Corporate Entrepreneurship and Real Options in Transitional Policy Environments: Theory Development*

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ABSTRACT  We develop a theoretical framework for describing, modelling, and predicting entrepreneurial strategies by corporations in transitional public policy environments. Drawing on research in entrepreneurship, real options, and strategic management under uncertainty, we demonstrate how corporations affected by government policy can use entrepreneurial strategies to exploit discontinuities generated by uncertain and unstable public policy environments. We argue that specific strategies will be effective depending on the degree and slope/inflection profile of policy change. Four strategies are identified: preemptive, optioned, synchronized, and adaptive. We develop propositions and provide illustrations to show how each of these strategies has helped firms respond to transitional policy environments. We conclude by offering a discussion of the utility and limitations of the framework and its potential application to other managerial circumstances in which uncertainty is pervasive, and by describing opportunities for further research, including empirical testing of our model.

INTRODUCTION

There is active interest in the impact of government policy on private actors (e.g. Lenway and Murtha, 1994; Murtha and Lenway, 1994; Porter, 1990; Shaffer and Hillman, 2000). This interest has heightened as a result of dramatic shifts in government policies as they relate to private corporations. Policies that illustrate these profound shifts include democratization, privatization, deregulation, reregulation, and trade liberalization. These initiatives, which characteristically include a redefinition of government’s role and responsibility, have had a profound impact on market structures and business strategies.

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For example, privatization of telecommunications services has dramatically altered the competitive landscape by transferring conservative, bureaucratic state-owned corporations from public to private hands, with the attendant opportunities for entrepreneurial transformation of such firms (Zahra et al., 2000). Often, privatization is accompanied by subsequent market liberalization, allowing new entrants into the market to compete against the newly privatized incumbent, generating a second wave of competitive impacts (Doh, 2000). Reduction of trade and investment barriers through formal and informal trade agreements, such as occurred following the conclusion of the last round of multilateral trade negotiations, have resulted in shifts in trade and investment toward developing countries and increased possibilities for exchange of services, intellectual property, and other intangibles. The competitive adoption of technical standards and auctioning of ‘public space’ such as telecommunications bandwidth have had profound impacts on firms such as NTT DoCoMo, Deutsche Telekom, and Verizon. These firms have bid for service rights based on assumptions about future adoption scenarios of devices that rely on high-speed bandwidth. In light of the ‘winner take all’ character of these opportunities, some firms are rewarded with concessions, while others are left on the sidelines.

In this paper, we develop a theoretical framework for describing, modelling, and predicting entrepreneurial strategies by corporations in response to changes in the public policy environment. In the first section of the paper, we briefly review and synthesize literature on corporate entrepreneurship to derive an operational definition of entrepreneurship in response to public policy change. In the second section of the paper, we discuss how transitional public policy environments create a unique opportunity for firms to exercise entrepreneurial options. Such environments, characterized by a state of uncertainty and turbulence, provide a particularly munificent setting for firms prepared to undertake entrepreneurial initiatives. We classify transitional policy environments by the degree of policy uncertainty and the slope and character (what we term inflection profile) of policy change. Drawing from real options research, we offer a normative assessment of which entrepreneurial strategies will be most effective given these contingencies in the policy environment. We present several examples of the application of these entrepreneurial strategies within specific transitional policy environments. Finally, we offer suggestions for how our framework is useful in other managerial circumstances in which uncertainty is pervasive, and propose further research and empirical testing of our model.

**CORPORATE ENTREPRENEURSHIP IN RESPONSE TO POLICY CHANGE**

There is increasing evidence that larger and more established firms can adopt entrepreneurial initiatives that result in new business opportunities. In addition,
corporations have been shown to develop and employ strategies to manage government-influenced environmental variables. In this section, we develop a theoretically-supported but pragmatic model of how firms can employ entrepreneurial strategies in response to public policy change.

**Entrepreneurship and Corporate Strategy**

In the Schumpeterian (1934) view, the entrepreneur is an agent of disruptive competition. Such a view provides the groundwork for the development of theory focused on entrepreneurial strategies in response to transitional policy environments. Contemporary perspectives on entrepreneurship centre on efforts by the firm to seek opportunities with unwavering determination, and seize such opportunities in spite of resource limitations (Timmons, 1994). Entrepreneurship has been defined as the degree of proactivity, risk tolerance, and innovation of a given firm or strategy (Covin and Slevin, 1989). Proactivity includes the notion of developing an aggressively competitive orientation and identifying and seizing marketplace opportunities ahead of competitors (Covin and Slevin, 1989; Lumpkin and Dess, 1996). Hence, firm-level competitive strategy is influenced by entrepreneurial orientation, and the ability of corporate entrepreneurs to identify and exploit opportunities is a reflection of their entrepreneurial success.

Although the field of entrepreneurship is associated with small businesses and new ventures, firm size and age are not defining characteristics of entrepreneurship. Large, staid, bureaucratic organizations can undergo entrepreneurial transformation, and corporate entrepreneurship can take hold in such firms under the right circumstances (Nielsen et al., 1985; Pinchot, 1985). In this paper, we use the term ‘corporate entrepreneurship’ to refer to the range of entrepreneurial initiatives taken by firms regardless of size or age.

Researchers have demonstrated the close relationship between entrepreneurial initiative and broader corporate strategies (Ahuja and Lampert, 1999). Barringer and Bluedorn (1999) found a positive relationship between the intensity of corporate entrepreneurship and specific strategic management practices, such as scanning intensity, planning flexibility, locus of planning, and strategic controls. Cooper and Dunkelberg (1986) add ‘pioneering’ to the list; Lumpkin and Dess add ‘new entry’ (1996). In the case of transitional policy environments, one-time industry reconfiguration presents a shifting disruption in the *status quo* that generates pressures for firms either to participate or lose out on long-term rent streams derived from the opportunity. To take advantage of these transient windows of opportunity, firms must array and deploy resources rapidly and strategically.

**Corporate Political Strategy and Entrepreneurship**

Research in corporate political strategy suggests that because government policies can have a significant impact on business activities, corporations adopt various
strategies to both affect government policy and to response to competitor efforts to influence that policy (Hillman and Keim, 1995; Keim and Baysinger, 1988; Keim and Zeithaml, 1986; Marcus et al., 1987; Mitnick, 1993; Weidenbaum, 1980). For example, this body of research suggests approaches to political strategy (Hillman and Hitt, 1999; Meznar and Nigh, 1995), techniques to accomplish goals (Kaufman et al., 1989), proposes the integration of political and corporate strategies (Baron, 1995), and offers strategies for shaping the external environment (Cook and Barry, 1995). More specifically, a number of researchers have attempted to develop generalizations about which political strategies are effective under specific situations, most notably Boddewyn and Brewer (1994), Meznar and Nigh (1995), and Weidenbaum (1980).

While research in corporate political strategy has offered a rich set of recommendations and normative insights, these contributions have proposed relatively crude, unidimensional strategies – e.g. bargaining versus nonbargaining. Our goals are to complement, undergird, and extend this literature. Therefore, in this paper, we are primarily interested in corporate entrepreneurship in response to policy changes, and the range of strategies that can be employed by firms to generate opportunities under different change scenarios. We also take a more finely variegated approach than provided in previous research. Even when firms seek to influence policy, they must also predict or at least narrow the range of probable outcomes from those influencing efforts within the complex policy-making milieu. These planning efforts are a basis for the entrepreneurial strategies we describe later in the paper. Finally, while we apply our framework to the public policy environment, we argue that its applicability is not limited to public policy issues, hence, our framework is not intended to supplant research on corporate political strategy but to complement it.

Corporate Entrepreneurship in Response to Public Policy Change

Shane and Venkataraman (2000) argue that opportunity recognition and exploitation are constructs that fall squarely within the unique domain of entrepreneurship and should be the focus of research in the field. They suggest, as Casson did (1982), that entrepreneurial opportunities are ‘those situations in which new goods, services, raw materials, and organizing methods can be introduced and sold at greater than their cost of production’ (Shane and Venkataraman, 2000, p. 220).

Integrating these perspectives allows for the development of a general construct of corporate entrepreneurship in response to public policy change. We define such activities to encompass innovative, proactive, or risk-seeking behaviours designed to exploit knowledge or relationships regarding present and future developments in the public policy arena, specifically legislative and regulatory policy.
CORPORATE ENTREPRENEURSHIP IN TRANSITIONAL PUBLIC POLICY ENVIRONMENTS: A REAL OPTIONS PERSPECTIVE

Environmental uncertainty is a challenge to a wide range of organizations (March and Simon, 1958; Thompson, 1967) and may generate a situation conducive to the exercise of entrepreneurial options. In response, a growing body of research has focused on venture creation and the relationship between environmental conditions and the nature of entrepreneurial activity (for a summary, see Gnyawali and Fogel, 1994). Additionally, Low and MacMillan (1988) have suggested that such research into entrepreneurial behaviour should consider contextual issues and identify the processes that explain (rather than merely describe) the entrepreneurial phenomenon.

Transitional Public Policy: Classifying Uncertainty and Change

Transitions in government policy generate significant discontinuities. These discontinuities can be characterized and classified by the degree of uncertainty or probability over the future direction of policy, as well as the slope and inflection of change, that is, how quickly policy change is occurring and what specific type of trajectory or contour that change will follow. Understanding the type of policy uncertainty and the pace and inflection of policy transition can lead to deliberative entrepreneurial strategies to exploit and harness change to the advantage of the firm. A brief illustration may be helpful.

During the election of 1992, US companies faced an uncertain environment regarding the future of US trade policy. Then-candidate Bill Clinton signalled his support for open trade but with some vaguely defined conditions. It was unclear exactly what this would mean for specific US policies if he were elected. Companies’ strategies would respond to that change as they gained a sense of its direction, but there were uncertainties over how much change they would face (degree or level of uncertainty) and how quickly and smoothly that change would be implemented (slope and inflection profile). In particular, questions about whether the North American Free Trade Agreement (NAFTA) would be passed by Congress and implemented in the USA caused companies to consider alternative schemes to maximize their position in light of the possible outcomes to this debate.

The importance of uncertainty levels in the external environment is acknowledged by strategic management theory (Koberg and Ungsom, 1987; McCabe, 1990; Milliken, 1987). Uncertainty in strategic management can be characterized by four levels or degrees of ambiguity regarding future paths: (1) a clear future around which probabilities can be established; (2) alternate paths; (3) a range of futures; and (4) true ambiguity (Courtney, 2001; Courtney et al., 1997). Strategy making within transitional policy environments may vary according to these
different levels of uncertainty about the future public policy environment. Figure 1 presents a graphical depiction of these different degrees of uncertainty.

Firms must also be concerned with the pace of change, and the characteristics or contour of its trend line, what we term its ‘inflection profile’. Some environments are relatively stable and characterized by slow, continuous change. Others are characterized by ‘high velocity’ or ‘radical organizational change’ (Bourgeois and Eisenhardt, 1988; Newman, 2000; Newman and Nollen, 1998), a sort of free-for-all of policy change that is difficult to predict and potentially disruptive to business planning. In such environments, managers must respond in a highly adaptive manner to radical policy changes (Bourgeois and Eisenhardt, 1988) and engage in continuous responses to changes in their environments and market conditions (Brown and Eisenhardt, 1997).

A variant of this research suggests that some environmental situations are characterized by ‘punctuated equilibrium’, that is, periods of relative stability interspersed by periods of rapid transformation (Gould, 1989; Gersick, 1991; Romanelli and Tushman, 1994). We simplify these characterizations and group them into three possible change scenarios: (1) slow, continuous change; (2) rapid,
high velocity change; and (3) uneven, discontinuous change. Figure 2 presents a graphical depiction of these different inflection profiles.

Policy environments can therefore be simultaneously classified by the degree of uncertainty and by a particular slope and inflection profile. Returning to the case of the trade policy environment in the early 1990s, President Clinton endorsed the NAFTA negotiated by President George Bush but placed conditions on the agreement that required negotiation of supplemental accords on labour and environment, resulting in a revised set of obligations and a one-year delay in the agreement’s implementation. During Congressional approval of the agreement, the level of uncertainty regarding its implementation could be characterized as relatively high, probably falling somewhere between ‘true ambiguity’ and ‘a range of paths’. The pace of change, however, was reasonably slow, allowing firms time to adjust to the new regime no matter the outcome. If firms have the ability to estimate the probability of a public policy change, and the likely pace and contour of that change, they may be able to take specific actions to secure a more favourable position in the emerging policy environment.

**Real Options Perspectives on Transitional Public Policy**

As firms confront choices about which path to follow in the response to unstable and transitional policy environments, they must bring some rigour to their efforts to make sense of the seeming confusing scene they face. Specifically, companies must consider risks and rewards associated with their interactions with govern-
mental actors, identify the specific pay-offs associated with entrepreneurial initiatives, and estimate the probabilities of those pay-offs being realized under a set of possible outcomes. The emergent field of real options provides a useful framework for evaluating these questions.

Real options theory concerns classes of investments in real assets that are similar to financial options in structure but applied to managerial decision choices (Bowman and Hurry, 1993; Dixit and Pindyck, 1994). While a financial option contract conveys the right but not the obligation to purchase the underlying asset on which the contract is written, investment in a real option conveys the opportunity to continue investing. If investments are staged so that expenditures end under poor conditions, losses can be contained. The cost of failure is limited to the cost of creating the real option, less any remaining option value (Dixit and Pindyck, 1994; Mitchell and Hamilton, 1988; Roberts and Weitzman, 1981). Should conditions prove favourable, further investments may be made, an act that constitutes ‘exercising’ the option.

In financial options, increased volatility in the value of the underlying asset increases the value of the option because the potential gains are greater while the costs to access them remain the same. Ideally, the upside becomes greater, but potential losses become no worse (Fama and Miller, 1972). This is also the case with real options, for which potential variance of expected returns is akin to volatility (McGrath, 1997). Hence, ex ante uncertainty is an important driver of option value. If their present value is held constant, projects with greater variance of potential outcome have higher option value. In the case of unstable and transitional public policy environments, firms may be able to maximize their return on investment with strategies that exploit the opportunity created by policy uncertainty, with the added benefit of constraining downside risk. Scholars applying a real options framework under conditions of uncertainty, such as net present value calculations, have emphasized its advantages over conventional approaches (Dixit and Pindyck, 1994; Hurry et al., 1992; Kogut, 1991; Kogut and Kulatilaka, 1994; Trigeorgis, 1996).

A real options framework has been described as a useful lens for viewing entrepreneurship. For example, Baumol (1993) argues that the ‘structure of payoffs’ will influence the investments that an entrepreneur makes. McGrath (1997) applied real options logic to the decision to initiate technology positioning investments, and Hurry et al., (1992) described Japanese exploration of venture capital investments in the United States as option ‘calls’. In each of these cases, the researchers applied real options logic to strategic decisions, choices that were inherently fraught with the uncertainty required for options to produce value.

Response Speed and Competitive Dynamics

In addition to the size and scope of the investment implied by real options reasoning, firms must also be concerned with the speed of response. In a com-
petitive context, speed is the pace of progress that a company displays in responding to current or anticipated business needs (Pearce, 2002). It is gauged by a firm’s response times in meeting customer expectations, in innovating and commercializing new products and services, in changing strategy to benefit from emerging market and technological realities, and in continuously upgrading its transformation processes to improve customer satisfaction and financial returns.

Management research on entry order, which is often one important manifestation of speed, has paralleled real options research by arguing broadly that under certain conditions early entrants have the potential to internalize advantages that might be difficult for later entrants to appropriate (Kerin et al., 1992; Lieberman and Montgomery, 1988; Mascarenhas, 1992). First mover benefits are substantial when one-time discontinuities create generous rent streams for the early entrant, with little left for followers, as is the case in privatization (Doh, 2000). In other circumstances, later entrants may be advantaged because they are able to learn from the mistakes of first movers (Smith et al., 1992; Tellis and Golden, 1996) and the competitive dynamics among firms may result in the first mover overpaying for its initial position, a situation analogous to the ‘winner’s curse’, a problem that is particularly acute in bidding for items of uncertain value, resulting in below normal or even negative average profits for winners (Thaler, 1991).

Corporate Entrepreneurship and Real Options in Transitional Public Policy Environments

Real options theory can be used to understand how entrepreneurial strategies provide competitive advantages for individual firms. A real options perspective can be employed by a company engaged in corporate entrepreneurship to weigh the risks and rewards associated with alternate strategies implemented in response to a change in the public policy environment. Opportunities in real markets can sometimes offer, for a fixed cost, the right to realize future payoffs in return for further fixed investments, without imposing a significant obligation to invest. Two applications of a real options perspective to corporate entrepreneurship in response to transitional public policy illustrate the practical value of this discussion.

If a real estate developer can establish the probability of a Congressional or Parliamentary candidate’s election, and determine a series of possible scenarios regarding the candidate’s commitment to revitalization of a specific urban area, that developer may be able to purchase land at a relatively low cost in the area prior to its being targeted for development. Such an investment can secure the potential for significant upside return, with little downside risk if the candidate is not elected or the land development plan does not come to fruition.

A second example can be drawn from the area of mobile phone concessions, where there is a parallel between owning a cellular licence and a stock option. By
paying a fixed licence fee to the government, a telecom company buys a real option: the right to realize payoffs at any time over the next X years by making further fixed investments, yet often with no obligation to develop the concession. Other examples of real options in transitional policy environments include strategic alliances and other low commitment cooperative ventures when such arrangements provide an option or ‘down payment’ that can lead the way to an equity joint venture or acquisition should conditions merit that greater commitment.

In some instances, firms may choose definitive strategies. Preemptions – complete, spatial, and temporal – may be particularly effective when governments undertake dramatic changes in public policy. For example, international telecommunication carriers have had opportunities for first-mover positioning provided by privatization in many developed and developing markets around the world (Doh, 2000; Sarkar et al., 1999). In Mexico and Brazil, for example, thriving telecom firms followed strategies of preemption of both markets and partners. In state-owned industries facing the prospect of privatization, and in regulated industries facing the prospect of deregulation, spatial preemption may be a key determinant of competitive advantage once market equilibrium is restored (Sarkar et al., 1999). In an environment characterized by a single defining transformation, a definitive, first strike strategy may be necessary to secure a desirable position.

In addition, some conditions may be so intrinsically uncertain and rapidly evolving that it is unwise or impossible for firms to take either a definitive or optioned approach. In such circumstances, firms must continuously evolve in response to or in tandem with the environment. For example, when governments face complex and ongoing military threats for which time frames and outcomes are uncertain, firms whose business models are directly affected by government military investment cannot stake out a definitive position that supposes a specific outcome to a given conflict. Rather, they must adjust and adapt as the situation unfolds.

Governments are facing continuous pressure to redefine their roles in social and economic life. This transformation can be seen in privatization, deregulation, and market/sectoral liberalization. Companies active in industries where government policy plays a substantial regulatory role may cope through proactive responses to the new policy environment. Awareness of the transitional uncertainties generated by policy changes are critical to the choices companies make in response to transitional policy environments.

**ENTREPRENEURSHIP STRATEGIES IN RESPONSE TO TRANSITIONAL POLICY: PROPOSITIONS AND ILLUSTRATIONS**

The discussion above suggests a simple classification scheme of corporate entrepreneurship in response to transitional government policy environments with the potential to identify entrepreneurial strategies that have the highest potential return in different types of environments. Given the four degrees of policy uncer-
tainty (Figure 1), and the four basic inflection profiles of public policy change (Figure 2), we identify four types of promising entrepreneurial corporate strategies with applications in transitional policy environments: preemptive, optioned, synchronous, and adaptive. We modify these four strategies with the additional dimension of speed, since the rapidity of firm responses, and the sequence and order in which they respond, are important for competitive advantage in response to uncertain and volatile policy environments (Lieberman and Montgomery, 1988; Smith et al., 1992).

Table I illustrates the interaction between these two sets of variables in a matrix that summarizes the propositions presented below.

<table>
<thead>
<tr>
<th>Degree of uncertainty</th>
<th>Pace/inflection profile</th>
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<th>Pace/inflection profile</th>
<th>Degree of uncertainty</th>
<th>Pace/inflection profile</th>
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<tbody>
<tr>
<td>Slow, continuous change</td>
<td>Preemptive-measured</td>
<td>Uneven, discontinuous change</td>
<td>Preemptive-moderate</td>
<td>Rapid, high velocity change</td>
<td>Preemptive-accelerated</td>
</tr>
<tr>
<td>Level 1 uncertainty: clear future</td>
<td>Preemptive-measured</td>
<td>Preemptive-moderate</td>
<td>Preemptive-accelerated</td>
<td></td>
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</tr>
<tr>
<td>Level 2 uncertainty: alternate paths</td>
<td>Optioned-measured</td>
<td>Optioned-moderate</td>
<td>Optioned-accelerated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 3 uncertainty: range of paths</td>
<td>Synchronized-measured</td>
<td>Synchronized-moderate</td>
<td>Synchronized-accelerated</td>
<td></td>
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</tr>
<tr>
<td>Level 4 uncertainty: true ambiguity</td>
<td>Adaptive-measured</td>
<td>Adaptive-moderate</td>
<td>Adaptive-accelerated</td>
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Preemptive Strategies

Preemptive strategies are those in which the firm makes a ‘first strike’, involving a high level of resource commitment. They naturally involve an aggressive, ‘preemptive’ attack that is designed to garner a strong, defensible competitive position. Preemptive strategies are appropriate under a range of conditions, notably where the level of uncertainty is relatively low. These actions can be particularly effective when first mover positioning is especially valuable (Kerin et al., 1992; Lieberman and Montgomery, 1988; Mascarenhas, 1992), and market lockout opportunities are well defined (Doh, 2000; Patterson, 1993; Sarkar et al., 1999).
Proposition 1a: Preemptive strategies are most effective when the level of policy uncertainty is low and outcomes of policy transitions can be predicted with high levels of certainty.

Proposition 1b: Preemptive strategies will generate the highest return when the outcomes of policy transitions can be predicted with high levels of certainty and the inflection profile of policy change is uneven and discontinuous.

A specific example of this strategy occurred in 2000, when Deutsche Telekom purchased VoiceStream, a Washington-based cellular provider, to gain access to the growing US wireless market. Opposition to the deal came from members of Congress concerned about market access reciprocity because of the German government’s 58 per cent stake in Deutsche Telekom, although the FCC could only reject the merger if it was a clear violation of the public interest. In this case, Deutsche Telecom chose to exercise a definitive strategy in the face of a public policy environment characterized by relatively low uncertainty (at least over the long term) with reasonably predictable outcomes.

Optioned Strategies

Optioned strategies are those in which firms provide an initial, incremental investment designed explicitly to hold and protect a limited position that guarantees the access to a future strategic step. Optioned strategies are most appropriate when the level of uncertainty is moderate, and when clear, alternate paths can be identified. They will generate the highest returns when the inflection profile is uneven, allowing for temporal entry barriers that may be powerful for a period of time, but may abruptly disappear when the policy environment is suddenly altered. Optioned strategies allow the firm to hedge the preemptive bet, and reserve the right to participate in a more influential manner later. The right to intervene at a later date can be a powerful option if cost of failure can be limited to the cost of creating the real option, minus any remaining option value (Dixit and Pindyck, 1994; Mitchell and Hamilton, 1988; Roberts and Weitzman, 1981). Should the policy environment change, and conditions prove favourable, further investments may be made and the option can be ‘exercised’. When policy uncertainty is moderate, and clear alternate paths can be identified, an optioned strategy is most appropriate.

Proposition 2a: Optioned strategies are most effective when the level of policy uncertainty is moderate, clear alternate paths can be identified, and the cost of late entry is high.

If the inflection profile of policy change is uneven and discontinuous, such as under conditions of punctuated equilibrium, optioned strategies are likely to
be valuable because they allow the firm to place a down payment during periods of relative stability, in preparation for the possibility of rapid policy changes to come.

**Proposition 2b**: Optioned strategies will generate the highest return when no one outcome of policy transition can be predicted with high probability and the inflection profile of policy change is uneven and discontinuous.

A specific example of a preemptive optioned strategy came in the midst of the NAFTA negotiations when Corning initiated a joint venture (JV) deal with Vitro Sociedad Anonima, the $3 billion Mexican glass maker, in which each company took an equity stake in the JV and agreed to a series of marketing, sales and distribution relationships. Corning, Inc., the largest US glassmaker, had initially opposed the rapid reduction of tariffs on glass imports, and lobbied vigorously to delay or slow these reductions because of concerns that cheap imports from its Mexican competitor, Vitro, would swamp the US market. By linking with Vitro, Corning took an optioned approach to an uncertain policy environment characterized by uneven and discontinuous change, but for which clear alternate paths could be identified – either glass tariffs would come down or they would not.

**Synchronous Strategies**

The high-risk options of choosing proactive or laggard strategies can be eliminated when a firm plans to synchronize its investments with the progress of policy change. A synchronous strategy directs the firm to match its resource commitments with post-decision, pre-activation policy changes. The goal of a synchronous strategy is to help the company establish a position as a mainstream player, with solid prospects for industry-comparable profits. It does so by increasing its investments in competitive options as likelihood of occurrence and the consequence (payoff) of each path become more certain.

A synchronous strategy forces the firm to forfeit both the advantages gained by first movers, and the cost savings enjoyed by late entrants that appear once the demand for the product or service has been established. However, a company in uncertain conditions that implements a synchronous strategy benefits from investing at an intermediate risk level. The company manages its risk by directing its investments with a narrowing focus, simultaneously advancing from general to situation specific, as it increases its resource commitment. In comparison, preemptive strategies require an all-or-nothing investment, and optioned strategies require dividing an investment among multiple options thereby decreasing the payoff potential of the ‘correct’ investment. When the degree of uncertainty enables managers to specify only a range of paths, these options are likely to produce results inferior to those of a synchronous strategy.

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Proposition 3a: Synchronous strategies are most effective when the level of policy uncertainty is moderate, a range of paths can be identified, and the cost of second wave entry is low.

Synchronous strategies can be adopted by companies during any inflection profile but are more promising as the rapidity and velocity of change increase since they allow managers to be comparatively less speculative and more measured in their investments.

Proposition 3b: Synchronous strategies will generate the highest return when the outcome of policy transition can be narrowed to a range of paths and the inflection profile of policy change is rapid, high velocity.

Examples of successful synchronous strategies occurred during the liberalization of Colombia’s economy through the ‘apertura process’ (opening) of the 1990s. This process centred on new public policy initiatives designed to liberalize trade. The most important government policies were activated sequentially throughout the decade to facilitate changes and improvements in the textile and apparel industries. In a first phase of responsiveness, international apparel firms were reluctant to make foreign direct investments in Columbia because of the high degree of uncertainty about the sustainability of the policy initiative and concern over the speed at which change would occur. Therefore, interested investors formed strategic alliances with retail businesses in Colombia to enhance their competitive positions while sharing risk. For example, Wal-Mart Stores and the Sara Lee Corporation developed replenishment systems with Colombian partners to share information about best-selling products.

Later, in response to continued supportive policies from the Colombian government that reined in the domestic change process, multinational firms restructured to shift their focus from manufacture-driven to market-driven operations. Levi Strauss, Kellwood, and OshKosh B’Gosh all integrated their operations forward into retailing by adding company-owned stores (Haar and Reyes, 2002). In each instance, companies moved in tandem with the government’s announcements of new, pro-trade policies. As the government’s support increased for its growing list of trade policies, the international business community responded with increased investments and expanded presence in Colombia.

Adaptive Strategies

Complexity theory, and the investigation of adaptive systems, offers managers an approach to understanding nonlinear systems in which outcomes are hard to predict (Axelrod and Cohen, 2000). Adaptive strategies are those in which firms are prepared to constantly and continuously adjust actions and resources investments in
response to a rapidly changing set of conditions. Adaptive strategies are most appropriate when the firm is unable or unwilling to take any lasting definitive steps because (a) the level of policy uncertainty is so high that definitive steps dangerously ‘lock in’ the firm to a strategic position that may prove ineffective or self-destructive; or (b) the pace of policy change is so rapid that firms need to have the flexibility to continuously adjust and adapt to that change. Situations characterized by radical organizational change where time and spatial boundaries of policy transition are difficult to establish, require the firm to preserve its options because of the shifting policy landscape, even if this means foregoing specific – but risky – opportunities for large pay-offs (Newman, 2000; Newman and Nollen, 1998).

**Proposition 4a:** Adaptive strategies are most effective when the level of policy uncertainty is characterized by true ambiguity and no clear alternate paths can be identified.

In addition, when the inflection profile of change is characterized by rapid, high velocity change, the firm may seek to act in a highly flexible and adaptive fashion. More definitive steps could dangerously lock the firm into irrevocable commitments, alternate optioned strategies would be nearly impossible to identify, and synchronized strategies would be too constraining and not sufficiently responsive.

**Proposition 4b:** Adaptive strategies will generate the highest potential return when the level of policy uncertainty is characterized by true ambiguity and when the inflection profile of policy change is rapid, high velocity.

An example of an adaptive response to transitional policy environments is Tele Denmark’s response to the 3G (third generation) cellular licenses auctions in Switzerland. The initial 3G auction of four UMTS licenses was delayed after one of the potential bidders teamed with another, leaving only four applicants and dramatically limiting the very competition dynamics Swiss authorities were seeking to promote. The move was forced by Tele Denmark’s efforts to increase its share of the Swiss mobile fixed line telephony and Internet access markets. Following news of Tele Denmark’s planned mergers, the Swiss government postponed the auction.

Tele Denmark thus began with a definitive strategy that failed because it prompted the government to reverse a course that had been determined as a clear future. Subsequently, however, Switzerland’s Federal Communications Commission ruled that the auction would press ahead. Therefore, what had appeared as a clear future (auctioning the licences) was, in fact ambiguous (several possible paths), and the pace of change, while first appearing continuous, was, in fact, characterized by punctuated equilibrium. Hence, Tele-Denmark adjusted its strategy to respond to the rapidly changing policy environment.

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CONCLUSIONS, LIMITATIONS, AND IMPLICATIONS

Firms face a range of challenges in uncertain and transitional public policy environments. In this paper, we constructed a model for classifying types of policy uncertainty and categories of policy change in terms of degree of uncertainty and inflection profile, and we proposed four distinct strategies to respond to these varying conditions. Although our discussion is deliberately delimited to the public policy environment, our framework could be applicable to other environments characterized by turbulence and change, such as the technological and financial environment of the recent past. For example, responses to uncertainties in macroeconomic performance, demographic shifts, and technological innovation could all be informed by our framework.

Clearly, market environments are at least as important as those ‘nonmarket’ environments described here, and may overwhelm the public policy process that is the focus of this paper. As Baron (1995) has argued, firms pursue both market and nonmarket strategies, and there is reason to expect that their responses to public policy changes would take the form of both market and nonmarket initiatives. Yet, we believe that the public policy process is particularly subject to the kinds of uncertainties we describe, and as an often-overlooked area of managerial research and decision-making, it merits increasing attention and focus.

Our emphasis on the policy environment in which strategy is undertaken positions us close to an institutional and industrial organization perspective on strategy. For purposes of this discussion, we have held constant the resource capabilities of the firm itself. Resource-based perspectives (Barney, 1986, 1991; Nelson and Winter, 1982; Penrose, 1959; Peteraf, 1993) are obviously relevant in public-policy making, particularly if the firm possesses intangible and difficult-to-appropriate resources such as government connections, insights, or secrets. These resources may provide the firm with more latitude in how and when it employs various strategies and free it from some of the confines described here. Moreover, game theory can be important for understanding how the actions of firms discussed here affect competitors, and how those competitors, in turn, affect the actions of the focal firms. Hence, the ability of the firm to shape the outcome of that instability, the timing and sequencing of the firm’s position in the policy competition, and the commitment or outlay associated with a particular entrepreneurial strategy, are all relevant to understanding how firms operate in transitional policy environments.

Other considerations that are not explicitly part of this analysis include institutional and public policy environments in different jurisdictions affect the changes discussed here, and how firms could or should respond to those changes. Business-government relations vary based upon the political and legislative traditions and environments of different countries (Doh, 1999; Hillman and Keim, 1995). It would seem that the interaction between public policy-makers and the firms they regulate is a reflexive one, so that entrepreneurial strategies in response to changes...
in policy beget adaptations of that policy. Indeed, our model anticipates interaction between the degree of uncertainty and the rate of change, as research in strategic management has suggested that the rate of change may have an effect on perceived uncertainty (Duncan, 1972; Karagozoglu and Brown, 1988; Koberg, 1987; Koberg and Ungson, 1987). Although we do illustrate some of these interactions in the speed of response of the strategies we propose, we have not fully incorporated this dynamic process in our model.

Notwithstanding the intentional limits of our paper, we see substantial opportunity for future empirical research based on our model. First, future research could measure and classify specific environments according to our schema. Such ex-post and ex-ante efforts could provide a useful base for future research, and for entrepreneurs seeking to understand the potential impact of policy uncertainty on their business decisions. Second, such research could classify corporate entrepreneurial responses to such transitions and then gauge the relative success of different strategies in different transitional policy environments, an explicit test of our propositions. It would seem that longitudinal studies, analysing different strategies by a group of firms over time, would be an appropriate first step. In addition, combining such panel data with examples drawn from individual cases would make for a particularly rich and insightful approach to testing this model.

We also anticipate the potential for practical application of our framework, given the accelerating rate of change, and the general unpredictability of the public policy and broader business environment. We argue that corporations seeking to identify and exploit opportunities resulting from unstable transitional policy environments can use this framework. First, firms must identify the level of policy uncertainty and the degree and inflection profile of policy change. Next, they can isolate the particular type of entrepreneurial initiative that will be most effective under that combination of conditions, and seek to employ these strategies.

Recent events related to real and potential terrorist threats have created a highly discontinuous and uncertain situation for a range of industries and companies in the USA and around the world. In particular, major airline carriers in the USA and Europe face challenging questions regarding how governments will respond to the security threat and whether public officials will provide financial assistance and other regulatory relief to the airlines as they confronted severe economic challenges. Some firms may use a framework similar to the one proposed here to gain advantages by identifying the probabilities of specific public policy actions, and isolating the degree and character of change associated with those probabilities.

Public policy is a too-often ignored aspect of the business environment. The contribution of public policy is often viewed as exogenous to the competitive forces that affect the attractiveness of broad industries and specific opportunities within those industries (Porter, 1980). The result of this narrow perspective is that firms are not always attuned to the specific attributes of public policy changes. In
particular, firms could benefit from attention to the potential direction of public policy changes and the probabilities of specific outcomes. Failure to fully appreciate these contingencies can cause firms to severely misjudge their strategic alternatives and miss potential opportunities for new ventures. Through efforts to estimate the direction of public policy, to identify the degree of uncertainty of specific options, and to anticipate and position in response to those options, firms can actually exploit uncertainty, identify and initiate new ventures, and improve long-term performance.

NOTE

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