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**A STUDY OF FIRM MOTIVATIONS TO INVEST IN STRATEGIC
POLITICAL MANAGEMENT**

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by

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A Study of Firm Motivations to Invest in Strategic Political Management

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Firms are believed to engage in strategic political management (SPM) in attempts to shape public policy in favorable ways and enhance their economic returns. Extant research has broadly considered the motivations leading to corporate political activity, focusing on the effects of market power using metrics such as firm size and industry concentration to investigate this phenomenon. More recently, scholars have proposed a more nuanced perspective on the subject, suggesting that different types of SPM may exist. For example, both Baysinger (1984) and Oliver and Holzinger (2008) have distinguished between corporate political strategies designed to maintain or alter the firm's political environment. In this study, I seek to more critically explore this distinction. I propose that at least two different types of SPM exist: defensive SPM, which is directed at protecting existing competitive advantage, and offensive SPM, which is focused on creating new forms of competitive advantage. I further propose that the threats and opportunities in a firm's regulatory environment are important motivators of these different types of SPM. In the context of the natural gas industry in Texas from 1999-2009, I find that the degree of regulatory uncertainty in the firm's political environment influences it to engage in defensive SPM. I also find that the size of the firm's asset inventory influences it to engage in offensive SPM. Furthermore, I find that

regulatory uncertainty negatively moderates the relationship between the size of a firm's asset inventory and its likelihood of investing in offensive SPM.

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Chapter 1: Purpose and Contribution

A firm's environment can be defined as having both market and non-market components. The market environment consists of a firm's competitors, suppliers, and customers that interact voluntarily through transactions (Baron, 1995). The non-market environment, "a greatly neglected source of organizational power and change" (Fligstein, 1987: 45), consists of the state and is responsible for establishing formal political and judicial rules which define and facilitate the exchange of property rights in markets (North, 1990) as well as regulate the operations of firms. Strategy research has predominately taken a market perspective, focusing on the actions firms take in this arena to maximize economic returns. However, Fligstein (1987: 45) argues that "The state regulates organizations in a number of ways, and organizations also control the activities of the state." Indeed, recent empirical studies indicate that organizations enjoy significant returns when their efforts to influence the state are successful. For example, de Figueiredo & Silverman (2006) found that universities in states represented by a member of the House Appropriations Committee or Senate Appropriations Committee received \$4.52 and \$5.24 respectively, for every \$1 invested in lobbying. Similarly, in a study of firms that lobbied for a tax holiday on repatriated earnings created by the American Jobs Creation Act of 2004, Alexander, Scholz, & Mazza (2009), found that firms received \$220 per \$1 spent on lobbying. These findings suggest that the nonmarket environment can be lucrative, providing firms an alternative path to maximize economic returns.

Despite the fact that recent research indicates that returns to strategic political management can be significant, firms vary in how much and when they invest. Perhaps more importantly, little is known about what motivates firms to make such an investment.

Political scientists and economists have approached the question of motivation, but focused on the industry as their level of analysis, arguing that firms and their industries represent interest groups (Epstein, 1980) and that their influence on public policy should be expected to be significant (Lowi, 1969). In political economics, Stigler's (1971) theory of economic regulation has formed much of the theoretical basis for industry-state interaction, arguing that political activity is engaged in by industry to gain benefit via government subsidies and influence over market entry, prices, and the rules that determine product substitutes. He further argued that public policy is designed for industry's benefit and all industries with sufficient political power will seek to manipulate the state in hopes of gaining governmental favors (Stigler, 1971). These arguments have been foundational in providing a set of expectations regarding industry-state interactions, yet such arguments do not consider the possibility that firms embody different, and possibly unique, motivations that lead them to engage the state at different times and in different ways.

Scholars in strategic management have taken an alternative approach in studying the relationship between the firm and the state. Research from this perspective has produced a descriptive inventory of the various political tactics, such as lobbying, advocacy advertising, constituency building, financial contributions, and coalition formation that firms undertake to manage their political environment (Bonardi, Hillman & Keim, 2005; Hillman & Hitt, 1999; Hillman et al., 2004). Strategy research has also identified several possible antecedents leading firms to engage the government, such as firm size (Boddewyn & Brewer, 1994; Schuler, Rhebein & Cramer, 2002), firm age (Boddewyn & Brewer, 1994; Hillman & Hitt, 1999), and organizational slack (Meznar & Nigh, 1995), but with the exception of firm size, which has been shown to have a positive effect on a firm's likelihood of engaging the state, the results of these studies have been

mixed. Thus, while strategy scholars have focused on firm motivations to engage in political activity, research has yet to yield conclusions inconsistent with Stigler's early arguments linking corporate political activity to firm size.

A key insight from extant research in strategic management is that organizations differ in ways other than size (Barney, 1991; Moran & Ghosal, 1999; Penrose, 1959). Indeed, strategy scholars have emphasized the importance of the context in which firms operate as a key criterion motivating particular actions (Burgelman, 1983; Hambrick & MacMillan, 1985). More specifically, strategic categorization research has suggested that managers respond differently when they perceive the environment to pose threats or represent opportunities. For example, perceived threats tend to cause managers to restrict the amount of information they attend to and the solutions they consider (Billings, Milburn, & Schaalman, 1980; Staw, Sandelands, & Dutton, 1981). In comparison, perceived opportunities can result in more open information searching and in more straightforward appraisal processes (Nutt, 1984).

Employing ideas from the strategic categorization literature to corporate political activity suggests that there may be more than one motivation driving firms to engage in political action. Indeed, to the extent that there are threats in a firm's political environment, we may expect it to engage in corporate political activity that attempts to protect it from such threats. In contrast, to the extent that opportunities exist in the political environment, a different set of political actions focused on capturing such opportunities may ensue. The research presented here seeks to explore the possibility that different motivations drive firms to engage in different types of political actions by addressing the research question: *What influences firms to engage in political activity and what drives different types of corporate political behavior?*

CONTRIBUTION

My thesis seeks to contribute to research in strategic management in three ways. First, I theoretically differentiate between different types of strategic political management based on contextual motivations. The notion that different types of strategic political management exist has been proposed by scholars that study the interaction of business and government. For example, Baysinger (1984) distinguished between (a) domain maintenance, in which a firm engages in politics to deal with threats to the way it pursues its goals, and (b) domain management, which occurs when firms engage in politics to gain special monetary opportunities at the expense of other interests. More recently, Oliver and Holzinger (2008) distinguished between defensive political strategies designed to thwart unwanted political changes and proactive political strategies focused on shaping the way norms and public policies are defined. However, despite identifying potentially different types of corporate political activity, research has yet to consider the conditions under which firms would be expected to engage in one or the other. I propose specific environmental conditions and firm-level motivations that would be expected to lead to different types of strategic political management.

Second, I seek to extend strategic categorization theory. Prior research using strategic categorization theory has suggested that when faced with threats or opportunities, firms either take (a) actions internal to the firm, such as reworking routines, or (b) market oriented activities, such as expanding products into new markets (Chattopadhyay, Glick & Huber, 2001). I argue that when faced with threats or opportunities, firms may also engage in political activity to protect or create advantage. Thus, I propose that strategic categorization theory also applies to actions that firms take beyond their boundaries or within the market in which they compete. I argue that under certain circumstances, how a firm perceives the threats and opportunities within its

environment, can lead it to engage in political activity to shape the rules that govern its operations.

Third, I develop a methodology which empirically assesses two types of strategic political management: defensive and offensive. No research that I am aware of has attempted to empirically assess this potentially important distinction. Methodologically assessing different types of corporate political activity is likely to be important to research in non-market strategy because it will allow strategy scholars to more readily apply existing firm-level theory to the political actions that firms take.

This research proceeds as follows. Chapter 2 provides a review of (a) the literature on why firms engage in strategic political management from the perspective of strategic management, organizational theory and political science/economics and (b) research that has developed different strategic typologies of corporate political activity. Chapter 3 extends strategic categorization theory to develop testable hypotheses by relating ideas about how firms respond to threats and opportunities in their political environment by engaging in strategic political management. Chapter 4 provides the methodology employed to test the proposed hypotheses. Chapter 5 shows the results of the study. Chapter 6 provides a discussion of the results and future research directions.

Chapter 2: Literature Review

The following literature review of strategic political management is divided into two sections: prior research that considers the motivations why firm engage in political activity and prior research that has developed different strategic typologies of corporate political activity. Within the section on motivation for corporate political action, three perspectives are assessed: strategic management, organizational theory and political science/economics. Summary tables of the literature's reviewed for both sections are provided in Tables 1 and 2.

FIRM MOTIVATIONS TO ENGAGE IN POLITICAL ACTIVITY

STRATEGIC MANAGEMENT PERSPECTIVE. Research in strategic management on corporate political behavior has been termed strategic political management (Oliver & Holzinger, 2008), corporate political activity (Baysinger, 1984) and non-market strategy (Baron, 1995). Strategic political management (SPM) is defined as “the set of strategic actions that firms plan and enact for the purpose of maximizing economic returns from the political environment” (Oliver & Holzinger, 2008: 496). Corporate political activity is described as corporate attempts to shape public policy in ways favorable to the firm (Baysinger, 1984). Non-market strategy is defined as a “concerted pattern of actions taken in the non-market environment to create value by improving its overall performance” (Baron, 1995: 47). Going forward, I use the term SPM to describe a firm's political behavior.

Strategic management research has considered why firms might be expected to engage in SPM, focusing primarily on the firm-level motivations that lead organizations to engage the state (Getz, 1997; Hillman & Hitt, 1999). Scholars have proposed that firms undertake SPM for a variety of reasons, including to: alert the government to their

interests (Keim & Baysinger, 1988), decrease their dependence on the state (Getz, 1993), gain access to state-owned resources (Hillman, 2003), shape public policy (Keim & Zeithaml, 1986), halt undesirable regulation (Yoffie, 1987), and lower costs (Kaufman, Englander, & Marcus, 1993).

To empirically assess why firms engage the state, strategy scholars have considered a variety of firm characteristics that could lead to investment in SPM. The most popular antecedent in the management literature has been firm size, with larger firms expected to be more politically active (Boddeyn & Brewer, 1994; Keim & Baysinger, 1988). Similar to political economists who have assumed that firm size equates to political power (Oster, 1982), strategy scholars have typically argued that firm size acts as a proxy for resources and therefore larger firms should be more capable of engaging the state than smaller firms (Epstein, 1980; Schuler & Rehbein, 1997, Yoffie, 1987). Empirically, firm size has been measured in terms of sales (Schuler et al., 2002), assets (Meznar & Nigh, 1995), market share (Schuler, 1996), and number of employees (Meznar & Nigh, 1995). Furthermore, firm size has been shown to be positively associated with SPM in a variety of industries, such as: wood products, electronics, steel, and petroleum (Salamon & Siegfried, 1977; Schuler, 1996; Ungson, James, & Spicer, 1985).

Firm slack has also been used to predict SPM (Meznar & Nigh, 1995; Schuler, 1996; Schuler & Rehbein, 1997; Schuler et al., 2002). The primary argument for slack as a driver of SPM has been that firms with greater uncommitted resources would be more active in the political arena because they could afford to do so. This relationship was empirically demonstrated by Meznar and Nigh (1995), though it has not been found consistently (e.g., Schuler, 1996; Schuler et al., 2002). Additionally, firm age has also been linked to investment in SPM. Scholars have argued that firm age should be

interpreted as a proxy for the firm's reputation (Boddeyn & Brewer, 1994) or its experience (Hillman & Hitt, 1999) and could therefore be associated with greater amounts of SPM. However, empirical research has yet to confirm these arguments.

More recently, strategy scholars have begun to look within the firm to better understand why certain companies engage in SPM. For example, Cook and Barry (1995), in a study of small firms' SPM, noted the importance of managerial cognition in driving firms to engage the state. Burris (2001) investigated the political contribution patterns of firms and their top managers, finding that the two were not related. In fact, managers appeared to be more willing to attempt to alter the makeup of Congress by acting as individuals outside of the firm than as corporate actors responsible to the demands of stakeholders. Still other studies have taken an upper echelons perspective arguing that firms with board of directors that have prior government experience should be expected to provide unique access between the firm and policy makers (e.g., Hillman, 2005; Lester et al., 2008). These studies found a positive relationship between board's with prior government experience and likelihood of future SPM and have provided important initial insights into the influence of corporate leadership on a firm's likelihood of engaging in SPM.

In summary, prior strategic management research on the use of SPM by firms suggests that it can be motivated by a variety of factors. Extant research has considered a number of firm-level characteristics that could predict the likelihood of a firm engaging in SPM, though only firm size has provided consistent results in this regard. Nevertheless, strategy research has generated some important conceptual insights regarding firm-level antecedents that might lead to SPM which, in turn, provides the theoretical and empirical starting point on which this research is based. Furthermore, the variables that prior research in strategy has posited as potentially influential in motivating

firm SPM are included as controls in this study, where appropriate, to minimize the number of alternative explanations for the results.

ORGANIZATIONAL THEORY PERSPECTIVE. Organizational theorists have also considered the question of motivation to invest in strategic political management, primarily from the institutional and resource dependence perspectives, though social network and stakeholder management theory have also been applied. Institutional theorists have typically emphasized the survival value of conformity with the institutional environment and the benefits of adhering to external rules and norms (DiMaggio & Powell, 1983; Meyer & Rowan, 1977). However, this research has also suggested that firms might seek to manipulate external rules and norms to which they are expected to conform (DiMaggio, 1983; Scott, 1983). Moreover, Oliver (1991) explicitly suggests that organizations may engage in political influence tactics, such as lobbying, to redefine the institutional rules to which they are required to conform.

Resource dependence theory has also been applied to the question of corporate political activity motivation by emphasizing the organizational necessity of adapting to environmental uncertainty. This perspective has considered a wide range of behaviors that organizations engage in to exert influence over the allocation of critical resources (Pfeffer & Salancik, 1978; Scott, 1987; Thompson, 1967). For example, prior research suggests that firms dependent on the government for key resources would be more likely to engage in political activity to manage such critical dependencies (Hillman & Hitt, 1999; Meznar & Nigh, 1995). To test this notion, research has argued that firms with a high proportion of sales to or contracts with the federal government (e.g., defense contracts), or with heavy cost burdens imposed from public policy (Hillman et al., 2004), would be likely to engage in political action to shape public policy (Hansen & Mitchell, 2000; Hart, 2001; Schuler, 1999; Schuler et al., 2002). Further, Martin (1995) and

Schuler (1999) included a firm's percentage of exports, to capture government dependence, as a determinant of corporate political activity in their studies.

Research from a social network perspective has also considered why firms engage the state. Useem (1984) and Mizruchi (1992) suggested that formal and informal institutions bind elites from business and government together. Therefore, firms more central in these networks would be more likely to be actively involved in political activities. Broadbent (2000) tested this notion, finding that centrality in networks among business, labor, and government in Japan tended to result in consensus on the promotion of future policy agendas.

Research from stakeholder management theory has examined the entire set of environmental and interest group pressures exerted on firms by the media, public opinion, consumers, advocacy groups, employees, shareholders, and government. This research has emphasized the importance of political issues to a given company as a key motivator of political strategy (Mitchell, Agle & Wood, 1997; Vogel, 1996). Similar to resource dependence theory, stakeholder management theory has tended to focus on the importance of a political issue to a firm as a function of the firm's dependence on the stakeholder, in this case the government (Freeman, 1984).

In summary, organizational theorists have considered the reasons why firms engage in strategic political management from a variety of perspectives. Scholars have employed institutional theory to suggest that firms predominately conform to the coercive institutional forces from the government, yet, at times may also engage the state and act as agents of institutional change. Resource dependence theory has been employed to explain this phenomenon as well, suggesting that those firms with critical interdependencies with the government would be expected to be more likely to engage in political activity. Social network theorists have argued that elites within corporations and

government should be expected to be cohesive and thus the structure of corporate political activity should be related to the centrality of the corporation within the firm-government network. Finally, similar to resource dependence theory, stakeholder management theory has argued that the government represents yet another stakeholder influencing firms and predicts conditions under which firms would be likely to engage the state.

POLITICAL SCIENCE/ECONOMICS PERSPECTIVE. Scholars from political science and political economics have, in general, posited two distinct motivations for why firms might engage in political activity. A popular theory from this field is the regulatory capture perspective which argues that firms, especially large ones, engage the state to capture regulatory power, and should be expected to benefit at the expense of the collective interests of the public (Olson, 1965; Peltzman, 1976; Stigler, 1971). In contrast, the neopluralist theory posited by other scholars from this field argues that firms engage in political activity when they are in trouble or threatened (Gray & Lowery, 1996; Salisbury, 1984; Truman, 1951). Neopluralists have made important contributions to this area of study and the majority of their arguments are consistent with ideas from resource dependence theory which was reviewed above. Thus, the regulatory capture perspective is the focus of this section.

The basis for much of the regulatory capture argument on firm-state interactions stems from George Stigler's foundational work on the theory of economic regulation. Within this theory, Stigler (1971) proposed that interest groups and other political participants can acquire or capture political activity. More specifically, he argued that because industry tends to represent the most powerful political participants in the economy, it would be more likely to capture the regulatory and coercive powers of government in ways beneficial to it. Examples of regulatory capture outcomes include

direct subsidies and laws affecting industry entry barriers and prices. Taken to its extreme, Stigler's theory suggests consumers would consistently lose out to industry as it is better organized and more capable of deploying its greater resources than more fragmented consumer groups, yet anecdotal evidence suggests that this is not always the case. To rectify this shortcoming, Peltzman (1976) expanded on this theory by giving equal attention to the supply of regulation; the motivations that drive regulators to generate regulations that benefit consumers even though industry is capable of lobbying more effectively. Becker (1983) further contributed to this stream of research by developing a model of competition between interest groups which argued that the amount of pressure that an interest group applies to an issue, relative to other interest groups, is directly related to its success in gaining favorable policy outcomes.

The research that has followed from these foundational works has assumed that firms and legislators operate in a market environment in which firms provide voters and political contributions in exchange for favorable public policy, thereby maximizing respective self-interests (Shaffer, 1995). Thus, the state is not viewed as an exogenous force influencing industry, but rather an endogenous component of the economic system. Stiglerian political economists therefore argue that the purpose of public policy is to act as a mechanism which transfers favors that are demanded by industry and supplied by policy makers (Caeldries, 1996). This argument stems directly from Stigler's (1971) theory that public policy is designed for industry's benefit, and any industry with sufficient political power will seek to manipulate policy to gain advantage. Empirically, Stigler (1971) provided a case study to support this hypothesis but surprisingly little empirical work since has attempted to test the theory.

Consistent with the regulatory capture perspective, political scientists have also argued that public policy occurs as a result of competing demands amongst interest

groups (Baumgartner & Leech, 1998). Firms are viewed as an interest group and it is argued that they work together as a collective to secure specific interests (Epstein, 1969; Francis, 1993). As a result, the possibility exists that firms could undermine public interests and democratic processes (Lowi, 1969). Recently, debate amongst these scholars has questioned the degree to which firms should be considered interest groups (Hart, 2004). Interest group theory assumes a voluntary association of citizens who seek to influence public policy for some greater good (Olson, 1965). Scholars have argued that firms do not represent a voluntary association of individuals and, instead, firms seek to influence policy decisions to maximize profits and as such should not be considered interest groups (Hart, 2004; Salisbury, 1984). While this debate continues, the majority of research from this perspective has taken an industry-level view of firms. As a result of this aggregation to the industry level, these scholars have not addressed public policy outcomes from the perspective of individual firms or the possibility that firms may increase profitability or gain an advantage over rivals through their influence on policy-makers (Shaffer, 1995).

In summary, political economists and political scientists have taken a rational-maximizing perspective regarding why firms attempt to influence the state and why policy makers would be expected to respond to such influence attempts. Firm size is assumed to equate to political power, yet these scholars have tended to treat business as a single coalition (Oster, 1982), focusing instead on the challenges firms face in acting collectively within their industry (Olson, 1965). Political economists have not focused on the possibility that firms may compete over specific legislative outcomes or that individual firms would seek to gain competitive advantages through strategic political management (Hersch & McDougall, 2000). Thus, while political economics and political

science offers an industry-level perspective on firm-state interaction, it yields little insight into how firms may differentially seek to influence the policy-making environment.

Beyond this variety of perspectives concerning corporate motivations to engage in SPM, extant research in strategic management has also proposed a number of typologies of SPM. Because the research presented here focuses on the role of contextual drivers motivating firms to engage in different types of SPM, it is important to provide background on how existing research has distinguished between these different types of SPM. A review of these typologies follows.

TYPOLOGIES OF STRATEGIC POLITICAL MANAGEMENT

In addition to considering questions of firm motivations to engage in corporate political behavior, past research has also attempted to characterize different typologies of SPM. Extant typologies of SPM have predominately focused on the expected outcomes associated with different characterizations of SPM. For example, Baysinger (1984) characterized three types of SPM: domain management, domain defense and domain maintenance. Domain management is said to occur when firms seek to gain special monetary and anticompetitive favors from government at the expense of other firms or interests. In domain management, political tactics are developed and implemented to induce governmental organizations to use their power on behalf of the firm, creating a cooperative relationship between governmental entities and business firms. In domain defense, firms seek to manage environmental turbulence caused by organizational goals adversely impacting societal third parties. Such environmental turbulence may result in governmental threats to the legitimacy of the firm's strategic goals. Thus, domain defense comprises a set of business political activities which are aimed at counteracting such challenges to its goals. In domain maintenance, firms seek to manage threats to the

ways in it pursues the strategic goals. Domain maintenance is similar to domain defense, but focuses on threats to the legitimacy of organizational methods, regardless of the perceived legitimacy of its goals and purposes.

Weidenbaum (1980) differentiated between three types of corporate political activity: passive reaction, positive anticipation and public policy shaping. Passive reaction strategies occur when firms make no attempt to play a role in policy formulation or implementation, focusing instead on reacting post hoc to new legislation. Positive anticipation strategies occur when firms take a more active stance towards public policy but don't participate in the policy making process, rather choosing to attempt to factor the influence of government policy into the strategic planning process. Using this strategy, firms try to anticipate future regulations and make adjustments accordingly in their strategies, thus attempting to turn regulations into business opportunities. Finally, public policy shaping entails proactive corporate political behavior focused on achieving specific political objectives.

Yoffie (1987) created perhaps the most comprehensive typology of corporate political strategies differentiating between the actions of free riders, followers, leaders, private good firms and political entrepreneurs. Free rider strategies are based off of collective action theory, which suggests that given nearly perfect information firms would be expected to free ride and enjoy the benefits of the collective actions of others (Olson, 1965). Firms are expected to free ride when political issues have low salience and resources that the organization can commit to political action are limited. Follower strategies occur when firms do not take the lead in collective organizations, but are willing to participate in collective action because they perceive the strategic benefit of favorable public policy for the firm. In contrast, leader strategies occur when firms take the lead in organizing collective action and are likely to occur when firms hold a

dominant position in the industry and therefore have a large stake in the politics that influence the industry resulting in the individual benefit to organizing a collective effort to outweigh the costs. Firms acting in a leadership capacity would be expected to be more effective when the industry as a whole can agree upon the hierarchy of important issues affecting them. Additionally, leadership is thought to become more difficult when there is uncertainty about future regulations and whether they will differentially affect firms within the industry.

Private goods strategies seek legislation, court decisions, regulations, executive orders, or other government assistance conferring unique benefits to an individual company. Large and monopolistic firms are expected to try to undertake this strategy, but due to public disclosure, one firm gaining unique benefits from government is argued to be difficult. Finally, political entrepreneur strategies occur when a firm uses resources to mobilize ad hoc coalitions of other companies and individuals with an eye towards securing access to key decision makers for the firm, but without the costs and risks of a private goods strategy and without the costs and constraints of organizing and leading a formal interest group.

Moving forward in time, Meznar and Nigh (1995) differentiated between two types of SPM: buffering and bridging. They defined buffering strategies as those focused on trying to keep the environment from interfering with internal operations and trying to influence the external environment. Buffering implies that a firm is trying either to insulate itself from external interference or to actively influence its environment through such means as contributions to political action committees, lobbying, and advocacy advertising. In contrast, bridging strategies occur when firms seek to adapt organizational activities so that they conform to external expectations. Bridging implies that the firm is actively trying to meet and exceed regulatory requirements in its industry

or that it is attempting to quickly identify changing social expectations in order to promote organizational conformance to those expectations. It is important to note that as conceived by Mezner and Nigh (1995), buffering and bridging strategies are not mutually exclusive and both are expected to occur with increasing environmental uncertainty.

Boddeyn and Brewer (1994) offered a slightly different perspective when creating their typology of SPM. They first defined non-bargaining political behavior as occurring when firms do not engage the government and bargaining political behavior as occurring when firms do engage the state. Within bargaining political behavior, they further characterized conflict strategies and partnership intensity strategies. Conflict strategies are implemented when governments attempt to appropriate the rents resulting from a firm's operations. Firms are expected to take political actions to re-appropriate these gains or generate new ones. Partnership intensity strategies occur when firms seek to create formal or informal partnerships with the government in an effort to shift (a) from spot transactions to futures relationships, (b) from conflict to cooperation, (c) from dependence to interdependence, and (d) from opportunism to trust (Gambetta, 1988).

Recently, Oliver and Holzinger (2008) have created yet another typology of SPM. First, these scholars differentiated between compliance and influence strategies. Compliance strategies occur when firms undertake actions to conform with political requirements and expectations for the purpose of maintaining or creating value by anticipating or adapting to public policy. Influence strategies, on the other hand, occur when firms engage in political activity to mobilize support for specific interests.

Compliance strategies are further differentiated into reactive political strategies and anticipatory political strategies. Reactive political strategies are actions undertaken to align a firm's internal processes with political demands whereas anticipatory political strategies are actions undertaken to gain a first mover advantage by anticipating future

public policy (Oliver & Holzinger, 2008). Influence strategies are further differentiated into defensive and proactive political strategies. Defensive political strategies are corporate political actions undertaken to thwart unwanted political changes and protect the status quo whereas proactive political strategies occur when firms seek to shape and control the way norms and public policies are defined.

CONCLUSION

In review, research on firm motivation to engage in corporate political activity suggests that firms engage the government because they: (a) are large and have the resources to undertake such a strategy (political economics-transaction theorists and recent empirical strategic management), (b) are dependent upon the state, in trouble or threatened and need to react (political economics-neopluralists, institutional and resource dependence theory), or (c) possess unique capabilities or connections to the state which provide them a competitive advantage (recent theoretical strategic management research). Furthermore, while prior work has suggested a variety of typologies of SPM, it has focused predominately on the goals and expected outcomes associated with each strategy type ignoring the role of contextual factors motivating different types of strategies. As a result, prior work does not provide a great deal of insight into how contextual factors may influence when a firm would be expected to engage in different types of SPM. Such a distinction is likely to matter because research has established that decision makers behave differently in contexts of perceived threats and opportunities (e.g., Dutton & Jackson, 1987; Jackson & Dutton, 1988; Staw, Sandelands & Dutton, 1981) as well as when they are focused on recouping losses versus preserving gains (Kahneman & Tversky, 1979). This strategic categorization of threats and opportunities and how it influences firms to engage in different types of SPM is explored next.

Chapter 3: Theory Development

As described in chapter 2, scholars have theorized about different typologies of SPM. While prior research has proposed different types of SPM (e.g., Baysinger, 1984; Oliver & Holzinger, 2008), research has yet to consider the conditions under which firms would be expected to engage in one type or another, and specifically, when those actions are likely to be offensive or defensive in nature. Such a distinction is likely to matter because (1) research has found that decision makers behave differently under conditions of perceived threats and opportunities (e.g., Dutton & Jackson, 1987; Jackson & Dutton, 1988; Staw, Sandelands & Dutton, 1981) as well as when they are focused on recouping losses versus preserving gains (Kahneman & Tversky, 1979), and (2) as I argue below, distinctions of threats vs. opportunities and losses vs. gains are key to understanding how managers frame decisions about whether to engage the state in an offensive or defensive manner.

Formally, I argue that defensive SPM occurs when firms engage in political activity to protect the value of existing resources from possible threats. This may entail a firm lobbying for existing rules to remain in effect or for special loophole provisions to be added to new laws, the goal being to preserve a firm's status quo. In contrast, I argue that offensive SPM occurs when firms engage in political activity to create new opportunities for financial gain or competitive advantage. For example, a firm may lobby to deregulate an industry for which it is well suited to compete but is currently prohibited from entering. These definitions of defensive and offensive SPM are distinct from previously proposed types as they focus on the context and decision framing that guides firms to engage in SPM (i.e., threats and opportunities) rather than the expected outcomes

of such actions (e.g., Baysinger, 1984) or the reasons why such action may be effective (e.g., Oliver & Holzinger, 2008).

There are likely to be a number of contextual factors that would motivate firms to engage in offensive or defensive SPM. The intent of this research is not to provide a comprehensive listing of such factors, but rather to explore some factors that might influence firms to engage in different types of SPM. This, in turn, will validate that different types of SPM exist and are influenced by contextual factors. Broadly, this research considers environmental and firm specific factors that could influence a firm to engage in defensive and offensive SPM. The complete model described below and tested herein is presented in Figure 1.

ENVIRONMENTAL DRIVERS OF DIFFERENT TYPES OF SPM

According to Milliken (1987), uncertainty can be defined in terms of the perceived inability of decision-makers to understand the direction in which an environment might be changing, the potential impact of those changes on the organization, and whether or not particular responses to the environment might be successful. One form of environmental uncertainty that is likely to influence whether a firm engages in SPM is regulatory uncertainty. Similar to Milliken's (1987) definition of state uncertainty, regulatory uncertainty can be defined as the situation that occurs when managers do not feel confident that they understand what the major events or trends in the political environment are or they feel unable to accurately assign probabilities to the likelihood that particular events or changes will occur (Milliken, 1987). The effects of regulatory uncertainty have been argued by scholars to increase political activity among firms (e.g., Marcus, 1981; Pfeffer & Salancik, 1978), but research has yet to examine its influence on different types of corporate political behavior. Additionally, regulatory

uncertainty is distinct from the degree of regulation within an industry, which refers to the extent to which a firm is regulated by a federal or state agency. Industries can experience regulatory uncertainty regardless of whether they are highly regulated or not. For example, the natural gas exploration and production industry is highly regulated and is currently undergoing a high degree of regulatory uncertainty as states decide whether to create new legislation or increase existing regulations on unconventional gas well development in shale rock formations. The computer industry, which is less regulated, has dealt with regulatory uncertainty in the recent past as state and federal governments have considered the issue of mandatory electronics recycling (Congressional Quarterly, 2009).

It is likely that regulatory uncertainty would be perceived negatively by firms. This is because increased operating costs and losses of management time accompany – or are at least perceived by executives to accompany – virtually all government actions, and hence almost any potential change in a firm’s regulatory environment, even one that eventually leads to less regulation, is likely to be perceived negatively by firms and their managers – until, that is, the law is set in stone and its interpretation is broadly agreed upon. By its very nature, the legislative process involves numerous stakeholders with competing worldviews and conflicting ideologies; so regulatory outcomes are both uncertain and fraught with unintended consequences (Allison, 1969). Thus, many executives will believe that any potential regulatory change could open Pandora’s Box. Given this, regulatory uncertainty is defined as an occurrence that stems from potential, unpredictable changes to a firm’s political environment. This definition is conceptually similar to Miliken’s (1987) definition of state uncertainty in which a firm perceives its environment to be unpredictable.

Strategic categorization research has suggested that managers respond differently when they perceive the environment to pose threats or represent opportunities. For example, perceived threats tend to cause managers to restrict the amount of information they attend to and the solutions they consider (Billings, Milburn, & Schaalman, 1980; Staw, Sandelands, & Dutton, 1981). In comparison, perceived opportunities can result in more open information searching and in more straightforward appraisal processes (Nutt, 1984). Jackson and Dutton (1988) found that threats have a negative connotation, are associated with feelings of lack of control and are likely to be attended to more readily by managers. In contrast, they found that opportunities are positive issues, perceived as having a high potential for gain with only limited loss and are likely to be acted upon by managers in a more variable way. Opportunities and threats, rather than being two ends of a single continuum, are therefore treated as distinct categories by managers when they make decisions (Dutton & Jackson, 1987; Mintzberg, Raisinghani & Theoret, 1976; Staw, Sandelands & Dutton, 1981).

High levels of regulatory uncertainty are likely to be perceived by a firm as a threat. This is because firms have gained experience and understand how to operate in their current political environment, and any potential change to the way in which the government regulates that environment is likely to result in increased government scrutiny of the firm's current operations. This increased scrutiny, in turn, has the potential to threaten the firm's underlying strategy. Firms are therefore likely to be sensitive to the increased government scrutiny associated with regulatory uncertainty and act in a quick and decisive manner to protect their strategic position. Resource dependence theory suggests that increasing uncertainty may lead to greater levels of corporate political activity (Pfeffer & Salancik, 1978). Yet, in environments characterized by high levels of regulatory uncertainty, firms would be motivated to not

just invest in SPM, but more specifically to invest in defensive SPM. We know that defensive SPM is particularly well suited for maintaining the status quo (Oliver & Holzinger, 2008). As government scrutiny of business operations increases with increasing regulatory uncertainty, firms would therefore be expected to invest in SPM that is focused on protecting the firm's strategic direction at risk to regulatory change.

Hypothesis 1: There will be a positive relationship between the degree of regulatory uncertainty and the extent of investment in defensive SPM.

FIRM SPECIFIC DRIVERS OF DIFFERENT TYPES OF SPM

UNREALIZED GAINS FROM STRATEGIC INVESTMENTS. So far I have focused on the environmental conditions under which a firm would be expected to engage in defensive SPM. It is also likely that firm specific factors could influence how a firm might invest in SPM. For instance, the more a firm has invested to take advantage of its existing competitive environment, the more it would rely on the rules governing its competitive environment to either remain unchanged or evolve in expected and foreseen ways. This is because strategic planning and implementation by firms is a difficult and costly process that requires a firm to make specific assumptions about its abilities to create value as well as how its competitive environment might respond to such efforts (Mintzberg, 1978). Furthermore, the returns to such strategic planning and the investment that follows are likely to be unrealized for some time (Kukalis, 1991). Thus, firms that have yet to realize economic gains from their strategic investments would be particularly motivated to maintain the aspects of their competitive environment that were assumed to exist during the original strategic planning. This idea is not dissimilar to the notion of a "sunk cost bias" in which prior research on individual and organizational decision making has shown that decision makers find it difficult to abandon a course of

action once they have made an initial commitment (Staw, 1976; Kahneman & Tversky, 1979; Arkes & Blumer, 1985). Engaging in defensive SPM, which is principally focused on maintaining the status quo (Oliver & Holzinger, 2008), would therefore be an attractive strategy for firms to undertake.

Hypothesis 2: There will be a positive relationship between the amount a firm has invested in yet to be realized gains and the extent of its investment in defensive SPM.

SIZE OF ASSET INVENTORY. In contrast to firms that have invested significant amounts in strategic initiatives that have yet to generate economic returns, firms that have a large asset inventory would be likely to invest in offensive SPM. This is because firms that have large asset inventories may face challenges with issues of underutilization (Teece, 1980; 1982). Underutilization here refers to slack resources and not a latent inefficiency embodied by the firm. Firms with a large inventory of assets that are not fully utilized are likely to search for opportunities under which they would be able to increase utilization rates. While market-oriented strategies to increase utilization rates of assets might include entering new markets (Teece, 1980) or engaging in strategic alliances (Kogut, 1988), nonmarket strategies may also exist. For example, scholars employing real options reasoning suggest that investments in SPM can be thought of as amplifying preinvestments aimed at shifting key legal boundaries and thus increasing the value of underlying assets (McGrath, 1997). Thus,

Hypothesis 3: There will be a positive relationship between the size of a firm's asset inventory and the extent of its investment in offensive SPM.

THE MODERATING ROLE OF EXPERIENCE WITH SPM

Research in strategic management has suggested that experience is directly related to an organization's ability to learn (Levitt & March, 1988). Consistent with this line of thinking, firms with experience engaging the state are more likely to utilize SPM than firms without such experience. This notion stems from Venkataraman's (1997) idea that a manager's prior experience leads to the recognition of opportunities related to the information gained from such experiences. Roberts (1991) also suggested that prior information, whether obtained from work experience, education, or other means, influences the manager's ability to comprehend, extrapolate, interpret, and apply new information in ways that those lacking that prior information cannot replicate.

This line of reasoning suggests that firms which have had experience engaging in SPM would be more likely to do so in the future. Indeed, when firms are faced with environments characterized by high levels of regulatory uncertainty, those firms which have utilized SPM to manage such environments would be more likely to engage in SPM than firms that don't have this experience. This is because these firms would likely recognize the value of SPM in managing such high regulatory uncertainty environments. Also, these firms would likely have a more nuanced understanding of how to use SPM to manage such environments. Therefore,

Hypothesis 4: Prior experience with SPM will positively moderate the relationship between the degree of regulatory uncertainty and the extent of investment in defensive SPM.

The relationship described in hypothesis 2 is also likely to be moderated by the amount of prior experience a firm has had engaging in SPM. As argued, firms which have made strategic investments that have yet to generate a return are likely to engage in defensive SPM in an effort to maintain the status quo and increase the likelihood that

they will be able maximize the returns from their investments. When firms have prior experience engaging in SPM, this relationship would be expected to be even stronger. Therefore, based on the same rationale suggested above:

Hypothesis 5: Prior experience with SPM will positively moderate the relationship between the amount a firm has invested in yet to be realized gains and the extent of its investment in defensive SPM.

The relationship described in hypothesis 3 is also likely to be moderated by the prior experience that a firm has had engaging in SPM. As described above, prior experience has been found to positively influence the discovery of new opportunities (Shane, 2000). Similarly, those firms with significant experience engaging in SPM would be expected to be more likely to engage in offensive SPM when they have a large asset inventory. This is because firms with substantial asset bases may already be predisposed to engage in offensive SPM to shape future rules of their competitive environment to better utilize those assets. Firms with such asset bases and prior experience with SPM would be even more likely to engage in offensive SPM because their prior SPM experience would help them better understand how to engage the state to generate new and beneficial rules. Thus,

Hypothesis 6: Prior experience with SPM will positively moderate the relationship between the size of a firm's asset inventory and the extent of its investment in offensive SPM.

THE MODERATING ROLE OF REGULATORY UNCERTAINTY

The relationship described in hypothesis 2 is likely to be moderated by the degree of regulatory uncertainty in the firm's environment. As previously argued, environments characterized by high levels of regulatory uncertainty are expected to result in firms

engaging in defensive SPM. This is because managers perceive the possibility of increased government scrutiny associated with regulatory uncertainty as a threat and engage in defensive SPM to protect existing competitive advantage. When firms have invested capital in yet to be realized strategic outcomes, in environments characterized by high levels of regulatory uncertainty, their efforts to engage in defensive SPM are likely to be even greater. This is because managers in these firms and environments will (a) perceive the regulatory uncertainty in the environment as a threat and (b) be under substantial pressure to make good on strategic investments that have yet to generate profitable returns. Thus,

Hypothesis 7: Higher levels of regulatory uncertainty will positively moderate the relationship between the amount a firm has invested in yet to be realized gains and the extent of its investment in defensive SPM.

The relationship described in hypothesis 3 is also likely to be moderated by the degree of regulatory uncertainty in the firm's environment. Firms that have a large inventory of assets are expected to engage in offensive SPM in an effort to create new opportunities for demand of their assets. However, as previously argued, environments characterized by high levels of regulatory uncertainty are expected to lead firms to engage in defensive SPM. Therefore, when firms have a large inventory of assets but operate in environments characterized by high levels of regulatory uncertainty, their efforts to engage in offensive SPM would be expected to be weakened. This is because managers in these firms and environments are likely to perceive the high level of regulatory uncertainty as a threat that supersedes their use of offensive SPM to create new ways of increasing the demand for the firm's surplus asset base. Thus,

Hypothesis 8: Higher levels of regulatory uncertainty will negatively moderate the relationship between the size of a firm's asset inventory and the extent of its investment in offensive SPM.

Chapter 4: Methodology

EMPIRICAL SETTING

The empirical setting for this study is the U.S. natural gas industry. Between 1999 and 2009, the natural gas industry underwent a significant change with the development and combination of cost effective technologies to extract natural gas from unconventional rock formations. Horizontal drilling technologies were combined with hydraulic fracturing technologies which allowed firms to horizontally access and fracture these previously unproductive natural gas formations. Traditionally, wells were drilled vertically and the gas producing formations were accessed along a much shorter length of drill casing. Utilizing horizontal drilling technologies, firms were able to increase the surface area of the drill pipe within the natural gas formation. Hydraulic fracturing technologies were then used to create fractures in the formation to increase the flow of natural gas. As a result of this combination of technological innovations, vast new deposits of natural gas locked within shale rock formations became productive across the United States. The first major shale gas development began in Texas, the Barnett Shale, in 2002, and the largest projected shale gas deposit currently exists in the northeastern United States, the Marcellus Shale, where commercial development began in 2005.

Recently, issues with the use of hydraulic fracturing have begun to arise. Complaints of groundwater contamination and air pollution have been reported near shale well developments and the Environmental Protection Agency has announced that it will be undertaking an environmental impact assessment of the use of hydraulic fracturing in shale gas well development (Environmental Protection Agency, 2010). As a result of these environmental concerns, the state of New York ordered a nine-month moratorium

on hydraulic fracturing in August 2010 so more data could be collected as to its environmental impacts (Honan, 2010).

This study utilizes data on shale gas developments in Texas, providing an interesting context to test the proposed hypotheses. The first producing gas well drilled in Texas was completed in 1872 (Railroad Commission of Texas, 2011). The annual natural gas production in Texas was approximately 7,000 billion cubic feet (bcf) in 2008 and the number of active wells in 2008 was 96,502. Importantly, the potential of the technologically recoverable reserves in the Barnett shale of Texas is estimated to be 44 trillion cubic feet (tcf) (Arthur, Langhus, & Alleman, 2008).

To test robustness, a data sample on shale gas developments in New York was also collected. New York represents a distinct regulatory context from Texas. The first producing gas well drilled in New York was completed in 1821 (New York State Department of Environmental Conservation, 2008) and the annual natural gas production in New York in 2008 was 50 bcf. There were 6,675 active wells in New York in 2008. More notable, the potential of the technologically recoverable reserves in the Marcellus shale is estimated to be 262 tcf (Arthur et al., 2008). Thus, while Texas has historically produced significantly more natural gas than New York, the potential of shale natural gas production in New York may be greater than in Texas.

SAMPLE

The data sample used to assess the proposed hypotheses was derived from the natural gas industry between 1999 and 2009. It is comprised of all publicly traded natural gas firms (SIC: 1311) that existed at the end of 2009 (N=154). As a result of this sampling technique, there are no firm exits in the data sample. However, there are a number of firms that enter the sample at various points during the sample time frame.

This should not be a concern because in this study I am focused on the relationship between the firm's regulatory environment and its lobbying activity as well as the relationship between specific firm variables and lobbying activity. Therefore, utilizing a sample of firms, some of which lobby and some of which do not affords the opportunity to test whether such relationships exist. The full sample includes 1,831 firm-year observations.

DEPENDENT VARIABLES

The dependent variable for Hypotheses 1, 2, 4, 5 and 7 was the amount a firm invested in defensive SPM in Texas. The dependent variable for Hypotheses 3, 6 and 8 was the amount a firm invested in offensive SPM in Texas. Texas lobbying data became available starting in 1999 from the Texas Ethics Commission. To test for robustness, New York lobbying data, which became available in 2005 from the New York State Commission on Public Integrity, was also used. To distinguish between defensive and offensive SPM, I first assessed whether a firm invested in lobbying in Texas. Then I distinguished between defensive and offensive lobbying by analyzing each firm's lobbying activity report and assessing (a) the issues lobbied upon and (b) specific bills or regulations lobbied. If an issue lobbied upon by the firm pertained to a proposed law or regulation that would negatively impact the firm's ability to explore for natural gas, defensive SPM was coded. If the issue lobbied by the firm pertained to a proposed law or regulation that would positively impact the firm, offensive SPM was coded.

For example, during 2005, a firm in the sample lobbied in Texas on House Bill 217 which, "Authorized the commissioners' court of a county with a population of more than 3.3 million to regulate sound levels of activities in unincorporated areas of the county to promote the public health, safety, or welfare." It also "allowed the county to prohibit any act that produces a sound that a reasonable person would find objectionable"

and “made each hour that a violation continues a separate offense.” In this example, this firm’s investment in SPM was coded as defensive because the Barnett shale development is close to the Dallas-Fort Worth metroplex and the process of hydraulic fracturing is extremely loud. Thus, should this bill have passed it would have led to increased regulatory pressure on natural gas firms developing production in the Barnett shale.

In contrast, during 2009, a different firm lobbied on Texas House Bill 634 which “Directed the Texas Commission on Environmental Quality, in consultation with the Public Utility Commission, to establish a carbon dioxide "cap and trade" program that would limit and then reduce the total carbon dioxide emissions released by electric generating facilities in this state.” Because natural gas is a “cleaner burning” fossil fuel than coal, many natural gas producers have attempted to focus attention on the reduced CO₂ emissions that natural gas generated electricity produces (America’s Natural Gas Alliance, 2010), arguing at the same time for increased carbon dioxide regulations. Thus, this investment in SPM was coded as offensive.

To validate whether I had assessed the negative and positive legislation accurately, and hence coded defensive and offensive SPM appropriately, I utilized a third party analysis of the legislation provided by the Texas Oil and Gas Association (TXOGA). As part of its Legislative Affairs service TXOGA, the primary trade association for the natural gas industry in Texas, provides bill analysis of all legislation that would positively or negatively impact oil and gas companies in the state (<http://www.txoga.org/categories/Legislative-Affairs/Bill-Analysis/>). Comparing my independent coding of legislation with the bill analysis performed by TXOGA yielded a 92% rate of agreement. For the 8% of the coding that were not in agreement, the TXOGA bill analysis was used.

A representative sample of this defensive/offensive coding procedure is provided in Table 3. In general, defensive SPM was coded to occur when proposed legislation would result in increased costs or increased regulations for firms in the natural gas industry. Defensive SPM was also coded when proposed legislation would result in decreased costs or regulations for firms in industries that competed with the natural gas industry (e.g., the coal industry). Finally, defensive SPM was coded when proposed legislation would result in the creation of new demand or new market opportunities for firms in industries that competed with the natural gas industry (e.g., legislation funding clean-coal technology).

In contrast, offensive SPM was coded to occur when proposed legislation would result in decreased costs or decreased regulations for firms in the natural gas industry. Offensive SPM was also coded when proposed legislation would result in increased costs or regulations for firms in industries that competed with the natural gas industry (e.g., the coal industry). Finally, offensive SPM was coded when proposed legislation would result in the creation of new demand or new market opportunities for firms in the natural gas industry (e.g., legislation establishing low emissions vehicle standards).

It is important to note that not all of the legislation on which a firm lobbied could be classified as clearly offensive or defensive in nature. For example, in 2007 House Bill 1493 was lobbied upon by several firms in my sample. This legislation called for the creation of a regional planning commission to create a storm research center to develop plans and programs focused on hurricane response in the Gulf Coast Region. Because it is not clear whether the passage of this bill would have been viewed positively or negatively by a firm in the natural gas industry it was coded as “unknown”. The key criteria for the coding of “unknowns” in the sample were that they represented truly

ambiguous legislation. A complete breakdown by year which shows how many bills were coded as offensive, defensive and unknown is provided in Table 4.

Because firms typically lobby on multiple issues and proposed legislation in any given year, a count of defensive and offensive SPM actions was tallied for each firm in each year in which a lobbying investment was made. A percentage of defensive SPM investment was then calculated by dividing the number of defensive SPM actions by the total number of all SPM actions undertaken by each firm in each year. Similarly, a percentage of offensive SPM investment was calculated by dividing the number of offensive SPM actions by the total number of all SPM actions for each firm in each year. These percentages were then multiplied by the total lobbying investment made by each firm in each year to calculate each firm's defensive and offensive SPM investment. These variables were highly skewed to the right, so the log of each was used to produce a more normal distribution.

INDEPENDENT VARIABLES

REGULATORY UNCERTAINTY. The independent variable for Hypothesis 1 was the degree of regulatory uncertainty. Regulatory uncertainty was calculated by dividing the number of Democratic legislators by the number of Republican legislators in the Texas House of Representatives and Senate. A similar measure was created to assess robustness in New York. Given the pro-business leanings of the Republican Party, greater numbers of Republican legislators were associated with lower regulatory uncertainty, therefore values of less than one represent environments lower in regulatory uncertainty while values greater than one represent higher regulatory uncertainty environments. Assessing regulatory uncertainty in this manner is based on the methodology described by political scientists who have argued that firms tend to prefer

Republicans over Democrats based on ideological grounds (Burris, 1987; Handler & Mulkern, 1982). For Texas, this data was collected using the Legislative Reference Library of Texas (<http://www.lrl.state.tx.us/>). For New York, this data was collected using the New York State Red Book available through the New York State Library.

It is important to note that I created and experimented with using two variables to account for regulatory uncertainty within the state for both branches of government for each year. This type of regulatory uncertainty was assessed in each model. Ultimately, the single variable approach, which assessed regulatory uncertainty by state by averaging across the respective House of Representatives (or Assembly in New York) and Senate, was chosen. This measure allowed for the models to preserve the unique state level regulatory uncertainty while also simplifying the interpretation of the models.

UNREALIZED GAINS FROM STRATEGIC INVESTMENTS. The independent variable for Hypothesis 2 was the amount of investment at risk to regulatory changes. This variable was measured as the annual number of permitted shale gas wells in Texas (and New York for the robustness check). Permitted wells represent an investment by the natural gas firm as they have paid to lease property on which they intend to drill, have received state approval to commence exploration, but have not yet begun the exploration process. This variable was highly skewed to the right, so it was logged to produce a more normal distribution.

SIZE OF ASSET INVENTORY. The independent variable for Hypothesis 3 was the size of the firm's asset inventory. This variable was measured as the volume of each firm's natural gas production, in million cubic feet (mcf), from shale formations in the state in each year. This variable was highly skewed to the right, so it was logged to establish a more normal distribution.

MODERATING VARIABLES

PRIOR EXPERIENCE WITH SPM. Prior experience with SPM was the moderating variable in Hypotheses 4, 5 and 6. This variable was measured as the count of the number of years since each firm began investing in lobbying in each state.

REGULATORY UNCERTAINTY. Regulatory uncertainty was the moderating variable in Hypotheses 7 and 8. This variable was measured the same way as described above as it was also the independent variable for Hypothesis 1.

CONTROL VARIABLES

A number of variables were used to control for alternative explanations. Firm size, measured as the log of the number of employees at each firm, and firm slack, measured as the log of cash at each firm, have both been hypothesized to affect a firm's likelihood of engaging in SPM (e.g., Schuler, 1996; Stigler, 1971). Market share, measured as the log of the firm's total natural gas production in the state was assessed as well to control for the possibility that some firms may have been more active in developing production in general during the time period of interest.

ANALYSIS

Generalized estimating equations (GEEs) were used to analyze the panel data for this study. GEE models are an extension of generalized linear models, which are designed to handle longitudinal data (Liang & Zeger, 1986; Lipsitz, Fitzmaurice, Orav & Laird, 1994). GEE models derive maximum likelihood estimates and allow for non-independent observations. To define GEE models four components must be specified: (1) the dependent variable distribution, (2) a link function, (3) the independent variables, and (4) the correlation structure of the repeated measurements. For all models a Gaussian (normal) distribution with an identity link function was used. The covariance structure of

the repeated measurements was specified as autoregressive with one lag (AR1). Furthermore, a more conservative approach was employed by estimating the GEE models with Huber/White heteroscedasticity-consistent standard errors and covariances. This estimation procedure produces covariances that are robust to general heteroscedasticity, because variances within a cross-section are allowed to differ across time (White, 1980).

The dependent variables for all hypotheses turned out to have a substantial zero inflation factor, thus there is the possibility that the sample could be biased by the firms which make no investment at all in SPM across the window of observation. In order to control for this, a two-stage Heckman procedure was used (Heckman, 1979). This procedure involves the use of an event history model to estimate the likelihood of investment in defensive and offensive SPM as a function of the variables which are similar to those used in the primary analysis. For example, while employee count was utilized as a control for firm size in the second stage GEE model, log of assets was used in the first stage probit model. Similarly, while cash on hand was used as a measure of slack in the second stage GEE model, the log of working capital was utilized in the first stage probit model. Finally, total state natural gas production was used in the first stage probit model as a proxy for market share and firm age was also included in the first stage probit model.

The estimated values from these models were transformed to obtain the inverse Mills ratio (Hamilton & Nickerson, 2003). This transformation eliminates instabilities that can occur if the assumptions underlying the probit model are not met. This inverse Mills ratio was then included as a control in the GEE models. The estimated value for firm's investing in defensive SPM (*invmills1*) was used as a control for Hypotheses 1, 2, 4, 5 and 7 (i.e., defensive SPM investment hypotheses). The estimated value for firm's

investing in offensive SPM (inv mills2) was used as a control for Hypotheses 3, 6 and 8 (i.e., offensive SPM investment hypotheses).

Chapter 5: Results

Data collected and analyzed from U.S. natural gas producers are reported in this chapter. As previously discussed, the focus of this study is on shale natural gas production and lobbying in Texas (i.e., the Texas data sample). The Texas natural gas industry has been in existence since 1872 (Railroad Commission of Texas, 2011) and continues to grow. According to the Texas Railroad Commission (2011), from 1936 to 2009, natural gas production in Texas grew nearly 9-fold, from 844 trillion cubic feet (Tcf) produced in 1932 to 7,573 Tcf produced in 2009. During that same time period, the number of producing wells increased 37 times, from 2,717 to 101,097. The Bureau of Economic Geology (Kim & Ruppel, 2005) estimated that in 2002 Texas was responsible for 30% of total U.S natural gas production. It further argued that if Texas was its own nation, it would rank as one of the top 10 natural gas producers in the world. Tables 5 and 6 provide descriptive statistics for the Texas data sample. Table 5 lists the means and standard deviations of key variables assessed. Table 6 lists the correlations among those variables.

Data on lobbying and natural gas production was also collected for New York. New York represents a different institutional context than Texas, so it provides the opportunity to check the robustness of the findings from the Texas data sample. Information on the robustness checks is presented at the end of this chapter.

RESULTS FOR TEXAS DATA SAMPLE

Results associated with lobbying and natural gas production data from Texas are presented in the following order. First, diagnostic analyses dealing with issues of multicollinearity are presented. Second, results from the first stage models (probit

models) are presented. Finally, results from the second stage models (GEE models) are discussed.

DIAGNOSTIC ANALYSIS: MULTICOLLINEARITY. Multicollinearity was assessed for the Texas data sample using condition indices (Belsley, 1991). The highest condition index was 5.23, well below any problematic value. To further assess collinearity among the independent variables OLS regressions were run to generate Variance Inflation Factors (VIFs) for all the variables. The highest value was 4.93 and the average VIF was 2.74 well below the recommended cutoff of 10, so multicollinearity does not appear to be a concern in the results (Chatterjee, Hadi & Price, 2000; Neter, Kutner, Wasserman, & Nachtsheim, 1996). Table 7 shows the diagnostic analysis for the Texas data sample.

FIRST-STAGE ANALYSIS. Tables 8 and 9 displays the first-stage models used to estimate the zero-inflation factors associated with a firm's decision to invest in both defensive and offensive SPM in Texas, respectively. Following Greve (1999), the variables used to assess the probability that a firm would invest – at any level -- in either defensive or offensive SPM were predictive of those phenomena but theoretically distinct from the independent variables in the second-stage models that I used to test my hypotheses. Specifically, the variables used in the first-stage models included firm age, firm assets, firm working capital, and total natural gas production in the state of Texas. Firm age has been shown to be related to a firm's likelihood of engaging in SPM (Boddewyn & Brewer, 1994). Firm assets were used as a proxy for firm size which has been shown to be related to a firm's likelihood of engaging in SPM (Meznar & Nigh, 1995). Firm working capital was used as a proxy for slack resources which has also been shown to be related to a firm's likelihood of engaging in SPM (Schuler, 1996). Finally, total natural gas production in the state of Texas was used to quantify the firm's Texas assets which could influence its propensity to engage in SPM.

Reviewing the findings in Table 8 shows that firm age was negative and significantly related to the firm's likelihood of investing in defensive SPM. This finding runs counter to prior research which has shown a positive relationship between firm age and investment in SPM (Boddewyn & Brewer, 1994). This finding is likely due to the fact that younger firms in the sample were also more successful developing natural gas in Texas than older firms and hence more likely to engage in lobbying. Firms in the natural gas industry are typically younger than firms in the oil industry because natural gas development hasn't historically been as lucrative as oil development, but it has been significantly cheaper. As a result, in an effort to avoid competing with the oil majors (e.g., ExxonMobil, BP, ChevronTexaco) natural gas firms have tended to develop regional expertise. When these firms "hit the jackpot", they are oftentimes acquired by one of the oil majors.

Consistent with prior research, firm size (Meznar & Nigh, 1995) and firm working capital (Schuler, 1996) were positive and significantly related to the firm's likelihood of investing in defensive SPM. Also, total natural gas production in Texas was found to be positive and significantly related to the firm's likelihood of investing in defensive SPM. These results are mirrored in Table 9 which assessed the likelihood that a firm would invest in offensive SPM.

SECOND-STAGE ANALYSIS OF DEFENSIVE SPM INVESTMENT. Table 10 shows the results of the second-stage analyses in which investment in defensive SPM was the independent variable. Model 1 of Table 10 is the base model consisting only of control variables. Model 2 adds in the hypothesized direct effects influencing a firm's investment in defensive SPM. Models 3 through 5 add each hypothesized interaction individually. Model 6 then presents the full model including all of the hypothesized interactions influencing a firm's investment in defensive SPM. To assess whether the

impact of adding variables in successive models improved model fit, the quasiliikelihood under the independence model criterion (QIC) was employed. Because GEE methodology is based on quasi-likelihood theory (Wedderburn 1974), there is no assumption made about the distribution of the response observations. Thus, more typical model fit criterion, such as $-2 \log$ likelihood, cannot be applied. Per Cui (2007), the model with the smallest QIC value should be interpreted as the best-fitting model to the data.

Hypothesis 1 predicts that high levels of regulatory uncertainty will be positively associated with firm investment in defensive SPM. Model 2 of Table 10 indicates that the association between regulatory uncertainty and investment in defensive SPM is positive and significant ($b = 0.57, p < 0.05$). Therefore, Hypothesis 1 is supported.

Hypothesis 2 predicts a positive association between yet to be realized investments by the firm (i.e., investment in horizontal drilling permits) and its investment in defensive SPM. Model 2 of Table 10 indicates that the association between a firm's unrealized gains from its strategic investment in horizontal permits and its investment in defensive SPM is negative and not significant ($b = -0.23, n.s.$). Thus, Hypothesis 2 is not supported.

Hypothesis 4 predicts a positive interaction between regulatory uncertainty and prior experience with SPM and firm investment in defensive SPM. Model 3 of Table 10 reports the evidence, indicating a negative and non-significant interaction coefficient ($b = -0.27, n.s.$). Furthermore, in the full model (Model 6), the coefficient remains negative and the interaction remains non-significant ($b = -0.24, n.s.$). Therefore, Hypothesis 4 is not supported. Hypothesis 5 predicts a positive interaction effect between yet to be realized investments by the firm (i.e., investment in horizontal drilling permits) and prior experience with SPM and its investment in defensive SPM. Model 4 of Table 10 shows

that this relationship is negative and non-significant ($b = -0.02$, n.s.). Examining the full model (Model 6) in Table 10 indicates that this relationship becomes positive but remains not significant ($b = 0.001$, n.s.). Thus, Hypothesis 5 is not supported. Finally, Hypothesis 7 predicts a positive interaction effect between yet to be realized investments by the firm (i.e., investment in horizontal drilling permits) and regulatory uncertainty and its investment in defensive SPM. Model 5 of Table 10 shows that this relationship is negative and non-significant ($b = -5.20$, n.s.) as does the full model (Model 6; $b = -5.43$, n.s.). Therefore, Hypothesis 7 is not supported.

SECOND-STAGE ANALYSIS OF OFFENSIVE SPM INVESTMENT. Table 11 shows the results of the analyses in which investment in offensive SPM was the independent variable. Model 7 of Table 11 presents the base model consisting only of control variables. Model 8 adds in the hypothesized direct effects influencing a firm's investment in offensive SPM. Models 9 and 10 add each hypothesized interaction individually. Model 11 represents the full model including both of the hypothesized interactions influencing a firm's investment in offensive SPM.

Hypothesis 3 predicts a positive association between the size of a firm's asset inventory and its investment in offensive SPM. Model 8 of Table 11 indicates that the association between the size of a firm's asset inventory and its investment in offensive SPM is positive and significant ($b = 0.09$, $p < 0.01$). Therefore, Hypothesis 3 is supported.

Hypothesis 6 predicts a positive interaction effect between the size of the firm's asset inventory and prior experience with SPM and firm investment in offensive SPM. Model 8 of Table 11 indicates a negative and non-significant coefficient ($b = -0.01$, n.s.). Additionally, Model 11 of Table 11 also reports a negative and non-significant coefficient ($b = -0.02$, n.s.). Thus, Hypothesis 6 is not supported. Hypothesis 8 predicts a

negative interaction effect between the size of the firm's asset base and regulatory uncertainty and firm investment in offensive SPM. Model 10 of Table 11 shows a negative and significant relationship ($b = -0.39, p < 0.05$). Model 11 of Table 11 also indicates a negative and significant relationship ($b = -0.43, p < 0.05$). Therefore Hypothesis 8 is supported.

A number of analyses using alternative measures and functional forms of the variables were assessed as a result of the lack of findings of the interaction terms. In the analyses described herein, a firm's investment in defensive SPM was logged to reduce the skewness in the distribution. However, a non-logged version of this independent variable was also used, both with an identity link function and a logged link function in the GEE analysis. In the first case, the model would not achieve convergence. In the second case, the QIC value of all models was much greater than the values presented in Tables 10 and 11. In a separate analysis, lags of the independent variables were used to assess the proposed hypotheses. Again, the QIC values of the resultant models suggested a poor fit. Finally, there was a possibility that a curvilinear relationship may have existed between the proposed independent variables and investment in SPM. Therefore, the square of each control variable and independent variable was also analyzed, separately and in combination with the other variables. No curvilinear relationships were found.

ROBUSTNESS CHECK USING NEW YORK DATA SAMPLE

The method described above was also applied to the NY data sample ($N = 784$ firm-year observations) as a robustness check. While the natural gas industry in New York represents a smaller dataset than the Texas data sample, it offers a different regulatory context on which to assess the robustness of hypotheses in this study. Table 12 shows the descriptive statistics and correlations for the New York data sample.

Regression results are shown in Tables 13 and 14. Table 15 contains a summary of the results from both the Texas and New York data samples.

Consistent with the finding from the Texas data sample, Hypothesis 1 was confirmed in the New York data sample (Table 13; $b = 1.28$, $p < 0.05$). This robust finding suggests that regulatory uncertainty is an important driver of a firm's investment in defensive SPM. Even across different regulatory contexts, firms appear likely to engage in defensive SPM to maintain the status quo when their regulatory environment becomes more uncertain.

Unlike the Texas data sample, Hypothesis 2 was also supported in the New York data sample (Table 13; $b = 1.81$, $p < 0.01$). These conflicting findings may be the result of the different regulatory contexts. More specifically, the New York natural gas industry between 2004 and 2009 underwent a boom in horizontal permits for shale gas development, but the drilling of those wells has lagged. Thus, a natural gas firm operating in New York is likely to have a greater surplus of undrilled horizontal permits that it is seeking to protect through investments in defensive SPM than firms in Texas.

Hypothesis 3 was not supported using the New York data sample (Table 14; $b = -0.28$, n.s.) though it was supported using the Texas data sample. Similar to Hypothesis 2, this lack of robust finding is likely the result of the different regulatory contexts examined. For example, firms in Texas had, on average, a much larger asset inventory than firms operating in New York. As a result, firms in New York would have been less likely to engage in offensive SPM because they did not have excess asset inventory for which they were trying to create increased demand.

Consistent with the finding in the Texas data sample, Hypothesis 4 was not supported in the New York data sample (Table 13; $b = -1.64$, $p < 0.10$). This robust non-finding suggests that a firm's prior experience with SPM does not interact with regulatory

uncertainty to increase investment in defensive SPM. In fact, the coefficient was negative in both analyses. This suggests that that a different theoretical mechanism may be driving this relationship than the proposed learning effect.

Unlike in the Texas data sample, Hypothesis 5 was supported in the New York data sample (Table 13; $b = 5.63$, $p < 0.01$). Much like the outcome of Hypothesis 2, this conflicting finding is likely the result of the different regulatory contexts. Because a firm in New York was more likely to have a greater surplus of undrilled horizontal permits, it would likely have sought to protect those investments by engaging in defensive SPM. Prior experience with SPM interacted to make this more likely in New York.

Hypothesis 6 (Table 14; $b = -0.17$, $p < 0.01$) was not supported using the New York data sample because, while significant, the interaction occurred in the opposite direction predicted. This non-finding is robust across data samples. Additionally, the negative coefficient occurs across both data samples though it is non-significant in the Texas data sample (see Table 11). The smaller number of firms with natural gas production in New York may be causing the significant finding. However, the fact that a firm's prior experience with SPM decreases the likelihood of it investing in offensive SPM when it has a larger asset inventory demands further theorizing.

Similar to Hypothesis 6, Hypothesis 7 (Table 13; $b = -0.69$, $p < 0.01$) was not supported using the New York data sample because, while significant, the interaction occurred in the opposite direction predicted. This non-finding is robust across data samples. Furthermore, the negative coefficient occurs across both data samples though it is non-significant in the Texas data sample (see Table 10). Thus, analysis of both data samples suggest that regulatory uncertainty decreases the likelihood of a firm investing in defensive SPM when it has yet to be realized investments (i.e., investment in horizontal drilling permits).

Finally, Hypothesis 8 was not supported using the New York data sample (Table 14; $b = -0.59$, n.s.) though it was supported using the Texas data sample (see Table 11). This lack of robust finding is likely the result of the different regulatory contexts examined. Again, firms in Texas had, on average, a much larger asset inventory than firms operating in New York. As a result, firms in New York would have been less likely to engage in offensive SPM, regardless of the uncertainty in the regulatory environment, because they did not have excess asset inventory for which they were trying to create increased demand.

Chapter 6: Discussion and Concluding Remarks

Research in strategy has considered several facets of why firms engage in strategic political action and has proposed multiple typologies that describe the outcomes of such action. For example, Baysinger (1984) distinguished between domain maintenance and domain management, while Oliver and Holzinger (2008) distinguished between defensive political strategies and proactive political strategies. These existing typologies have been primarily theoretical though. This study has endeavored to empirically assess the factors influencing when firms would seek to engage in political action specifically designed to protect the status quo (e.g., defensive SPM) and political action focused on shaping future legislation (e.g., offensive SPM). The threats and opportunities within a firm's regulatory environment were proposed as the primary motivation driving firms to engage in these distinct forms of SPM. As predicted, when firms experienced higher regulatory uncertainty in their political environment, they reacted with greater amounts of defensive SPM. Furthermore, when firms possessed a large inventory of assets, they were more likely to engage in offensive SPM. Regulatory uncertainty was also found to negatively moderate the relationship between a firm's asset inventory and its likelihood of investing in offensive SPM suggesting that regulatory uncertainty in a firm's political environment may override its efforts to engage in offensive SPM.

These findings have important implications for strategy research because they begin the process of empirically validating a typology of SPM determined by how firm's perceive their environment. The research presented here contributes theoretically to this conversation by identifying specific environmental and organizational conditions under which firms would be expected to engage in defensive and offensive SPM.

DISCUSSION OF RESULTS

ENVIRONMENTAL DRIVERS OF DIFFERENT TYPES OF SPM. I found that the degree of regulatory uncertainty in a firm's environment significantly impacts whether it invests in defensive SPM (Hypothesis 1). More specifically, as regulatory uncertainty increases so does the likelihood that firms will invest in defensive SPM. This finding was also supported by the robustness check using the New York data sample. What are the implications of this finding? First, this finding lends support to the importance of theoretically differentiating between different types of strategic political management based on contextual motivations. The notion that different types of strategic political management exist has been proposed by scholars that study the interaction of business and government (Baysinger, 1984; Oliver and Holzinger, 2008). However, despite identifying potentially different types of corporate political activity, research has yet to consider the conditions under which firms would be expected to engage in one or the other. This finding demonstrates that a specific environmental condition can lead to a specific type of strategic political management.

Second, this finding suggests that when a firm is faced with threats in its political environment it is likely to engage in SPM to defend itself. Strategic categorization theory argues that managers perceive threats and opportunities and suggests that firms act in specific ways as a result of such perceptions (Dutton & Jackson, 1987; Jackson & Dutton, 1988). Yet research that has employed this theory has implied that firms are likely to undertake actions internal to the firm, such as reorganizing divisions and routines to more effectively ward off threats or expanding into new product markets to take advantage of an opportunity (Chattopadhyay et al., 2001). This finding suggests that a firm may also engage the political environment when faced with threats in attempts to preserve its competitive advantage. This makes sense for a number of reasons. First, because SPM

can be undertaken relatively cheaply (Ansolabehere, de Figueiredo & Snyder, 2003), it may be high on the list of actions firms take when facing difficulties. SPM is also something that executives are likely to directly influence, perhaps more so and more quickly than they can influence other strategic actions such as new product development or extensive reorganizations. Thus, engaging in defensive SPM when a threat occurs in the firm's political environment is likely to be at the forefront of the executive's minds.

Third, this finding provides legitimacy for the methodology employed in this study which empirically assessed the two types of strategic political management: defensive and offensive. While extant research has theoretically differentiated between different types of SPM, empirically this distinction has not been measured. I devised specific ways of measuring offensive and defensive SPM and operationalized those measures using state lobbying data to distinguish between them. Going forward, methodologically assessing different types of corporate political activity is likely to be important to research in non-market strategy because it will allow strategy scholars to test theory that predicts specific types of corporate political action.

FIRM SPECIFIC DRIVERS OF DIFFERENT TYPES OF SPM. I also argued that there should be a positive relationship between the amount a firm had invested in yet to be realized gains and the extent of its investment in defensive SPM (Hypothesis 2). This hypothesis was not supported. This non-finding suggests that firms in Texas that invested in horizontal permits to explore for natural gas were no more likely to engage in defensive SPM to protect their investment than firms which had not made significant investments in horizontal permits. Considering that the Barnett shale in Texas was heavily developed during the time frame of this study the firms operating there that had a large inventory of undrilled horizontal permits may not have felt that they were at risk of losing their ability to develop those permits. More generally, firms that have invested in

yet to be realized gains may not perceive defensive SPM as a viable mechanism to protect those investments.

Additionally, I argued that there would be a positive relationship between the size of a firm's asset inventory and the extent of its investment in offensive SPM (Hypothesis 3). This hypothesis was supported. Employing a similar logic as was used to understand Hypothesis 2 helps to understand this finding. Firms in Texas substantially increased the volume of shale gas produced during the sampling window. As a result, these firms were likely to have a surplus of gas for which they were seeking additional demand opportunities. Hence these firms were more likely to engage in offensive lobbying in an effort to create new markets in natural gas vehicles and increase demand for natural gas in electricity generation.

THE MODERATING ROLE OF EXPERIENCE WITH SPM. A firm's prior experience with SPM was argued to increase the likelihood that it would engage in defensive or offensive SPM. Indeed, the main effect of prior experience with SPM on investment in both defensive and offensive SPM was found to be positive and significant. However, prior experience with SPM did not have the predicted moderating effects on the degree of regulatory uncertainty in a firm's political environment, its amount of investment in yet to be realized gains, or the size of its asset inventory.

More specifically, I argued that prior experience with SPM would positively moderate the relationship between the degree of regulatory uncertainty and the extent of investment in defensive SPM (Hypothesis 4). This non-finding could be the result of the fact that firms primarily engage in defensive SPM rather than offensive SPM and experience with SPM plays only a minor role in motivating a firm to engage in defensive SPM when regulatory uncertainty is high. In other words, high levels of regulatory

uncertainty may trigger a defensive SPM response, regardless of how much experience a firm has had utilizing SPM.

I also argued that prior experience with SPM would positively moderate the relationship between the amount a firm had invested in yet to be realized gains and the extent of its investment in defensive SPM (Hypothesis 5). Similar to the finding for Hypothesis 2, in Hypothesis 5 we see that firms in Texas with significant numbers of horizontal permits were no more likely to engage in defensive SPM, whether or not they had previous experience utilizing it. Once again, the sample of Texas firms used in this study likely influenced this non-finding as these firms may not have perceived any risk of losing their undrilled horizontal permits.

Additionally, I argued that prior experience with SPM would positively moderate the relationship between the size of a firm's underutilized asset base and the extent of its investment in offensive SPM (Hypothesis 6). The fact that a firm's prior experience with SPM does not interact with the quantity of shale gas produced is troubling, as investment in offensive SPM was argued to be more likely for those firms that had gained experience with SPM. This non-finding with the Texas data sample brings into question whether and how firms learn to engage in offensive SPM. Digging more deeply into this question will be an important future research direction as I try to uncover whether engaging in offensive SPM is a learned strategy.

More generally, the pattern of non-findings associated with the moderating effects of prior experience with SPM, taken in combination with the positive and significant main effect, suggests that prior experience may lead organizations to learn about and undertake greater amounts of SPM, but that the conditions presented by environmental and firm specific characteristics overwhelms such learning. Indeed, it may be that when firms are faced with the specific conditions tested in this study they understand how to

respond using SPM. This may entail firms understanding when not to engage in SPM. In other words, it may be that prior experience with SPM helps firms learn that in certain circumstances, SPM will not provide a benefit and therefore investment in SPM is unaltered.

THE MODERATING ROLE OF REGULATORY UNCERTAINTY. I argued that higher levels of regulatory uncertainty would positively moderate the relationship between the amount a firm had invested in yet to be realized gains and the extent of its investment in defensive SPM (Hypothesis 7). This hypothesis was not supported. The rationale for this hypothesis was that firms which had invested in horizontal permits but had not yet received a return on that investment would be even more likely to engage in defensive SPM when regulatory uncertainty was high. Not only was this not the case, the coefficient for this hypothesized interaction was negative. Thus this finding suggests that regulatory uncertainty may negatively moderate the relationship between the amount a firm had invested in yet to be realized gains and the extent of its investment in defensive SPM.

Finally, I argued that higher levels of regulatory uncertainty would negatively moderate the relationship between the size of a firm's asset inventory and the extent of its investment in offensive SPM (Hypothesis 8). This hypothesis was supported which suggests that firms utilize SPM first and foremost to manage the regulatory uncertainty in their environment. This finding is important as it suggests that a hierarchy may exist in which firms primarily engage in defensive SPM to manage their environment and seek to engage in offensive SPM more selectively when specific opportunities may exist. A future research direction, based on this result, would be to dig deeper into this proposed hierarchy in attempts to confirm it and determine when it may not hold.

CONCLUSIONS. Overall, the pattern of findings in this study seem to suggest a number of underlying mechanisms may be influencing what motivates firms to engage in SPM and whether that SPM is defensive or offensive in nature. First, regulatory uncertainty more so than any other variable appears to influence whether a firm engages in SPM. This finding was robust across multiple regulatory contexts. More over, firms appear to respond to such uncertainty with SPM designed to protect the status quo. So strong is the effect of regulatory uncertainty on firms, it seems to decrease the likelihood that a firm would invest in offensive SPM even if its asset position would indicate that it should. Thus, one key conclusion that can be drawn from the results is that firms are much more likely to respond to regulatory uncertainty with defensive SPM regardless of the regulatory context in which they operate or the firm specific assets under control.

Second, the overall lack of support for the proposed firm specific hypotheses that would drive defensive and offensive SPM suggests that more work is required to understand the key firm level drivers of SPM. While firms with a significant inventory of unused assets were found to invest in offensive SPM, this finding was not robust across both regulatory contexts. There could be a number of reasons for these null results: (a) the theory applied might be faulty, (b) the measures employed could be problematic, (c) the empirical setting might be causing problems, or (d) the analysis itself might be an issue. It is also possible that more than one of these issues could be at play at the same time.

Strategic categorization theory was employed to derive the proposed hypotheses in this study. Based on existing research which has considered how firms respond to uncertainty in their environment this appeared to be the most appropriate lens through which to build my arguments. Furthermore, a series of interviews undertaken prior to this study with individuals that worked at the intersection of business and politics

suggested that firms engage in SPM in a fashion similar to that described by this theory. Hence, while other theoretical mechanisms could certainly be at work here, I believe that the proposed theory represents one of the stronger aspects of this research.

A number of firm specific measures were used to assess the proposed hypotheses and the construct validity of these measures could be a driver of the null results. For example, using permitted but undrilled wells as a proxy for unrealized gains from strategic investments may not have fully captured the risk of a firm losing a key investment. This is because most natural gas firms tend to have a fairly diversified inventory of drilling permits so losing the opportunity to drill a specific shale gas well may not have caused too much of a problem for a firm operating in multiple locations and drilling into a variety of producing formations. Furthermore, the cost of any one permit is not extremely high so the firms in the sample may not have been motivated to engage in defensive SPM. Another example of a potentially problematic variable was the operationalization of prior experience with SPM using a simple count of years engaged in lobbying. This measure treated as equal the amount a firm invested in lobbying in previous years by simply counting whether an investment was made or not. However, a \$1,000,000 lobbying investment is substantially different from a \$5,000 lobbying investment and this discrepancy needs to be accounted for in the measure. Thus, going forward, more detailed measures will be constructed to try to more accurately assess the firm specific independent variables.

Additionally, the empirical setting appears to have had significant influence on when and how firms engaged in SPM. Considering how the abovementioned firm specific hypotheses varied in support across Texas and New York, there is reason to believe that regulatory context may be an important underlying driver affecting firm specific decisions to engage in defensive and offensive SPM. Indeed, a number of firms

in the Texas data sample also operated in New York during the time frame of this study and appeared to undertake completely different political strategies. Thus, research will need to closely consider the effects of the empirical setting on how firms strategically engage in corporate political activity.

Finally, Generalized Estimating Equation (GEE) models were used in the analysis of the data in this study. These models were run as a second stage model after a first stage probit analysis was performed to assess whether zero-inflation was an issue. The GEE models were run using a logged-link function, assuming a normal distribution and an AR1 (autoregressive 1-year lag) within subject correlation structure. A large number of other models were also run to assess the best model fit before settling on these parameters for the GEE. Furthermore, a VIF analysis was run on the variables in these models and no issues of multicollinearity were found to exist. While it is possible that the analysis could be driving the null results in this study, I believe that is less likely than the issues of construct validity and the empirical setting studied.

LIMITATIONS

This paper begins the process of empirically assessing defensive and offensive SPM and as such embodies some limitations which should be addressed. First, and more generally, the primary findings from this study are based on a single industry in one institutional context (i.e., the natural gas industry in Texas). Moving forward research should consider extending the context of study beyond the political actions of a single industry in one state. The natural gas industry examined herein provides a context that has experienced varying levels of regulatory uncertainty over the sample window. However, when the same hypotheses were assessed using a secondary institutional context (i.e., New York), the results were not very robust. On one hand, the New York

results should be taken with a grain of salt because the sample size (N = 784 firm-year observations) was quite small. On the other hand, these differing results should be further studied by scholars investigating multiple industries under different levels of regulatory uncertainty. This would allow researchers to disentangle potential effects that a specific industry's regulatory structure and the regulatory uncertainty surrounding that structure may have on each other.

Second, regulatory uncertainty was determined based on the composition of Democrats and Republicans in the House of Representatives and the Senate in Texas. This variable was assessed by combining the count of Democrats and Republicans in both legislative branches across the term of the sample. The measure infers that Democrats are more likely to propose anti-business legislation than Republicans and thus firms would perceive a legislature comprised of more Democrats as more uncertain. This measure is based on extant research (Burris, 1987; Handler & Mulkern, 1982). However, not all firms may perceive regulatory uncertainty in this way. For example, firms may perceive greater levels of uncertainty associated with newly elected congressional representatives with which they are unfamiliar. Additionally, some scholars have suggested that firms are more likely to make political contributions to whomever they believe has the best chance of winning an election (e.g., Burris, 1987) and this study does not control for political contributions made by firms. Therefore, additional research that employs the type of regulatory uncertainty measures used in this study would help to strengthen its interpretation.

Third, offensive and defensive SPM was determined in this study based on lobbying disclosure reports from the firms in the sample. Firms which engage directly in lobbying or contract with an outside firm to lobby on their behalf must submit disclosure reports. While firms submit these disclosures on an annual basis, they do not always

complete them in the same way. As a result, I was only able to assess offensive and defensive SPM for firms which specified the legislation on which they lobbied and for which there was a clear interpretation of how the firm would interpret that legislation. While this is a limitation of the underlying lobbying data, it does create the possibility that not all of the issues lobbied upon by the firms which filed disclosure reports were represented in the dataset.

Finally, this research places a black box around a firm's perception of threats and opportunities in its regulatory environment. It implies that an uncertain regulatory environment would be perceived as a threat to a firm's operations and that opportunity to shape legislation may exist for those firms which have prior experience engaging in SPM. Because firm perceptions are not directly measured, executives may have formed impressions that differ from those suggested here. That said, through a series of ethnographic interviews with individuals that work at the interface of business and government (e.g., lobbyists, government affairs executives) it became apparent that firms do perceive threats and opportunities in their political environment. Furthermore, uncertainty in a firm's regulatory environment was explicitly mentioned in multiple interviews as a potential threat to firm operations and experience with SPM was noted as an important driver of the level of sophistication of a firm's strategy to engage in political activity.

FUTURE RESEARCH DIRECTIONS

Looking ahead, research at the intersection of business and government has the opportunity to make a considerable impact on the field of strategic management. The firm's non-market environment presents a unique arena for competition and opportunities

for firms to gain competitive advantage. It also presents fertile ground to expand upon existing theories in strategy and organizational theory.

Based on the findings from this study, one future research directions will endeavor to build upon the distinction between defensive and offensive SPM. The methodology developed in this study allows for data to be collected and analyzed on a number of different levels: federal, state and county/city. Examining the defensive/offensive distinction across multiple levels will provide an understanding of how firms engage in political activity to maximize preferred outcomes. For instance, a firm which feels threatened may seek to “amplify” legislative and regulatory outcomes that would be beneficial to its industry by investing in lobbying at all levels of government. In contrast, when seeking unique firm specific legislative and regulatory outcomes, firms may seek to more quietly propose policy at a specific level of government that could benefit the firm and may generate a unique competitive advantage. This differential political amplification strategy may be able to be teased apart by examining the same issues across firms lobbying at multiple levels of government.

Another opportunity to explore this defensive/offensive distinction resides at the intersection of corporate lobbying and corporate political action committee (PAC) contributions. Research has considered how lobbying behavior interacts with PAC contributions (e.g., Tripathi, Ansolabehere & Snyder, 2002). However, research has yet to consider how PAC contributions interact with defensive and offensive lobbying. Considering corporate PAC contributions in conjunction with defensive or offensive lobbying investment offers the opportunity to examine whether firms make such contributions to strategically strengthen lobbying efforts. Exploring this relationship may also offer insight into how a firms overall corporate political activity works with its various market strategies to gain competitive advantage.

As a result of the recent *Citizens United vs. Federal Election Commission* Supreme Court ruling in January 2010, firms are now able to make unlimited political contributions that focus on the election and/or defeat of specific candidates. This ruling has already had dramatic effects on the 2010 mid-term elections. For example, The Center for Responsive Politics found that independent outside expenditures increased from \$156 million in the 2008 mid-term election to \$210 million in the 2010 mid-term election cycle (opensecrets.org, 2010). As corporations continue to engage in ever increasing levels of political activity, it is imperative that the research community develop an understanding of what motivates specific types of corporate political action.

Appendix

Table 1: Summary of Literature Reviewed on Corporate Motivations to Engage in Political Activity

Authors (year)	Perspective	Type	Conclusion/Main Finding
Baron (1995)	Political Economics	Theory	Corporate political activity can be conceptualized as complements and substitutes to a firms more traditional market strategy.
Baumgartner & Leech (1998)	Political Science	Theory	Public policy is the outcome of competition among interest groups.
Baysinger (1984)	Strategy	Theory	Firms engage in corporate political activity in an effort to shape public policy in favorable ways.
Becker (1983)	Political Economics	Theory	Favorable policy outcomes are the result of the level of pressure applied by industry on a specific issue.
Boddewyn & Brewer (1994)	Strategy	Theory	Larger firms are more politically active and firm size is a key antecedent to political activity.
Broadbent (2000)	Political Science	Empirical	Dense networks among business, labor and government officials are more likely to create policy consensus.
Burris (2001)	Organizational Theory	Empirical	Managers are more likely to make political contributions to preferred candidates while firms are more likely to make political contributions to incumbents.
Caeldries (1996)	Political Economics	Empirical	The intent of legislation is to transfer favors to firms that are demanded by the industry.
Cook & Barry (1995)	Strategy	Empirical	The cognitive orientation of managers influences the extent to which firms engage in corporate political activity.
Epstein (1969)	Political Science	Theory	Industry represents a collective of firms that operate together to secure benefits.
Epstein (1980)	Political Science	Theory	Firms operate collectively as a social class to secure their own interests.
Francis (1993)	Political Science	Theory	Firms should be thought of as a unique social class focused on procuring preferential policy.

Authors (year)	Perspective	Type	Conclusion/Main Finding
Getz (1997)	Political Science	Theory	Industry represents a collective class of firms driven to optimize policy outcomes.
Gray & Lowery (1996)	Political Science	Theory	Competition between interest groups positively impacts the likelihood that a firm will engage in political activity.
Hansen & Mitchell (2000)	Political Economics	Empirical	Firm sales is positively related to a firm's likelihood of investing in
Hart (2001)	Political Science	Empirical	A firm's dependency on government for revenues is an important antecedent driving how it engages in political activity.
Hart (2004)	Political Science	Theory	Firms should not be characterized as an interest group because they are economically motivated and composed of workers who are compensated.
Hersch & McDougall (2000)	Political Science	Empirical	A firm's political activity is influenced by the political activity of its rivals.
Hillman (2005)	Strategy	Empirical	Firms that are more heavily regulated are more likely to have former politicians on their Board of Directors.
Hillman & Hitt (1999)	Strategy	Theory	The type of corporate political activity taken by a firm is dependent upon whether it takes a relational or transactional approach to government.
Kaufman, Englander & Marcus (1993)	Strategy	Theory	Firms engage in political activity as a way to reduce costs associated with operations.
Keim & Baysinger (1988)	Strategy	Empirical	Larger firms are more politically active and firm size is a key antecedent to political activity.
Keim & Zeithaml (1986)	Strategy	Theory	Firms engage in political activity as a way to secure government inaction over a specific issue.
Lester, Hillman, Zardkoohi & Cannella (2008)	Strategy	Empirical	An individual's breadth and depth of government experience is related to their likelihood of being appointed to a resource dependent firms' board of directors.
Lowi (1969)	Political Science	Theory	Public policy creates political competition which varies

Authors (year)	Perspective	Type	Conclusion/Main Finding
			across policy characteristics.
Martin (1995)	Political Science	Empirical	Formalized structures, such as a firm's Washington, D.C. office, facilitate corporate political activity by merging key individuals and resources.
Meznar & Nigh (1995)	Strategy/Organizational Theory	Empirical	Firm size and slack resources are key antecedents to political activity.
Mizruchi (1992)	Organizational Theory	Empirical	Formal and informal networks bind elites from business and government together.
Oliver (1991)	Organizational Theory	Theory	Under certain circumstances firms may engage in political influence tactics to alter institutional pressures to conform in ways that would not be beneficial to the firm.
Oliver & Holzinger (2008)	Strategy	Theory	The effectiveness of a firm's political activity is related to the dynamic political capabilities that reside within it.
Olson (1965)	Political Science	Theory	Collective action theory suggests that it will be less costly for firms to be politically active in concentrated industries.
Oster (1982)	Political Economics	Theory	Firms represent a coalition of interests which seek governmental favors.
Peltzman (1976)	Political Economics	Theory	Firms will not always prevail over unorganized interests due to the fact that regulators are motivated to design regulation that protects the consumers which vote for them.
Pfeffer & Salancik (1978)	Organizational Theory	Theory	Firms engage in political activity to manage their dependence on the government for key resources.
Salamon & Seigfried (1977)	Political Science	Empirical	Firm size is positively related to corporate political activity across a number of industries.
Salisbury (1984)	Political Science	Theory	Large institutions can be expected to dominate the political process, motivated primarily to manage trouble of threats encountered.
Schuler (1996)	Strategy	Empirical	Large firms dominate political activity to protect their industry from foreign competition.

Authors (year)	Perspective	Type	Conclusion/Main Finding
Schuler & Rehbein (1997)	Theory	Empirical	Firms gauge their political activity based on the salience of proposed policy on their competitive position.
Schuler, Rehbein & Cramer (2002)	Strategy	Empirical	Industry concentration, industry political activity and industry congressional caucuses influence the degree to which firms engage in multiple forms of political activity.
Stigler (1971)	Political Economics	Theory	Any industry with sufficient power will attempt to capture the state and obtain governmental favors.
Truman (1951)	Political Science	Theory	Firms are more likely to engage in political activity when they are threatened.
Ungson, James & Spicer (1985)	Strategy	Empirical	Regulatory agencies are perceived by firms as uncontrollable and influence firm goal setting and planning.
Useem (1984)	Organizational Theory	Theory	Formal and informal networks bind elites from business and government together.
Vogel (1996)	Strategy	Theory	The importance of political issues to a firm are likely to drive its engagement in political activity.
Yoffie (1987)	Strategy	Theory	Firms engage in political activity as a way to reduce the possibility that unwanted regulation will occur.

Table 2: Summary of Extant Typologies of Strategic Political Management

Baysinger, B. D. 1984. Domain Maintenance as an Objective of Business Political Activity: An Expanded Typology. *Academy of Management Review*, 9(2): 248-258.

- Domain Management: to gain special monetary and anticompetitive favors from government at the expense of other firms or interests. It is a strategic response to environmental uncertainty in which the organization attempts to employ governmental entities as instruments of organizational effectiveness. This objective may be pursued privately, collusively, or with the aid of governmental entities. Political tactics are developed and implemented to induce governmental organizations to use their power on behalf of the firm. This treats the relationship between governmental entities and business firms as basically cooperative.
- Domain Defense: to manage environmental turbulence created by governmental threats to the legitimacy of organizational goals and purposes. This turbulence often arises in areas in which organizational objectives or decisions adversely affect societal third parties. These individuals or groups, in turn, express their concerns regarding the legitimacy of the organization or its behavior, often through the expedient of seeking government action. Domain defense comprises a set of business political activities, the objective of which is to counteract such challenges to the legitimacy of business organizations' goals and purposes, as opposed to its methods of pursuing them.
- Domain Maintenance: to manage threats to the methods by which organizations pursue their goals and purposes. Domain maintenance is a parallel political objective to domain defense. The latter focuses on threats to the legitimacy of organizational goals and purposes; the former focuses on similar threats to the legitimacy of organizational methods, regardless of the perceived legitimacy of its goals and purposes.

Boddewyn, J. J., & Brewer, T. L. 1994. International-business political behavior: New theoretical directions. *Academy of Management Review*, 19(1): 119-143.

- Nonbargaining Political Behavior: Firms not engaging the government
 - Compliance and Avoidance: may be viewed as two sides of the same coin. Sovereign governments present obstacles and incentives to cost efficient and market-effective strategies and operations. This situation reflects a hierarchical-authority view of business-government relations by emphasizing the formal source of governmental power as something that is inherent in official positions (Astley & Sachdeva, 1984). The government as sovereign has the monopoly of legitimate power, whereas international companies have only delegated power as an institutionalized privilege resulting from permission to enter and operate in a country. Many international trading and investing firms are satisfied with the requirements imposed or their incentives offered by home and host governments, and they simply comply with them

because (a) they do not unduly constrain business strategies and operations, (b) they provide attractive benefits (e.g., tax deferrals and holidays), or (c) they are uncontrollable by a particular firm.

- **Circumvention:** circumvention through illegal activities (e.g., trade smuggling [Stephens, Boddewyn, & Sproul, 1991] and using local "front men" to disguise real investment control) provides another nonbargaining form of political response, although there may be legitimacy costs to bear if government detects such behaviors.

– **Bargaining Political Behavior:** Firms engaging the government

- **Conflict:** In a conflictual context, governments attempt to appropriate the rents resulting from IB operations, whereas international firms try to reappropriate these gains (= reaction) or to generate new ones (= proaction), almost as in a zero-sum game.
- **Partnership Intensity:** the partnership type of bargaining behavior rests on a positive-sum-game view of business-government interactions. Besides, it is characterized by a shift (a) from spot transactions to futures relationships, (b) from conflict to cooperation—collaborative governance in Boisot's (1986) and Ouchi's (1980) terminology, (c) from dependence to interdependence, and (d) from opportunism to trust (Gambetta, 1988).

Meznar, M. B., & Nigh, D. 1995. Buffer of bridge? Environmental and organizational determinants of public affairs activities in American firms. Academy of Management Journal, 38(4): 975-995.

- **Buffering Strategy:** involves trying to keep the environment from interfering with internal operations and trying to influence the external environment. It implies that a firm is trying either to insulate itself from external interference or to actively influence its environment through such means as contributions to political action committees, lobbying, and advocacy advertising. By buffering, a firm either resists environmental change or tries to control it.
- **Bridging Strategy:** occurs as firms seek to adapt organizational activities so that they conform with external expectations. It implies that the firm actively tries to meet and exceed regulatory requirements in its industry or that it attempts to quickly identify changing social expectations in order to promote organizational conformance to those expectations. By bridging, firms promote internal adaptation to changing external circumstances.
- *Buffering and bridging are not mutually exclusive strategies and both are found to occur with increasing environmental uncertainty.*

Oliver, C., & Holzinger, I. 2008. The effectiveness of strategic political management: A dynamic capabilities framework. Academy of Management Review, 33(3): 496-520.

- **Compliance Strategies:** firm-level actions undertaken in conformity with political requirements and expectations for the purpose of maintaining or creating value by anticipating or adapting to public policy.
 - **Reactive Political Strategy:** actions undertaken to efficiently align one's internal processes with political demands (e.g.,

rapid, low cost reconfiguration of internal processes to meet political demands; investment in training, resource, and skill innovations to accelerate and improve compliance with public policy).

- Anticipatory Political Strategy: actions undertaken to gain a first mover advantage by anticipating future public policy (e.g., continuous investment in environmental scanning; hiring ex-government experts; training and investment in knowledge of impending public policy changes).
- Influence Strategies: firm-level actions undertaken for the purpose of mobilizing support for a firm's interests.
 - Defensive Political Strategy: actions undertaken to thwart unwanted political changes and protect the status quo (e.g., advocacy of entry restrictions; activating social networks to defend current public policies; lobbying to reduce the threat of substitutes; lobbying to maintain protective pricing structures).
 - Proactive Political Strategy: actions undertaken to shape and control the way norms and public policies are defined (e.g., aggressive constituency building to create shared norms; cooperation with governments to create new rules; alliance formation to change the rules of political compliance).

Weidenbaum, M. 1980. Public policy: No longer a spectator sport for business. *Journal of Business Strategy*, 3(4): 46-53.

- Passive Reaction: a reactive strategy in which firms make no attempt to play a role in policy formulation or implementation, rather they react only post hoc to new legislation.
- Positive Anticipation: a more active stance towards public policy but still does not include participation in process, rather it refers to factoring government policy into the planning process of a firm. Firms attempt to anticipate future regulations and make adjustments accordingly to their strategies, thereby turning regulations into business opportunities.
- Public Policy Shaping: entails proactive behavior undertaken by firms to achieve specific political objectives.

Yoffie, D. 1987. *Corporate strategy for political action: a rational model*. In A. Marcus, A. Kaufman, & D. Beam (Eds.), *Business strategy and public policy*: 92-111. New York: Quorum.

- The Free Rider: collective action theory suggests that given nearly perfect information, firms would be expected to free ride and enjoy the benefits of the collective actions of others. Firms are expected to free ride when (a) political issues have low salience and (b) resources that can be committed to political action are limited. 80%-90% of firms are expected to free ride.
- Followers: firms that do not take the lead in collective organizations. Followers engage in SPM because they (a) perceive significant marginal benefit, (b) estimate low marginal costs, and (c) estimate a low supply of collective benefits.
- Organizing or Leading: firms that hold a dominant position in the industry and therefore a disproportionately large stake in an industry's politics could calculate that the individual benefit to organizing a collective effort could outweigh the costs. *This suggests that market share would be an indicator of SPM investment*. Firms acting in a leadership capacity would be expected to be more effective when the industry as a whole can agree upon the hierarchy of important issues affecting them. Leadership is

thought to become more difficult when there is uncertainty about future regulations and whether they will differentially affect firms within the industry.

- Private Goods: a strategy which seeks legislation, court decisions, regulations, executive orders, or other government assistance conferring unique benefits to an individual company. Large and monopolistic firms are expected to try to undertake this strategy, but due to public disclosure, one firm gaining unique benefits from government is unusual.
- Political Entrepreneur: a firm using limited resources to mobilize ad hoc coalitions or other companies and individuals with an eye towards securing access to key decision makers for the firm, but without the costs and risks of a private goods strategy and without the costs and constraints of organizing and leading a formal interest group.

Table 3: Representative Sample of Defensive/Offensive SPM Coding Procedure

State	Session	Proposed Bill	Proposed Issue	SPM Coding	Coding Rationale	Category
TX	79 th (2005-2006)	HB 170	Required site-specific air quality monitoring after an excessive emissions event at a oil or gas well to protect the health of individuals in the affected community	Defensive	Would lead to cost increases for gas production due to additional monitoring requirements	Increased cost
TX	79 th (2005-2006)	HB 217	Authorized the commissioners' court of a county with a population of more than 3.3 million to regulate sound levels of activities in unincorporated areas of the county to promote the public health, safety, or welfare. Allowed the county to prohibit any act that produces a sound that a reasonable person would find objectionable. Made each hour that a violation continues a separate offense.	Defensive	Would lead to increased regulation and costs associated with compressor sound levels at drill site	Increased regulation

State	Session	Proposed Bill	Proposed Issue	SPM Coding	Coding Rationale	Category
TX	79 th (2005-2006)	SB 123	Authorized Texas Commission on Environmental Quality (TCEQ) to require in a near nonattainment area any air quality control measure the commission may require in a nonattainment area if both the participating county and the largest municipality in that county request the measure as part of an early action plan.	Defensive	Would lead to increase air quality regulations at drill site, depending on its proximity to a nonattainment area	Increased regulation
TX	80 th (2007-2008)	HB 176	Authorized the commissioners' court of a county with a population of more than 3.3 million to regulate sound levels of activities in unincorporated areas of the county to promote the public health, safety, or welfare. Allowed the county to prohibit any act that produces a sound that a reasonable person would find objectionable. Made each hour that a violation continues a separate offense.	Defensive	Would lead to increased regulation and costs associated with compressor sound levels at drill site	Increased regulation

State	Session	Proposed Bill	Proposed Issue	SPM Coding	Coding Rationale	Category
TX	80 th (2007-2008)	HB 269	Established a new legislative goal that each electric utility provide incentives sufficient for retail electric providers and competitive energy service providers to acquire additional cost-effective energy efficiency (to allow customers to reduce energy consumption, peak demand, or energy costs) equivalent to at least 50% (rather than the current 10%) of the electric utility's annual growth in demand.	Offensive	Would drive the development of natural gas cogeneration facilities to meet this legislative goal and thus increases demand for natural gas as an electricity generation feedstock	New demand created
TX	80 th (2007-2008)	HB 270	Imposed a 7.5% tax on the market value of coal used in the state, with the proceeds dedicated only to provide funding for new energy technology grants. Provided that a process of providing energy that the committee determines significantly reduces greenhouse gas emissions, has minimal risk to public health and the environment, and is sustainable and efficient is considered new energy technology. Made nuclear fission energy ineligible for a new energy technology grant.	Offensive	Would make the use of coal as an electricity generation feedstock more expensive and denies grant funding to nuclear fission based electricity generation thereby increasing demand for natural gas as an electricity generation feedstock	Increased cost to competitors

State	Session	Proposed Bill	Proposed Issue	SPM Coding	Coding Rationale	Category
TX	80 th (2007-2008)	HB 344	Required TCEQ to implement a low-emission vehicle program, for motor vehicles with a model year of 2009 or later, that is consistent with Phase II of the California Low-Emission Vehicle program.	Offensive	Would increase the demand for natural gas vehicles and thus create another market for natural gas production	New market created

State	Session	Proposed Bill	Proposed Issue	SPM Coding	Coding Rationale	Category
TX	80 th (2007-2008)	HB 375	<p>Required the State Energy Conservation Office by October 1, 2008 to recommend - to the governor, the lieutenant governor, the speaker of the house of representatives, and the standing committees of the legislature with primary jurisdiction over environmental, economic, and transportation matters - a coherent strategy and mechanisms for increasing the availability of low-emission automotive fuels.</p> <p>Required the State Energy Conservation Office to analyze the life cycle emissions for each recommended fuel and determine how well the fuel achieves the goal of producing at least 20 percent less emissions over its life cycle than conventional gasoline. Provided that the analysis is to include reduction in carbon dioxide emissions if part of the fuel's production process includes carbon capture and storage.</p>	Offensive	Would increase the demand for natural gas vehicles and thus create another market for natural gas production	New market created

State	Session	Proposed Bill	Proposed Issue	SPM Coding	Coding Rationale	Category
TX	80 th (2007-2008)	HB 440	Required TCEQ to adopt new screening levels for air contaminants that take into account all acute and chronic health effects on a person due to exposure to an air contaminant. Defined a condition of air pollution to exist if sufficient and credible evidence demonstrates an unacceptable risk of health effects due to air pollution as determined by an exceedance of the screening level for an air contaminant for a relevant period as provided by commission rule. Placed the burden on the owner or operator of the facility or source, if TCEQ brings an action for creation of a condition of air pollution, to demonstrate to the Commission through certification by a responsible official that the facility or source is in compliance with all technological and monitoring requirements.	Defensive	Would lead to cost increases as a result of penalties associated with air contamination at drill	Increased costs

State	Session	Proposed Bill	Proposed Issue	SPM Coding	Coding Rationale	Category
TX	81 st (2009-2010)	HB 290	Directed the TCEQ, in making a finding as to whether emissions from a facility for which a permit application is under consideration will contravene the intent of the Texas Clean Air Act (including protection of the public's health and physical property), TCEQ was to consider the cumulative effects on the public's health and physical property of expected air contaminant emissions from the facility.	Defensive	Would lead to increased costs associated with the time required to gain gas exploration well permits	Increased costs

State	Session	Proposed Bill	Proposed Issue	SPM Coding	Coding Rationale	Category
TX	81 st (2009-2010)	HB 323	Required the owner or operator of any source of a discharge of pollutants into any water in the state that is an industrial user or a publicly owned treatment works to use a gas chromatograph or other means specified by TCEQ to sample any discharges from the industrial facility or treatment works for purposes of detecting an unauthorized discharge of waste and promptly notify TCEQ of any such unauthorized discharge detected. Provided that the facility owner or operator must obtain TCEQ approval before replacing or upgrading the gas chromatograph or other means used in detecting an unauthorized discharge of waste.	Defensive	Would lead to increase costs associated with the discharge of water from hydraulic fracturing operations at well sites	Increased costs
TX	81 st (2009-2010)	HB 395	Repealed a legislative goal that 50 percent of the megawatts of generating capacity installed in this state after January 1, 2000, use natural gas, that such usage be labeled as “green” together with related requirements for the Public Utility Commission to establish programs (including the natural gas energy credits program) and adopt rules to accomplish this goal.	Defensive	Would reduce the possibility that future natural gas cogeneration facilities would be built and calls into question the “green” label applied to such facilities	Reduced potential for new market

State	Session	Proposed Bill	Proposed Issue	SPM Coding	Coding Rationale	Category
TX	81 st (2009-2010)	HB 469	Defined a "clean energy project" as a project to construct a coal-fired electric generating facility that will have a capacity of at least 200 megawatts, use integrated gasification combined cycle technology, and be capable of capturing and permanently sequestering in a geologic formation at least 60 percent of the carbon dioxide resulting from the generation of electricity by the facility.	Defensive	Would create new opportunities for coal-generated electricity and reduce the opportunity for natural gas cogeneration to develop in its place	New market for competitor created
TX	81 st (2009-2010)	HB 634	Directed the TCEQ, in consultation with the Public Utility Commission, to establish a carbon dioxide "cap and trade" program that would limit and then reduce the total carbon dioxide emissions released by electric generating facilities in this state.	Offensive	Would create new opportunities for natural gas cogeneration facilities to be developed to replace existing coal-fired facilities to meet future carbon dioxide limits	New market created

State	Session	Proposed Bill	Proposed Issue	SPM Coding	Coding Rationale	Category
TX	81 st (2009-2010)	SB 119	Required the TCEQ to adopt rules to implement a low-emission vehicle program for motor vehicles with a model year of 2012 or later that is consistent with the California Low-Emission Vehicle program.	Offensive	Would increase the demand for natural gas vehicles and thus create another market for natural gas production	New market created
TX	81 st (2009-2010)	SB 273	Required an applicant to the TCEQ for a permit for an injection well that, for a charge, will dispose of industrial or municipal waste to use on-site monitoring wells to monitor and analyze groundwater quality and to conduct shallow soil test in accordance with rules adopted by TCEQ. Required the holder of a permit for an injection well requiring on-site monitoring wells and soil testing to submit to TCEQ a report of groundwater and soil quality on a regular schedule as required by TCEQ rules and immediately when a change in quality is detected.	Defensive	Would increase costs associated with natural gas exploration due to multiple wells being drilled to monitor groundwater and shallow soil quality	Increased costs

State	Session	Proposed Bill	Proposed Issue	SPM Coding	Coding Rationale	Category
NY	228 th (2005)	A 5179	Directed the public service commission to adopt rules and regulations requiring electric corporations to develop and utilize clean energy technologies which annually reduce the pollution generated; established fines for failure to comply with such rules and regulations; such provisions shall apply to the power authority of the state of New York and the Long Island power authority.	Offensive	Would drive the development of natural gas cogeneration facilities which meet clean energy technologies requirement and thus increases demand for natural gas as an electricity generation feedstock	New demand created
NY	229 th (2006)	A 645	Established a natural gas and oil well security fund to enable natural gas and oil producers to meet the financial security requirements in the environmental conservation law for the permitting, operation, maintenance and plugging of natural gas and oil wells.	Defensive	Would lead to increased costs associated with natural gas exploration due to financial indemnity	Increased costs

State	Session	Proposed Bill	Proposed Issue	SPM Coding	Coding Rationale	Category
NY	229 th (2006)	S 815	Re-imposed the natural gas company tax which expired on September 1, 2005 for privilege of engaging in business, doing business, employing capital, owning or leasing property, or maintaining an office in this state; applied to natural gas companies; provided for exemptions including for residential purposes and for utility credit or reimbursement.	Defensive	Would lead to increased costs associated with tax on natural gas exploration activity	Increased costs
NY	230 th (2007)	A 1092	Directed the department of environmental conservation to promulgate standards for emission of regulated air contaminants from certain generating sources; specified criteria therefore; provided for a permitting requirement and an alternative permitting mechanism involving a registration process.	Defensive	Would lead to increase air quality regulations at drill site	Increased regulation
NY	231 st (2008)	A 11606	Prohibited the use of toxic “fracing” solutions during hydraulic fracturing.	Defensive	Would lead to increased regulation and costs associated with the development of new non-toxic “fracing” fluid	Increased regulation

State	Session	Proposed Bill	Proposed Issue	SPM Coding	Coding Rationale	Category
NY	231 st (2008)	A 11527	Established a two-year moratorium on the issuance of permits for the drilling of new wells and directed the department of environmental conservation to study the need for environmental protection related to the drilling of oil and gas.	Defensive	Would slow the ability of natural gas firms to drill wells	Increased costs
NY	232 nd (2009)	A 1322	Established a moratorium on the issuance of permits for the drilling of wells and prohibited drilling within ten miles of the New York city water supply infrastructure.	Defensive	Would stop the ability of natural gas firms to drill wells in certain areas	Increased costs
NY	232 nd (2009)	A 3657	Related to the New York state oil, natural gas and solution mining advisory board (see description in text above).	Defensive	Would lead to increased regulation of natural gas drillers as a result of the advisory board having the ability to implement a best practices policy	Increased regulation
NY	232 nd (2009)	A 8784	Required permit holders to test groundwater prior to and after drilling wells for oil and natural gas.	Defensive	Would increase costs and time to explore for natural gas due to multiple groundwater test requirements	Increased costs

State	Session	Proposed Bill	Proposed Issue	SPM Coding	Coding Rationale	Category
NY	232 nd (2009)	S 1111	Required the commissioner of environmental conservation to promulgate rules and regulations implementing reductions in emissions of carbon dioxide by major electric generating facilities (see description in text above).	Offensive	Would create new opportunities for natural gas cogeneration facilities to be developed to replace existing coal-fired facilities to meet reductions in carbon dioxide emissions	New market created
NY	232 nd (2009)	S 2997	Related to the protection of water supplies; required an oil and gas driller or producer who affects a public or private potable water supply to restore or replace such water supply.	Defensive	Would increase costs associated with natural gas exploration that resulted in water pollution	Increased costs

Table 4: Breakdown of Type of SPM for Texas Data Sample

Year	Defensive	Offensive	Unknown	Total
1999	18	0	3	21
2000	22	1	4	27
2001	29	2	2	33
2002	30	8	6	44
2003	30	14	5	49
2004	40	19	11	70
2005	53	31	16	100
2006	54	32	14	100
2007	62	41	11	114
2008	71	53	23	147
2009	84	68	21	173

Table 5: Means and Standard Deviations for Texas Data Sample

	Mean	S.D.	Min	Max
Investment in Defensive SPM (log)	1.04	3.23	0.00	12.84
Investment in Offensive SPM (log)	0.77	2.75	0.00	12.15
Firm Age (log)	3.03	0.98	0.00	4.91
Firm Size (log employees)	0.54	0.88	0.00	4.06
Firm Size (log assets)	5.92	2.77	0.00	12.09
Cash (log)	2.53	2.11	-0.01	9.29
Working Capital (log)	1.56	2.18	-3.22	9.27
Natural Gas Production (log)	6.06	7.62	0.00	20.38
Size of Asset Inventory (log)	1.40	4.51	0.00	20.21
Unrealized Gains from Strategic Investments (log)	0.15	0.8	0.00	6.73
Regulatory Uncertainty	0.80	0.14	0.67	1.01
Prior Experience with SPM (log)	0.42	1.59	0.00	10.00
inv mills	2.62	1.22	0.35	5.32
inv mills2	2.70	1.13	0.45	5.15

Table 6: Correlations of Key Variables for the Texas Data Sample

	1	2	3	4	5	6	7	8	9	10	11
1. Investment in Defensive SPM (log)	1										
2. Investment in Offensive SPM (log)	0.86	1									
3. Firm Age (log)	0.11	0.10	1								
4. Firm Size (log employees)	0.43	0.35	0.30	1							
5. Firm Size (log assets)	0.41	0.36	0.22	0.74	1						
6. Cash (log)	0.39	0.36	0.26	0.72	0.76	1					
7. Working Capital (log)	0.23	0.24	0.13	0.34	0.38	0.58	1				
8. Natural Gas Production (log)	0.34	0.31	0.12	0.17	0.39	0.17	0.06	1			
9. Size of Asset Inventory (log)	0.49	0.45	0.09	0.17	0.34	0.19	0.10	0.49	1		
10. Unrealized Gains from Strat. Invest. (log)	-0.02	-0.13	-0.01	0.01	-0.13	-0.13	-0.11	-0.03	-0.05	1	
11. Regulatory Uncertainty	0.32	0.35	0.04	0.14	0.23	0.15	0.09	0.31	0.69	-0.10	1
12. Prior Experience with SPM (log)	0.77	0.82	0.12	0.40	0.39	0.40	0.24	0.34	0.45	-0.10	0.35
13. invmills	-0.43	-0.38	-0.08	-0.63	-0.95	-0.69	-0.39	-0.61	-0.41	0.13	-0.27
14. invmills2	-0.44	-0.39	-0.11	-0.63	-0.95	-0.70	-0.43	-0.63	-0.41	0.13	-0.28
	12	13	14								
13. invmills	-0.40	1									
14. invmills2	-0.41	0.99	1								

Table 7: Multicollinearity Analysis for the Texas Data Sample

Variable	VIF	Sqrt. VIF	Tolerance	R-Squared
Firm Size (log employees)	2.46	1.57	0.4060	0.5940
Cash (log)	3.01	1.73	0.3325	0.6675
Size of Asset Inventory (log)	2.47	1.57	0.4049	0.5951
Unrealized Gains from Strat. Invest. (log)	1.99	1.41	0.5025	0.4975
Regulatory Uncertainty	1.07	1.03	0.9364	0.0636
Prior Experience with SPM (log)	1.56	1.25	0.6431	0.3569
inv mills	4.38	2.09	0.2281	0.7719
inv mills ²	4.93	2.22	0.2028	0.7972
Mean VIF	2.74			

Table 8: First Stage Model of Defensive SPM for the Texas Data Sample

	Invmills Model
Firm Age (log)	-0.195** (0.068)
Firm Size (log assets)	0.413** (0.04)
Working Capital (log)	0.060** (0.022)
Total Natural Gas Production	0.057** (0.008)
Constant	-4.522** (0.322)
Chi-sq	376.01

** p<0.01, * p<0.05, + p<0.1

N = 1,429 firm-year observations; Standard errors are shown in parentheses

Table 9: First Stage Model of Offensive SPM for the Texas Data Sample

	Invmills2 Model
Firm Age (log)	-0.139+
	(0.074)
Firm Size (log assets)	0.359**
	(0.041)
Working Capital (log)	0.085**
	(0.023)
Total Natural Gas Production	0.06**
	(0.008)
Constant	-4.510**
	(0.348)
Chi-sq	297.77

** p<0.01, * p<0.05, + p<0.1

N = 1,429 firm-year observations; Standard errors are shown in parentheses

Table 10: Second Stage Model of Defensive SPM Investment for the Texas Data Sample

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Firm Size (log employees)	1.09*	0.61+	0.61+	0.61+	0.62+	0.62+
	(0.49)	(0.35)	(0.35)	(0.35)	(0.35)	(0.35)
Cash (log)	0.02	0.001	0.001	0.001	0.001	0.001
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Size of Asset Inventory (log)	0.22**	0.18**	0.18**	0.18**	0.19**	0.19**
	(0.07)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Prior Experience with SPM (log)		1.01**	1.22**	1.04**	1.04**	0.85
		(0.11)	(0.44)	(0.13)	(0.11)	(0.56)
Regulatory Uncertainty (H1)		0.57*	0.63**	0.58*	0.71*	0.66**
		(0.26)	(0.22)	(0.26)	(0.30)	(0.22)
Unrealized Gains from Strat. Invest. (log) (H2)		-0.23	-0.24	-0.15	3.52	3.67
		(0.25)	(0.25)	(0.41)	(2.50)	(2.89)
Regulatory Uncertainty*SPM Experience (H4)			-0.27			-0.24
			(0.54)			(0.66)
Unrealized Gains*SPM Experience (H5)				-0.02		0.001
				(0.05)		(0.06)
Unrealized Gains*Regulatory Uncertainty (H7)					-5.20	-5.43
					(3.59)	(4.34)
inv mills	-0.30*	-0.12	-0.12	-0.12	-0.12	-0.12
	(0.14)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
Constant	1.04+	-0.02	-0.05	-0.05	-0.12	-0.08
	(0.57)	(0.43)	(0.42)	(0.44)	(0.43)	(0.42)
QIC	9233.11	5184.01	5199.63	5159.87	5236.46	5229.73

** p<0.01, * p<0.05, + p<0.1 [N = 1,234 firm-year observations; Standard errors are shown in parentheses]

Table 11: Second Stage Model of Offensive SPM Investment for the Texas Data Sample

	Model 7	Model 8	Model 9	Model 10	Model 11
Firm Size (log employees)	0.48	0.01	0.01	-0.01	-0.03
	(0.32)	(0.14)	(0.13)	(0.14)	(0.13)
Cash (log)	0.07	0.04	0.05	0.05	0.05
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Unrealized Gains from Strat. Invest. (log)	0.37	-0.09	-0.03	-0.22	-0.16
	(0.42)	(0.26)	(0.27)	(0.30)	(0.30)
Prior Experience with SPM (log)		1.22**	1.31**	1.20**	1.31**
		(0.08)	(0.13)	(0.09)	(0.12)
Regulatory Uncertainty		-0.64+	-0.64+	-0.14	-0.11
		(0.33)	(0.34)	(0.18)	(0.18)
Size of Asset Inventory (log) (H3)		0.09**	0.11**	0.42*	0.47*
		(0.03)	(0.04)	(0.17)	(-0.183)
Size of Asset Inventory*SPM Experience (H6)			-0.01		-0.02
			(0.01)		(0.01)
Size of Asset Inventory*Regulatory Uncertainty (H8)				-0.39*	-0.43*
				(0.18)	(0.19)
inv mills2	-0.55**	-0.07	-0.05	-0.09	-0.07
	(0.18)	(0.06)	(0.05)	(0.06)	(0.06)
Constant	1.90**	0.77*	0.70*	0.42	0.3
	(0.64)	(0.34)	(0.33)	(0.28)	(0.27)
QIC	8297.01	3313.04	3254.37	3284.93	3207.75

** p<0.01, * p<0.05, + p<0.1 [N = 1,234 firm-year observations; Standard errors are shown in parentheses]

Table 12: Means, Standard Deviations, and Correlations of Key Variables for the New York Data Sample

	Mean	S.D.	Min	Max	1	2	3	4	5	6	7	8
1. Invest. in Defensive SPM (log)	0.41	2.06	0.00	12.51	1							
2. Invest. in Offensive SPM (log)	0.14	1.14	0.00	10.61	0.61	1						
3. Firm Age (log)	3.06	0.96	0.00	4.91	0.20	0.09	1					
4. Firm Size (log employees)	0.54	0.85	0.00	3.75	0.36	0.25	0.31	1				
5. Firm Size (log assets)	6.31	2.65	0.00	12.09	0.27	0.16	0.18	0.74	1			
6. Cash (log)	2.79	2.15	-0.01	9.29	0.26	0.15	0.25	0.69	0.72	1		
7. Working Capital (log)	1.86	2.29	-3.15	9.27	0.05	0.03	0.09	0.32	0.34	0.59	1	
8. Natural Gas Production (log)	0.42	2.31	0.00	17.53	0.34	0.25	0.03	0.14	0.22	0.12	0.01	1
9. Size of Asset Inventory (log)	0.09	0.89	0.00	10.10	0.19	0.20	0.04	0.10	0.14	0.14	0.05	0.55
10. Unreal. Gains/Strat. Invest. (log)	0.03	0.27	0.00	3.76	0.41	0.28	0.03	0.15	0.17	0.13	-0.02	0.74
11. Regulatory Uncertainty	1.64	0.11	1.41	1.78	0.08	0.08	0.04	0.02	0.10	0.05	0.08	0.01
12. Prior Experience with SPM (log)	0.08	0.47	0.00	4.00	0.78	0.66	0.17	0.31	0.24	0.23	0.05	0.34
13. invmills	3.15	1.07	0.55	6.31	-0.35	-0.20	-0.77	-0.65	-0.73	-0.58	-0.20	-0.36
14. invmills2	3.04	0.63	1.37	4.64	-0.34	-0.20	-0.49	-0.71	-0.91	-0.62	-0.11	-0.33
	Mean	S.D.	Min	Max	9	10	11	12	13	14		
9. Size of Asset Inventory (log)	0.09	0.89	0.00	10.1	1							
10. Unreal. Gains/Strat. Invest. (log)	0.03	0.27	0.00	3.76	0.34	1						
11. Regulatory Uncertainty	1.64	0.11	1.41	1.78	0.06	0.01	1					
12. Prior Experience with SPM (log)	0.08	0.47	0.00	4.00	0.32	0.41	0.12	1				
13. invmills	3.15	1.07	0.55	6.31	-0.22	-0.27	-0.08	-0.31	1			
14. invmills2	3.04	0.63	1.37	4.64	-0.20	-0.26	-0.09	-0.30	0.92	1		

Table 13: Second Stage Model of Defensive SPM Investment for the New York Data Sample

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Firm Size (log employees)	0.52+	0.52+	0.47+	0.52+	0.51+	0.46+
	(0.28)	(0.27)	(0.26)	(0.27)	(0.27)	(0.26)
Cash (log)	0.01	-0.03	-0.03	-0.03	-0.03	-0.03
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Size of Asset Inventory (log)	0.26	0.24	0.23	0.21	0.24	0.15
	(0.30)	(0.26)	(0.26)	(0.23)	(0.26)	(0.19)
Prior Experience with SPM (log)		0.69**	3.81+	0.79**	0.65**	3.82*
		(0.14)	(1.96)	(0.17)	(0.13)	(1.81)
Regulatory Uncertainty (H1)		1.28*	1.28*	1.29*	1.26*	1.23*
		(0.61)	(0.60)	(0.61)	(0.62)	(0.60)
Unrealized Gains from Strat. Invest. (log) (H2)		1.81**	1.69**	2.16**	0.50	-6.29**
		(0.17)	(0.17)	(0.19)	(1.24)	(2.40)
Regulatory Uncertainty*SPM Experience (H4)			-1.66			-1.64+
			(1.03)			(0.94)
Unrealized Gains*SPM Experience (H5)				0.21**		5.63**
				(0.03)		(1.56)
Unrealized Gains*Regulatory Uncertainty (H7)					-0.80	-0.69**
					(0.68)	(0.13)
invmills	-0.15	0.11	0.08	0.10	0.11	0.06
	(0.11)	(0.10)	(0.10)	(0.10)	(0.10)	(0.09)
Constant	0.51	-2.43+	-2.33+	-2.42+	-2.41+	-2.18+
	(0.47)	(1.27)	(1.22)	(1.27)	(1.29)	(1.19)
QIC	2984.88	2131.20	1935.08	2041.73	2161.41	1859.71

** p<0.01, * p<0.05, + p<0.1 [N = 784 firm-year observations; Standard errors are shown in parentheses]

Table 14: Second Stage Model of Offensive SPM Investment for the New York Data Sample

	Model 7	Model 8	Model 9	Model 10	Model 11
Firm Size (log employees)	0.19	0.09	0.13	0.09	0.13
	(0.16)	(0.12)	(0.12)	(0.12)	(0.12)
Cash (log)	0.03	0.02	0.02	0.02	0.02
	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)
Unrealized Gains from Strat. Invest. (log)	0.80	0.31	0.78	0.48	0.82+
	(0.67)	(0.69)	(0.51)	(0.68)	(0.50)
Prior Experience with SPM (log)		1.18*	1.22*	1.17*	1.22*
		(0.51)	(0.51)	(0.51)	(0.51)
Regulatory Uncertainty		0.37	0.39+	0.41+	0.40+
		(0.23)	(0.22)	(0.25)	(0.24)
Size of Asset Inventory (log) (H3)		-0.28	-0.07	2.03	0.91
		(0.22)	(0.10)	(1.68)	(1.32)
Size of Asset Inventory*SPM Experience (H6)			-0.18**		-0.17**
			(0.05)		(0.06)
Size of Asset Inventory*Regulatory Uncertainty (H8)				-1.37	-0.59
				(1.11)	(0.80)
invmills2	0.03	0.07	0.12*	0.07	0.12*
	(0.09)	(0.05)	(0.06)	(0.05)	(0.06)
Constant	-0.18	-0.87+	-1.09*	-0.96+	-1.11*
	(0.35)	(0.46)	(0.52)	(0.53)	(0.55)
QIC	1058.12	757.92	801.93	776.65	811.28

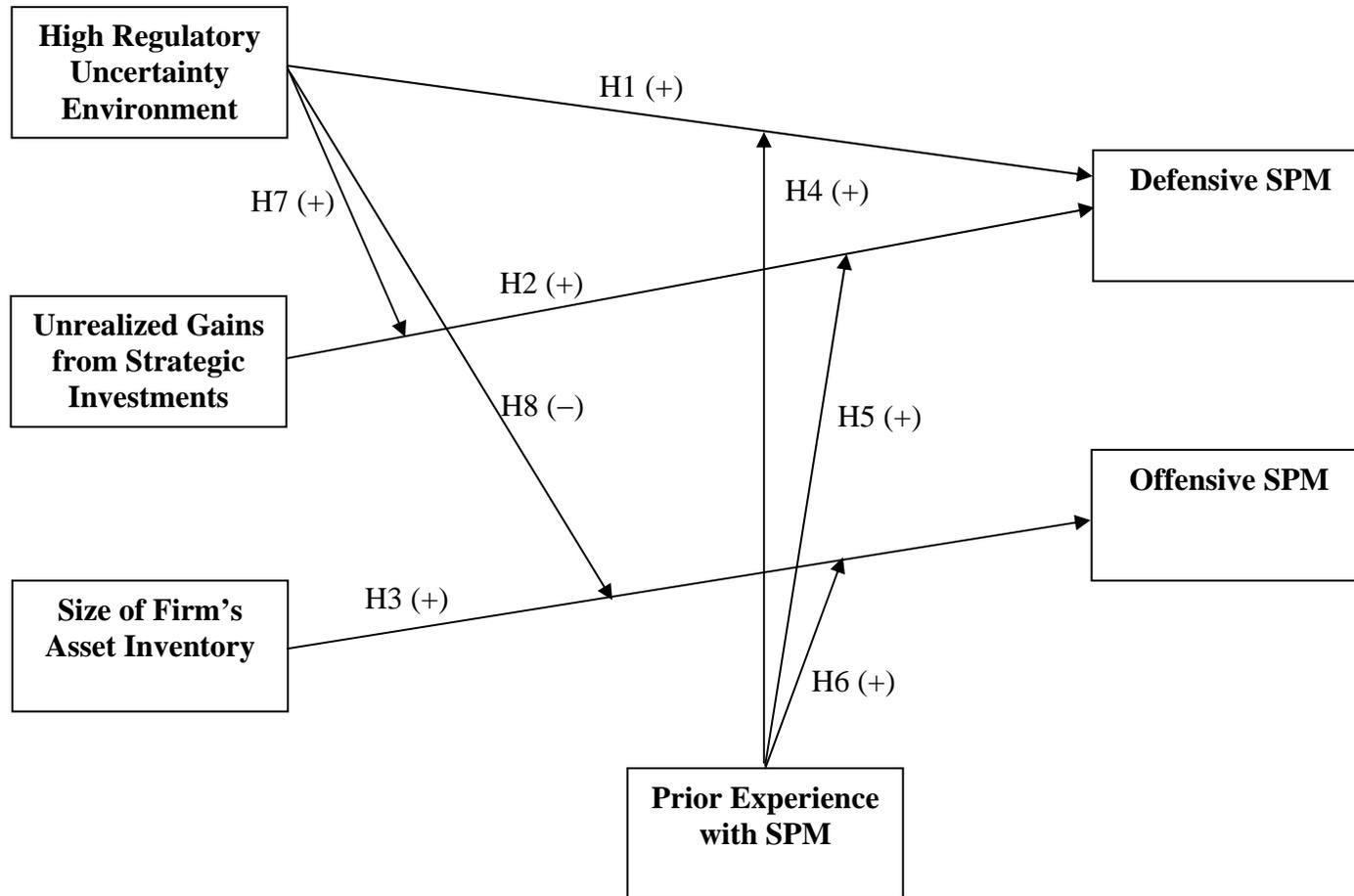
** p<0.01, * p<0.05, + p<0.1 [N = 784 firm-year observations; Standard errors are shown in parentheses]

Table 15: Summary of Results

Hypothesis #	Hypothesis	Texas Data Sample	New York Data Sample (Robustness Check)
1	There will be a positive relationship between the degree of regulatory uncertainty and the extent of investment in defensive SPM.	Supported	Supported
2	There will be a positive relationship between the amount a firm has invested in yet to be realized gains and the extent of its investment in defensive SPM.	Not Supported	Supported
3	There will be a positive relationship between the size of a firm's asset inventory and the extent of its investment in offensive SPM.	Supported	Not Supported
4	Prior experience with SPM will positively moderate the relationship between the degree of regulatory uncertainty and the extent of investment in defensive SPM.	Not Supported	Not Supported
5	Prior experience with SPM will positively moderate the relationship between the amount a firm has invested in yet to be realized gains and the extent of its investment in defensive SPM.	Not Supported	Supported
6	Prior experience with SPM will positively moderate the relationship between the size of a firm's underutilized asset base and the extent of its investment in offensive SPM.	Not Supported	Not Supported

7	Higher levels of regulatory uncertainty will positively moderate the relationship between the amount a firm has invested in yet to be realized gains and the extent of its investment in defensive SPM.	Not Supported	Not Supported
8	Higher levels of regulatory uncertainty will negatively moderate the relationship between the size of a firm's underutilized asset base and the extent of its investment in offensive SPM.	Supported	Not Supported

Figure 1: Proposed Model



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