, 3b, 3c and 3d about here

Increasing the value of *Vicarious learning (state)* does not appear to increase the effect that *Experiential learning* has on the probability of initiating a rate review while increasing the value of *Vicarious learning (region)* does appear to increase the effect. We present graphs of the change in probability, and 95% confidence intervals, associated with an increase in *Experiential learning* conditional upon an increase in *Vicarious learning*. From Figure 3c we can see that *Vicarious learning (state)* does not have a statistically significant moderating effect on *Experiential learning* over the entire range of values. By contrast, Figure 3d illustrates that *Vicarious learning (region)* moderates *Experiential learning* and is statistically significant over average to high values of Experiential learning. This provides some additional mild support for Hypothesis 3.

The results presented in Figures 4a through 4d are strongly supportive of Hypothesis 4 which pertains to the impact of a firm's absorptive capacity. Figures 4a and 4b illustrate that for a firm to learn generic political knowledge from the experience of others operating in the same region or state, the focal firm needs a base level of experience to absorb the information. Figure 4a shows that, conditional upon a low level of *Experiential learning*, the probability of initiating a rate review is unaffected by the firm's vicarious learning in the region; however, conditional upon high levels of *Experiential learning*, the probability of initiating increases as the firm's vicarious learning in the region increases. Figure 4b

illustrates that the change in probability from different levels of *Experiential learning* is everywhere increasing (and statistically significant) over the range of *Vicarious learning (region)*. This result is largely supportive of our theory that generic political knowledge is largely publicly observable for firms to learn. An almost identical qualitative story can be told for learning institution-specific political knowledge from *Vicarious learning (state)*. Figures 4c and 4d together show that conditional upon an increase in *Experiential learning*, the effect of *Vicarious learning (state)* is positive and statistically significant on the change in the probability of initiating. Combined, these results provide support for the prediction that a firm's absorptive capacity is important in the decision to engage in the political process. In contrast to generic political knowledge, however, these results suggest that institution-specific knowledge is more hidden: for firms to vicariously learn this type of knowledge a greater base level of experience within the specific jurisdiction is required.

Insert Figures 4a, 4b, 4c and 4d about here

DISCUSSION

This paper is the first attempt to develop a conceptual framework of different types of political knowledge and of how they are developed within organizations, as well as a theory of their impact on organizational decisions to participate in political processes. Whereas most of the existing literature in economics, management and political science focuses on factors related to the industry or firm size in explaining organizations' decisions to invest in political activities, our paper shows the important role of the political knowledge organizations have acquired over time. Our empirical analyses provide statistical support for our predictions that firms learn both experientially and vicariously from participation in political activities, and that the knowledge they learn can be classified

according to its degree of institution-specificity and its degree of firm-specificity. Generic political knowledge, which applies to any institutional environment and can be used by any firm, can be learnt vicariously by observing other firms experiencing political processes. We did not find support, however, for the idea that Institution-specific knowledge can be similarly learnt vicariously. This, of course, might be related to limitations in our data. Another explanation is that Institution-specific knowledge might contain too many hidden elements to be really acquired through observation. Future research is certainly warranted on this dimension.

We do find, however, that separate experiential and vicarious learning mechanisms reinforce each other, both when it comes to learning Generic and Institution-specific political knowledge. As mentioned earlier, this result is consistent with the notion that firms possess differing levels of 'absorptive capacity' for nonmarket as well as for market activities. In particular, having directly experienced political processes in the past with the same regulatory authority leads firms afterwards to learn more by observing others. Our empirical results, on the other hand, suggest that the opposite proposition does not hold: having learnt vicariously more in the past does not lead firms to learn more from their own experience afterwards.

Our interpretation of these interaction results is that there is some critical knowledge that firms need to develop by experience, and which will allow them to absorb a lot more when they scan the institutional environment they are part of. In the context of our framework, this critical knowledge refers to a firm's knowledge of the political value, in a political market, of its own economic assets. Knowing how much a regulatory authority values a firm's economic assets, at a certain period of time, enables a firm to discover many other opportunities for nonmarket activities by combining this knowledge with Institution-specific and Generic political knowledge.

Together, these results have important implications for future research on firms' nonmarket strategies, as discussed below.

Learning and nonmarket capabilities

One of the contributions of our paper is to explain why firms differ in their abilities to manage their political environments and hence in their levels of political engagement (Boddewyn and Brewer, 1994; Dean and Brown, 1994; Oliver and Holzinger, 2008). Unlike research in the competitive strategy field on how and why firms develop or acquire heterogeneous technological and market-based capabilities, relatively few studies have addressed the same regarding nonmarket strategy. Even though our paper does not explicitly articulate a theory of firms' idiosyncratic nonmarket capabilities, we believe that it provides some useful pieces in order to do so. In particular, our results imply that a firm's nonmarket capabilities will be at least composed of the four kinds of knowledge identified earlier, as well as of the firm's economic assets which might command political value.

Replacing this in a political market framework (Bonardi, Holburn and Vanden Bergh, 2006), what creates heterogeneity among firms can be accounted for by a bundle of valuable assets –which can be traded with policy-makers against favorable policies– and the ability to mitigate transaction costs when trading these assets –something that might happen through the firm's Generic and Institution-specific political knowledge. We leave to further research the task of adding other components and developing a full theory of what nonmarket capabilities are and why they matter to explain firms' performance in political environments.

Acquiring nonmarket capabilities

In addition to offering suggestions about what might constitute nonmarket capabilities, our paper also bring some new insights about the question of why some of these capabilities might be developed internally whereas others might be acquired by contracting

for lobbyists or government relations experts (de Figueiredo and Kim, 2003). Our framework suggests, in effect, that Generic and Institution-specific knowledge might be obtained from these external sources. However, the more firm-specific types of political knowledge probably cannot. There are significant transaction costs associated with contracting for firm-institution-specific knowledge, which, as we argue above, is required for effective negotiations with policy-makers. Unlike in competitive goods and services markets where numerous transactions enable firms to readily understand consumers' willingness-to-pay, the infrequency of transactions or negotiations in the political realm creates uncertainty for firms about the political value of their businesses. Political preferences vary from jurisdiction to jurisdiction, and can change over time with the election cycle. Policy-makers may also deliberately obscure their true policy positions from public view due to perceived election ramifications, further complicating the task of organizations when seeking to achieve favorable policy decisions.

Contracting for political services under such conditions of uncertainty and asymmetric information becomes challenging. Instead, we argue here that firms' direct experiences in political processes and bargaining can uncover hidden information about the value that politicians and regulators place on the firm's business and assets in their jurisdiction. Direct interaction between firms and policy-makers thus allows for firms to learn firm-institution-specific political knowledge that would otherwise not be obtainable through external lobbyists. In this sense, we point to organizational experience as a major mechanism for the development of idiosyncratic political capabilities (Dean and Brown, 1994; Henisz, 2003).

Relatedly, our analysis sheds light on why empirical studies have found a positive correlation between political connections of firms' senior executives and board members and measures of firm performance such as stock price movements, access to capital and so on (Faccio, 2006; Faccio, Masulis & McConnell, 2006; Hillman, 2005). Connections and

relationships with policy-makers can provide access to a firm, but this is not sufficient for creating value. Instead, we argue that as politically-connect executives develop deep knowledge over time about a firm's operations and business, they become better able to identify the political value of the firm's business and hence to recognize opportunities for mutually beneficial policy 'deals' with government and other stakeholders. Future research could test this thesis by examining how the impact of board level or executive political connections on firm performance evolves with the tenure of such executives.

Our insights about the nature and role of political knowledge, and how firms acquire it, have also broader implications for research on non-market strategy. This stream of research has evolved largely independently from research on market-based competitive strategy despite some calls for a more integrated approach that assesses the linkages between the two fields (Baron, 1995; Bonardi, 2004). One of the challenges in the 'integrated' strategy literature has been to define the conditions under which firms find it profitable to engage in non-market strategy. In this paper we suggest that a starting point is to analyze the political value, which may be positive or negative, of a firm's market-based assets; assuming that the firm can obtain some of the political value in the form of economics rents (e.g. through subsidies or grants), this provides a benchmark for evaluating the financial returns to implementing a non-market strategy.

Political knowledge and International Business

We also believe our paper can provide new avenues for research in international business. One of these avenues relates to the study of how nonmarket capabilities developed in one institutional area can be redeployed to other institutional arenas in the context of foreign markets entry. Henisz (2003) or Holburn and Zelner (2010), in particular, find support for the idea that there are indeed nonmarket capabilities that can be redeployed across international markets. The framework developed in our paper suggests

that these redeployable nonmarket capabilities should be based on Generic political knowledge and on some firm-specific political knowledge. On the other hand, our results would also tend to show that there are also important aspects of firms' nonmarket capabilities that cannot be redeployed with foreign governments, especially Institution-specific and Firm-Institution specific knowledge. Future research should try to identify the full implications of these differences on firms' internationalization decisions.

Limitations

Our paper suffers from several limitations which lead to caution in interpreting our results and conclusions. While we theorize about the impact of different types of political knowledge, we are not able to directly observe such stocks or flows of knowledge within organizations; instead we rely on differential learning mechanisms – namely observable prior experiences of the firm and of peers – to indirectly identify the effect of accumulated knowledge on political strategy. Such an approach creates the possibility that other factors than political knowledge account for the empirical results, for instance imitative behavior, though we attempt to control for such alternative explanations. An avenue for future research is thus to more accurately empirically identify the four types of knowledge.

Another shortcoming is that we have focused our empirical analysis on a single industry where we expect political knowledge to play an important role compared to other industries where government control or regulation is less significant. This may limit the generalizability of our conclusions. Nonetheless, despite these and other limitations, we believe our theoretical and empirical work makes an initial contribution to the understanding of how organizational knowledge about the political environment is acquired and deployed.

References

Adler, P., Kwon, S. 2002, Social capital: prospects for a new concept. *Academy of Management Review*, 27, 1: 17-40.

Ai, C., & Norton, E. C. 2003. Interaction terms in logit and probit models. *Economics Letters*, 80(1): 123-129.

Baron, D. 1995. Integrated Strategy: Market and Nonmarket Components. *California Management Review*, 37: 47-65.

Baron, D. 2001. Theories of Strategic Nonmarket Participation: Majority-Rule and Executive Institutions. *Journal of Economics and Management Strategy.*10, 1: 46-89.

Baron, D. 2005.Competing for the Public Through the News Media. *Journal of Economics and Management Strategy.* 14, 2: 339-376.

Baum, J.A., Xiao Li, S. and Usher, J. 2000.Making the Next Move: How Experiential and Vicarious Learning Shape the Locations of Chains' Acquisitions. *Administrative Science Quarterly*. 45-4:766-801.

Beckman, C., Haunschild, P. 2002. Network learning: the effects of partners' heterogeneity of experience on corporate acquisitions. *Administrative Science Quarterly*.47: 92-124.

Besley, T., & Coate, S. 2003. Elected versus Appointed Regulators: Theory and Evidence. *Journal of the European Economic Association*, 1(5): 1176-1206.

Boddewyn, J., Brewer, T. 1994. International-business Political Behavior: New Theoretical Directions, *Academy of Management Review*, 19, 1: 119-143.

Bonardi, J.P. 2004. Global and Political Strategies in Deregulated Industries: The Asymmetric Behaviors of Former Monopolies. *Strategic Management Journal*, 25: 101-120.

Bonardi, J.P. 2008. The limits to firms' nonmarket activity. *European Management Review*. 5: 165-174.

Bonardi, J.P., Hillman, A., and Keim, G. 2005. The attractiveness of political markets: Implications for firm strategy. *Academy of Management Review*. 30: 397–413.

Bonardi, J.P., Holburn, G. and Vanden Bergh, R. 2006. Nonmarket strategy performance: Evidence from U.S. electric utilities. *Academy of Management Journal.* 49 (6): 1209–1228.

Brambor, T., Clark, W. R., & Golder, M. 2006. Understanding Interaction Models: Improving Empirical Analyses. *Political Analysis*, 14(1): 63-82.

Cohen, W., Levinthal, D. 1990. Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*. 35: 128-152.

Crossan, M., Lane, H., White, R. 1999. An organizational learning framework: from intuition to institution. *Academy of Management Review*. 24, 3: 522-537.

Cyert, R., March, J. 1992. *A behavioral theory of the firm*. Second edition. Oxford: Blackwell.

de Figueiredo, J. M., and Kim, J.J. 2003. When do firms hire lobbyists? The organization of lobbying at the Federal Communications Commission. *Industrial and Corporate Change*. 23, 6: 883-900.

de Figueiredo, J. M., and Tiller, E. H. 2001. The structure and conduct of lobbying: An empirical analysis of corporate lobbying at the federal communications commission. *Journal of Economics and Management Strategy*. 10(1): 91-122.

Dean, T., Brown, R. 1995. Pollution regulation as a barrier to new firm entry: Initial evidence and implications for future research. *Academy of Management Journal*, 38: 288-303.

DiMaggio, P., & Powell, W. 1983. The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields. *American Sociological Review*, 48: 147-160.

Dixit, A. 1998. *The making of economic policy: A transaction cost politics perspective*. Boston: The MIT Press.

Dosi, G., Faillo, M., Marengo, L. 2008.Organizational capabilities, patterns of knowledge accumulation and governance structures in business firms: An introduction. *Organization Studies*. 29, 8-9: 1165-1185.

Dosi, G., Marengo, L. 2007. On the evolutionary and behavioural theories of organizations: A tentative roadmap. *Organization Science*. 18, 3: 491-502.

Faccio, M. 2006. Politically connected firms. *American Economic Review*. 96: 369-386.

Faccio, M. 2007. *The characteristics of politically connected firms*. Working paper, Vanderbilt University.

Faccio, M., Masulis, R., McConnell, J. 2006. Political connections and corporate bailouts. *Journal of Finance*. 61(6): 2597-2635.

Fremeth, A. R., & Holburn, G. L. F. Information Asymmetries and Regulatory Decision Costs: An Analysis of U.S. Electric Utility Rate Changes, 1980-2000. Forthcoming, *Journal of Law, Economics and Organization*

Fremeth, A. R., Holburn, G. L. F., & Spiller, P. T. 2011. Interest Group Representation in Administrative Institutions: The Impact of Consumer Advocates on Regulatory Policy in the United States. *Unpublished Manuscript*.

Grier, K., Munger, M., & Roberts, B. 1994. The determinants of industry political activity, 1978-1986. *American Political Science Review,* 88: 911–926.

Greve, H. R. 1996. Patterns of competition: the diffusion of a market position in radio broadcasting. *Administrative Science Quarterly*. 41: 29-60.

Greve, H. R. 1998. Managerial cognition and the mimetic adoption of market positions: what you see is what you do. *Strategic Management Journal*. 19: 967-988.

Greve, H. R., A. Taylor. 2000. Innovations as catalysts for organizational change: shifts inorganizational cognition and search. *Administrative Science Quarterly*. 45: 54-80.

Hayek, F. 1945. The use of knowledge in society. *American Economic Review*. 35, 4: 519-530.

Haunschild, P. 1993. Interorganizational imitation: The impact of interlocks on corporate acquisition activity. *Administrative Science Quarterly*. 38: 564-592.

Haunschild, P., Miner, A. 1997. Modes of interorganizational imitation: The effects of outcome salience and uncertainty. *Administrative Science Quarterly*. 1997: 42, 3.

Haunschild, P., Sullivan, B. 2002. Learning from complexity: Effects of prior accidents and incidents on airlines' learning. *Administrative Science Quarterly*. 47: 609-643.

Haveman, H. A. 1993. Follow the leader: Mimetic isomorphism and entry into new markets. *Administrative Science Quarterly*. 38 593-627.

Henisz, W. 2003. The power of the Buckley and Casson thesis: The ability to manage institutional idiosyncrasies. *Journal of International Business Studies*. 34: 173-184.

Henisz, W., Delios, A. 2002. Learning about the Institutional Environment.In Ingram, Paul & Brian Silverman (Editors). *The New Institutionalism in Strategic Management*. New York: JAI Press.

Hillman, A. 2005. Politicians on the board of directors: Do connections affect the bottom line? *Journal of Management.* 31:1–18.

Hillman, A., Hitt, M. 1999. Corporate political strategy formulation: A model of approach, participation and strategy decisions. *Academy of Management Review*. 24: 825–842.

Holburn, G., and Vanden Bergh, R. 2006. Consumer capture of regulatory institutions: The diffusion of public utility consumer advocacy legislation in the United States. *Public Choice.*126: 45-73

Holburn, G., Zelner, B. 2010. Political Capabilities, Policy Risk and International Investment Strategy: Evidence from the Global Electric Power Industry. *Strategic Management Journal*. 31: 1290-1315.

Huber, G. 1991. Organizational Learning: The Contributing Processes and the Literatures. *Organization Science*. 2, 1: 88-115.

Keim, G. & Zeithaml, C. 1986. Corporate political strategy and legislative decision making: A review and contingency approach. *Academy of Management Review*. 11, 4: 828-843.

Kersh, R. 1986. Corporate lobbyists as political actors: A view from the field. In A. J. Cigler & B. A. Loomis (Eds.), *Interest group politics:* 225-247.Washington, DC: CQ Press.

Kim, J.Y., Miner, A.S. 2007.Vicarious learning from the failure or near-failure of others: Evidence from the U.S. commercial banking industry. *Academy of Management Journal*. 50, 2: 687-714.

King, G., Tomz, M., & Wittenberg, J. 2000. Making the most of statistical analyses: improving interpretation and presentation. *American Journal of Political Science*, 44(2): 347-361.

Lant, T., Mezias, S. 1992. An organizational learning model of convergence and reorientation. *Organization Science*. 3, 1: 47-71.

Levitt, B., J. G. March. 1988. Organizational learning. *Annual Review of Sociology*.14: 319–340.

Mahmood, I., Mitchell, W. 2004. Two faces: Effects of business groups on innovation in emerging economies. *Management Science*, 50: 1348-1365.

March, J. 1991. Exploration and Exploitation in Organizational Learning. *Organization Science*, 2, 1: 71–87.

Martin, C.J. 1995. Nature or Nurture? Sources of Firm Preference for National Health Reform. *American Political Science Review*. 89: 898-913

Masters, M.F., Keim, G.D. 1985. Determinants of PAC participation among Large Corporations. *The Journal of Politics*. 47: 1158-1173.

Mayhew, D. R. 1974. *Congress: The Electoral Connection*. New Haven, CT: Yale University Press.

McKendrick, D. 2001.Global strategy and population level learning: the case of hard disk drives. *Strategic Management Journal*. 22: 307-334.

Mezias, S., Eisner, B. 1997. Competition, imitation and innovation: an organizational learning approach. *Advances in Strategic Management*. 14 261-294.

Mezias, S., Lant, T. 1994. Mimetic learning and the evolution of organizational populations. In J. Baum & J. Singh eds. *Evolutionary Dynamics of Organizations*. 179-193.Cambridge: Oxford University Press.

Mizruchi, M. 1992. *The Structure of Corporate Political Action: Interfirm Relations and their Consequences*. Cambridge, Mass.: Harvard University Press.

Nelson, R. R., & Winter, S. G. 1982. *An Evolutionary Theory of Economic Change*. Cambridge: Belknap Press.

Nonaka, I. 1991. The knowledge creating company. *Harvard Business Review*. 69: 96-104.

North, D. 1990. A transaction cost theory of politics. *Journal of Theoretical Politics*. 2, 4: 355-367.

North, D. 1994. Economic Performance Through Time. *American Economic Review*, 84, 3: 359-368

Oliver, C., Holzinger, I. 2008. The effectiveness of strategic political management: A dynamic capabilities framework. *Academy of Management Review*. 33, 2.

Olson, M. 1965. *The logic of collective action.* Cambridge: Cambridge University Press.

Simon, H. 1961. *Administrative behavior*. Second edition. New York: Macmillan.

Stigler, G. 1971. The theory of economic regulation. *The Bell Journal of Economics and Management Science*. 2: 3-21.

Suarez, S.L. 1998. Lesson learned: Explaining the political behavior of business. *Polity*. 31, 1: 161-178.

Teece, D., Pisano, G., Shuen, A. 1997. Dynamic capabilities and strategic management. *Strategic Management Journal*. 18, 7: 509-533.

Thornton, R., &Thompson, P. 2001. Learning form Experience and Learning from Others: An Exploration of Learning and Spillovers in Wartime Shipbuilding. *American Economic Review*. 91, 5: 1350-1368.

Vogel, D. 1983. The Power of Business in America: A Reappraisal. *British Journal of Political Science*. 13 (1983): 19-43.

Weymouth, S. 2010. Oligopolists rule: The microeconomic determinants of lobbying and political influence. Working paper. Department of Political Science, University of California, San Diego.

Wilson, J. Q. 1980. The Politics of Regulation. In Wilson (Ed.), *The Politics of Regulation*: 319-336. New York: Basic Books.

Zelner, B. A. 2009. Using simulation to interpret results from logit, probit, and other nonlinear models. *Strategic Management Journal*, 30(12): 1335-1348.

Figure 3a
Effect of Experiential learning and
Probability of initiating a rate review
Conditional upon value of Vicarious learning (state)
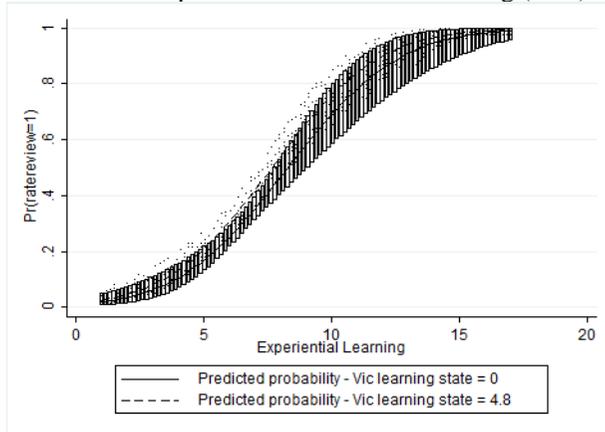
Effect of Experiential learning on Change in Probability
Conditional upon increase in Vicarious learning (state)
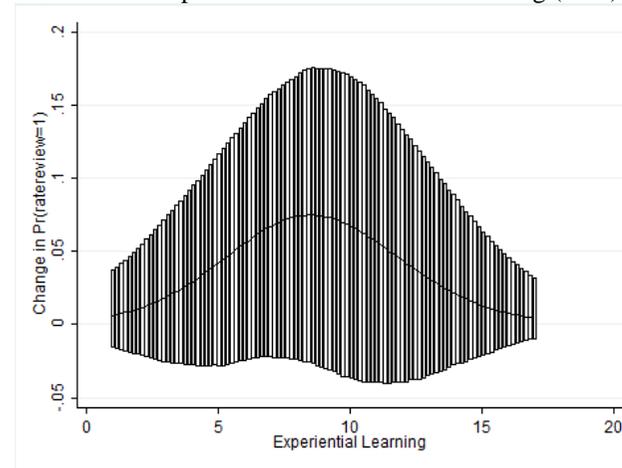

Figure 3b
Effect of Experiential learning on
Probability of initiating a rate review
Conditional upon value of Vicarious learning (region)
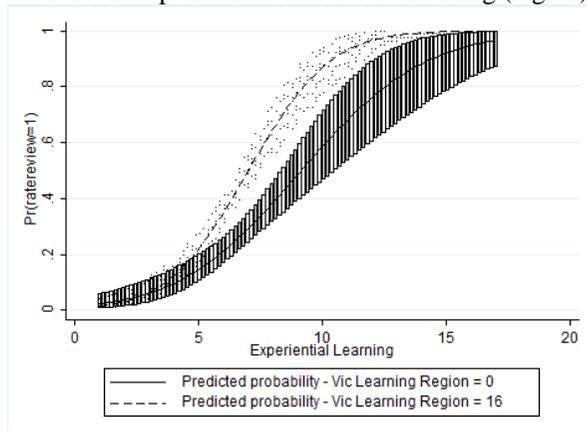
Figure 3d
Effect of Experiential learning on Change in Probability
Conditional upon increase in Vicarious learning (region)

Figure 3c

Figure 4a
Effect of Vicarious learning (region) on
Probability of initiating a rate review
Conditional upon value of Experiential learning

Figure 4c
Effect of Vicarious learning (state) on
Probability of initiating a rate review
Conditional upon value of Experiential learning

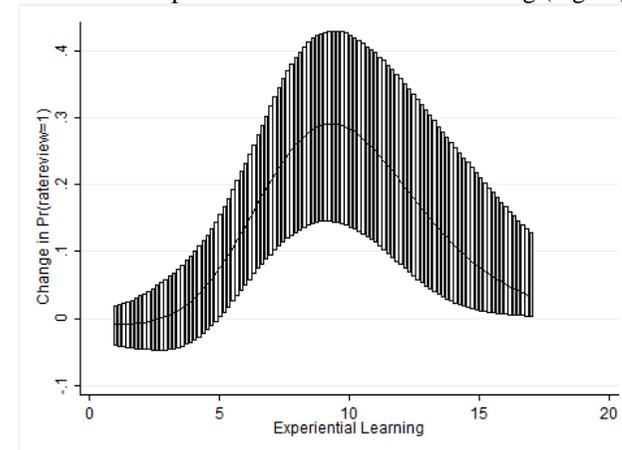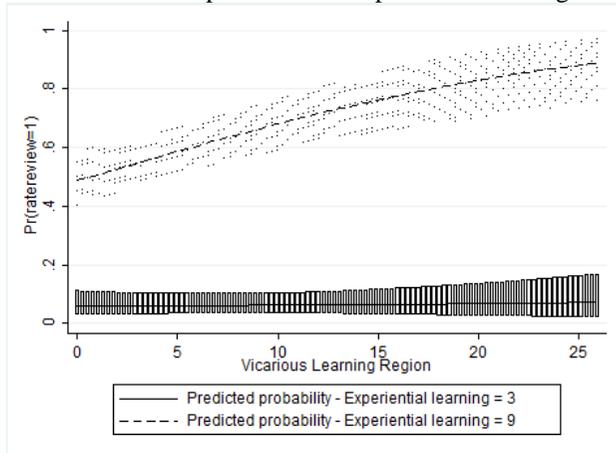Figure 4b
Effect of Vicarious Learning (region) on Change in Probability
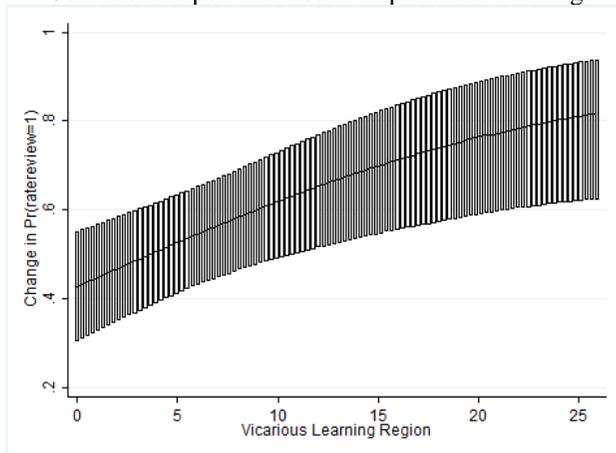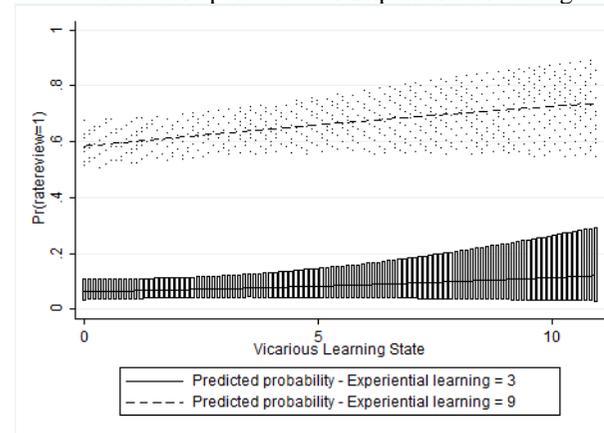Conditional upon increase in Experiential learning

Figure 4d
Effect of Vicarious Learning(state) on Change in Probability
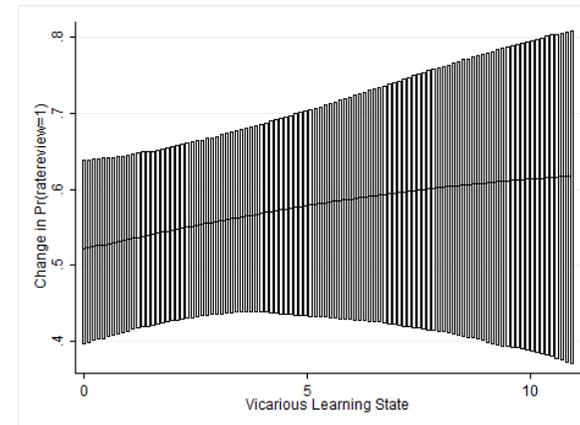Conditional upon increase in Experiential learning

Table 1: Variables and Descriptive Statistics

Variable	Mean	Std. Dev.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Firm initiated rate review	.348	.477	1.000																		
2. Experiential learning	6.353	2.796	0.184	1.000																	
3. Vicarious learning (state)	1.863	2.095	0.175	0.052	1.000																
4. Vicarious learning (region)	7.836	5.737	0.120	-0.087	0.123	1.000															
5. Absorptive capacity (state)	12.138	17.674	0.221	0.413	0.850	0.043	1.000														
6. Absorptive capacity (region)	48.397	38.883	0.200	0.380	0.114	0.823	0.214	1.000													
7. Recent performance	.005	.762	0.021	0.064	0.089	-0.020	0.144	-0.026	1.000												
8. Other firms initiating	.665	.472	0.168	-0.040	0.487	0.174	0.374	0.125	0.070	1.000											
9. Market share	.292	.264	0.027	0.133	-0.283	-0.006	-0.187	0.059	-0.053	-0.325	1.000										
10. Consumer advocate	.593	.491	0.011	0.121	0.157	-0.085	0.152	0.002	-0.006	0.063	-0.050	1.000									
11. Activists	1.501	1.071	-0.017	0.140	-0.123	-0.226	-0.037	-0.147	-0.011	-0.015	-0.003	-0.119	1.000								
12. PUC budget	2.010	1.486	-0.1101	0.134	-0.211	-0.084	-0.095	-0.035	-0.020	-0.223	0.130	-0.051	0.121	1.000							
13. Utility Revenue/PUC budget	105.644	131.223	0.063	0.033	-0.089	0.008	-0.095	0.042	-0.041	-0.117	0.596	-0.003	-0.055	-0.311	1.000						
14. Tenure PUC	3.640	2.598	-0.079	0.116	-0.140	-0.088	-0.026	-0.032	0.027	-0.180	0.124	-0.150	-0.163	0.209	0.000	1.000					
15. Elected PUC	.133	.339	-0.087	-0.168	-0.223	-0.089	-0.201	-0.160	-0.016	-0.226	0.255	-0.255	-0.273	0.087	0.098	0.453	1.000				
16. Change per capita income	.063	.029	0.112	-0.126	0.106	0.164	0.064	0.084	0.043	0.042	0.002	-0.015	-0.089	-0.131	0.047	-0.023	-0.005	1.000			
17. Interest rate change	-.770	2.223	0.155	-0.018	0.129	0.171	0.084	0.088	0.093	0.101	-0.025	-0.080	0.015	-0.057	0.031	-0.087	-0.064	0.450	1.000		
18. Change fuel cost	-1.684	20.573	0.123	-0.112	0.071	0.136	0.003	0.025	0.081	0.022	0.029	-0.073	-0.045	0.045	0.062	-0.060	0.027	0.224	0.505	1.000	
19. Average Fuel Cost	1.683	.820	0.084	-0.139	0.143	-0.004	0.081	-0.060	0.010	0.114	-0.041	-0.030	0.138	-0.277	0.120	-0.038	-0.067	0.146	0.148	0.226	1.000

N = 1,712

Table 2: – Probit estimation results -- Dependent Variable *Firm Initiated Rate Review*

	(1)	(2)	(3)	(4)	(5)	(6)
LEARNING VARIABLES						
Experiential learning	0.298***	0.121***	0.294***	0.107***	0.256***	0.086***
	(0.045)	(0.013)	(0.048)	(0.018)	(0.049)	(0.021)
Vicarious learning (state)	0.036	0.049***	0.021	0.006	0.036	0.051***
	(0.024)	(0.018)	(0.052)	(0.041)	(0.024)	(0.018)
Vicarious learning (region)	0.026***	0.014**	0.026***	0.014**	-0.023	-0.018
	(0.009)	(0.006)	(0.009)	(0.006)	(0.022)	(0.015)
Absorptive capacity (state)			0.002	0.006		
			(0.007)	(0.005)		
Absorptive capacity (region)					0.008**	0.005**
					(0.003)	(0.002)
CONTROL VARIABLES						
Other firms initiating	0.172*	0.351***	0.171*	0.351***	0.185*	0.353***
	(0.095)	(0.086)	(0.095)	(0.085)	(0.095)	(0.086)
Recent performance	-0.100**	-0.038	-0.102**	-0.044	-0.087*	-0.029
	(0.049)	(0.045)	(0.049)	(0.045)	(0.050)	(0.045)
Market share	0.022	0.494***	0.037	0.487***	0.115	0.503***
	(1.257)	(0.184)	(1.258)	(0.184)	(1.251)	(0.184)
Consumer advocate	-0.850***	-0.083	-0.854***	-0.081	-0.841***	-0.087
	(0.264)	(0.072)	(0.265)	(0.072)	(0.262)	(0.072)
Activists	-0.604***	-0.044	-0.603***	-0.047	-0.581***	-0.039
	(0.174)	(0.037)	(0.173)	(0.037)	(0.174)	(0.037)
PUC budget	-0.290***	-0.081**	-0.289***	-0.081**	-0.303***	-0.078**
	(0.100)	(0.032)	(0.100)	(0.032)	(0.100)	(0.032)
Utility Revenue/PUC budget	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000
	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)
Tenure PUC	-0.082***	-0.032**	-0.082***	-0.033**	-0.085***	-0.032**
	(0.026)	(0.016)	(0.026)	(0.016)	(0.026)	(0.016)
Elected PUC	-1.215*	-0.026	-1.210*	-0.041	-1.166*	-0.016
	(0.660)	(0.125)	(0.659)	(0.126)	(0.660)	(0.125)
Change per capita income	2.293	2.560**	2.258	2.405*	2.107	2.351*
	(1.465)	(1.258)	(1.471)	(1.267)	(1.466)	(1.255)
Interest rate change	-0.001	0.037*	-0.001	0.038**	0.007	0.042**
	(0.023)	(0.019)	(0.023)	(0.019)	(0.023)	(0.019)
Change fuel cost	0.007**	0.005***	0.007**	0.005***	0.007***	0.005***
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)
Average Fuel Cost	0.365***	0.081*	0.366***	0.079*	0.348***	0.076*
	(0.115)	(0.043)	(0.116)	(0.043)	(0.116)	(0.043)
Constant	-0.007	-1.646***	0.010	-1.525***	0.229	-1.423***
	(0.638)	(0.206)	(0.641)	(0.232)	(0.648)	(0.228)
Firm effects	Yes	No	Yes	No	Yes	No
Observations	1,712	1,712	1,712	1,712	1,712	1,712
Pseudo R^2	0.201	0.105	0.201	0.106	0.203	0.107
Log-Likelihood	-884.106	-1002.225	-884.055	-1001.568	-881.398	-1000.008

Table 3a: Marginal Effects of Main Learning Variables on Firm Initiated Rate Review

	Low values	Mean values	High values
Experiential learning	0.025***	0.105***	0.099***
Vicarious learning (state)	0.003	0.013	0.012
Vicarious learning (region)	0.002***	0.009***	0.009***

Calculations based on Model (1) from Table 2
* $p< 0.10$, ** $p< 0.05$, *** $p< 0.01$
Low - evaluated at Exp Learning = 3; Vic learning state=0; Vic learning region = 0; mean other continuous; 0 binary
Mean - MEs are computed at mean value of all continuous covariates and at 0 for binary
High - evaluated at Exp Learning = 9; Vic learning state =4.8; Vic learning region = 16; mean other continuous; 0 binary

Table 3b: Marginal Effects of Control Variables on Firm Initiated Rate Review

	Model Number from Table 2		
	(1)	(3)	(5)
Other firms initiating [a]	0.014	0.059*	0.058*
Recent performance	-0.035**	-0.036**	-0.031*
Market share	0.008	0.013	0.041
Consumer advocate	-0.303***	-0.304***	-0.300***
Activists	-0.213***	-0.212***	-0.205***
PUC budget	-0.102***	-0.102***	-0.107***
Utility Revenue/PUC budget	-0.000	-0.000	-0.000
Tenure PUC	-0.029***	-0.029***	-0.030***
Elected PUC	-0.307***	-0.306***	-0.300***
Change per capita income	0.807	0.795	0.742
Interest rate change	-0.000	-0.000	0.002
Change fuel cost	0.002**	0.002**	0.003***
Average Fuel Cost	0.128***	0.129***	0.123***

* $p< 0.10$, ** $p< 0.05$, *** $p< 0.01$
[a]MEs for Other Firms initiating computed for changes from 0 to 1
MEs computed at mean value for continuous variables and at 0 for binary variables
MEs for binary variables computed for changes from 0 to 1