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An Empirical Investigation of the Influence of Organizational Capacity and Environmental Dynamism on First Moves

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Sustained performance advantages are rare in business (Wiggins and Ruefli, 2002). Nevertheless, firm managers are constantly faced with the challenge of trying to attain this elusive goal. Thus, it is not surprising that an important aim of strategic management researchers is to better understand how firms attain superior firm performance (Hoskisson *et al.*, 1999). Firms adopting a "first-mover" strategy may be able to secure sustainable performance advantages (Lieberman and Montgomery, 1998).

The term "first moves" (or "pioneering moves") can mean organizational efforts to create new markets through the introduction of new products or services; it can also refer to entry into new markets, or the development and implementation of new work processes (Kerin *et al.*, 1992). Firms may benefit from adopting such strategies. For instance, Lieberman and Montgomery (1988) indicate three sources of advantage available to first movers so that they can outperform the competition. First, technological leadership allows for outperformance because a first mover is able to develop expertise from their leading edge research, development, and other similar activities (Cho *et al.*, 1998). Additionally, preemption of assets, obtaining valuable assets or positioning space before others enter the market (Kerin *et al*., 1992; Lieberman and

Montgomery, 1988) allows a competitive edge. Third, first movers are able to influence buyer behavior in that they provide the initial learning experience about a product/service for the consumer (Dos Santos and Peffers, 1995). As such, first-mover advantages have been an important area of study for strategy scholars.

This is not to say, however, that there are no risks or costs associated with first moving. Indeed, scholars have argued that there is no conclusive evidence to support the existence of a first-mover advantage (see discussions by Kerin *et al*., 1992; Xie, 2003). It is likely first moves can be advantageous, but these advantages are not a given. Advantages from first moving are more likely to be gained when certain firm and environmental conditions exist (e.g., Lieberman and Montgomery, 1998). Though some research does highlight the importance of specific internal characteristics and first moves (e.g., Szymanski *et al.*, 1995) and others have also included external contingencies (e.g., Covin *et al.*, 2000), the exact nature of the relationships among internal organizational characteristics, first moves, and firm performance remains elusive (Lieberman and Montgomery, 1998; VanderWerf and Mahon, 1997).

The resource-based view (RBV) can help one to better understand these relationships (Lieberman and Montgomery, 1998). The RBV is characterized by the assertion that a firm creates value through its network of resources (Black and Boal, 1994; Conner, 1991; Madhok, 1996). Firms outperform their competitors by leveraging these resources. As such, it is important to understand how these resources are acquired or built (e.g., Dierickx and Cool, 1989). Lieberman and Montgomery (1998) contend that the aforementioned sources of advantage resulting from first moves are indeed resources of the firm. In their model, Street *et al.* (2010) show how elements of organizational capacity aid first movers in building these resources that lead to superior performance. Based on this model, the effect of those elements of organizational capacity on the first move-performance relationship is tested here. Additionally, the influence of environmental dynamism on this moderated relationship is tested as well. To do so, first moves in five industries are identified. Then, stock prices of firms are analyzed to see if the firms' first moves result in positive stock reactions. Next, the effect of the level of a first mover's organizational capacity on this stock price reaction, as well as how environmental dynamism influences this effect are tested.

This paper contributes to strategic management literature in that the results help us learn more about the nature of the first-move performance relationship and its contingencies. Additionally, some results are found to be consistent with the resource-based view assertions from the model. On the other hand, some data indicate a failure of RBV to explain all of the relationships among the dimensions of a first mover's organizational capacity, the dynamism of the environment in which it operates, and the firm's performance. Accordingly, a new framework to explain the empirical findings (both those supportive of and those beyond the boundaries of the RBV) is developed.

THEORY AND HYPOTHESES

Based on the works of Lieberman and Montgomery (1988; 1998), Street *et al.* (2010) developed a model, grounded in the RBV, which explains the relationships among first movers' organizational capacity, environmental dynamism, and

performance. "Organizational capacity" is concerned with the ability of a firm to adapt (for examples of this concept, see Chakravarthy, 1982; White and Linden, 2002). Specifically, Street *et al.* (2010) focus on three main dimensions of organizational capacity – combinative capabilities, leadership capacity, and slack assets. Combinative capabilities include socialization (relating to the norms and common ideology in a firm), coordination (relating to relationships and processes), and systems capabilities (concerning rules and procedures) (Van den Bosch *et al.*, 1999), and are the ability "to synthesize and apply current and acquired knowledge" (Kogut and Zander, 1992: 384). Concerning the second dimension, leadership capacity, the general capacity of a leader to have strategic influence in the firm (Leavy, 1996) is considered. Finally, five types of slack assets – slack considered to be untapped or underutilized resources that enable a firm to adapt and facilitate new strategies (e.g., Bateman and Zeithaml, 1989; Bourgeois, 1981; Cyert and March, 1963) - are identified for the model. These are physical (tangible assets owned by the firm), financial (cash and equity), technological (intangible assets like quality and patents), human (assets based in the people of the firm), and reputational (attributions coming from past actions (Weigelt and Camerer, 1988)) slack assets (based on work by Hofer and Schendel (1978) and delineated by Grant (1991)). These components of organizational capacity can be employed by first movers to create sources of advantage (that is, resources) that lead to superior firm performance.

External contingencies are important as well. Environmental dynamism is the instability, rate of change, and unpredictability of factors in the environment and is usually viewed as ranging from stable to dynamic (Dess and Beard, 1984; Priem *et al.*, 1995). Street *et al.* (2010) suggest two ways in which environment dynamism affects how first moves and organizational capacity influence performance. First, the dynamism of the environment can change the effect that the components of organizational capacity have on the ability of a first move to lead to a source of advantage. Second, environment dynamism impacts the effectiveness in which the resources created by first moves are converted into increased performance for the firm.

Street *et al.* (2010) summarize their model as follows:

> "When asymmetries in the environment exist, luck, skill, and foresight can lead a firm to make a first move. The firm uses its organizational capacity to support the first move in creating sources of advantage and this will be affected by how dynamic the environment is. These sources of advantage will lead to increased performance if they are sustainable and if rents can be appropriated from them. Finally, the outcomes of the advantage building process, reflected in performance, affect the firm's future internal organizational characteristics."

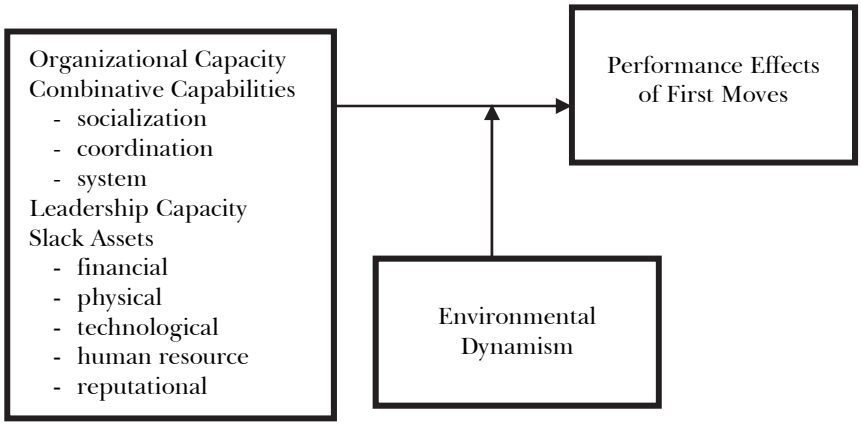
From this model, Street *et al.* (2010) develop a number of propositions, most of which are tested in this current research project and are summarized below. Readers are encouraged to contact the authors for more detailed information regarding this if questions arise.

The First Move-Performance Relationship

First movers may gain advantages from a variety of sources (Boulding and Christen, 2001; Grimm and Smith, 1997; Lieberman and Montgomery, 1988). Thus, in keeping with a large part of previous research,

Hypothesis 1: *First moves increase firm performance.*

Figure I
The Organizational Capacity-Performance Effects of
First Moves Relationship Moderated by Environmental Dynamism (Hypotheses 2-5)



The Effect of Organizational Capacity on the Performance Effects of First Moves

Based on the performance effects from first moves in hypothesis 1, hypotheses 2-5 examine how different conditions affect these performance effects that companies gain when moving first. These conditions are the company's possession of various dimensions of organizational capacity and the dynamism in the environment. A model of hypotheses 2-5 is presented in Figure I.

Because a first move is new not only to the market but also to the firm, the firm will need to be strong in the three components of organizational capacity (combinative capabilities, leadership capacity, and slack assets) in order to incorporate the first move into its workings and help create resources the firm can leverage for performance advantages (Street *et al.*, 2010). That is, it is expected that organizational capacity moderates the first move-performance relationship. The first component of organizational capacity, combinative capabilities, serves to facilitate the incorporation of new knowledge (Kogut and Zander, 1992) gained as a result of the first move so that performance enhancing resources can be built. Accordingly,

Hypothesis 2a: *Higher levels of combinative capabilities lead to more positive performance effects of first moves.*

Leadership capacity is needed as well to influence the organization in such a manner that it is accepting of the first move and thereby incorporates it in such a manner as to create performance enhancing resources. Leaders can set the direction of the firm (Hinings and Greenwood, 1989). The leadership capacity of a leader indicates the strategic influence that leader can have on the firm (Leavy, 1996). Influential leaders can motivate the firm's employees to be accepting of something new, like a first move. Employee acceptance will likely facilitate the success of the first move in building performance enhancing resources. As such, it is expected that

Hypothesis 2b: *Greater leadership capacity leads to more positive performance effects of first moves.*

Additionally, slack assets are used to support the creation of these resources available to first movers. For various reasons, firms have unused productive assets (Penrose, 1959), that is, slack. Slack can be used to help firms adapt new strategies (Bateman and Zeithaml, 1989; Bourgeois, 1981; Cyert and March, 1963). Street *et al.* (2010) propose that firms can draw upon slack assets to help build sources of advantage that lead to performance increases. One example given is that financial slack could be used to buy the assets for the preemption of assets that a first mover can undertake. In turn, competitors do not have access to these assets and first movers can gain a performance advantage. Given such potential advantages, it is predicted that

Hypothesis 2c1: *More slack assets lead to more positive performance effects of first moves.*

Further, certain types of slack assets may have stronger effects on the performance effects of first moves than other types do. The biggest effect is expected from those slack assets that help to build resources that are more easily sustainable and from which performance benefits can readily be appropriated. Reputational slack is most likely to help the first mover to build resources relating to their influence over buyer behavior, which is fairly difficult for competitors to copy (i.e., it is sustainable). Additionally, the firm should be the beneficiary of the performance generated from this type of resource. Technological and human slack would be more useful in supporting the first mover's resources concerning technological leadership. It is possible that the human element here may try to appropriate some of the performance benefits generated for themselves, but these resources would likely be fairly inimitable, just not to the extent of the aforementioned resources related to reputation. Finally, physical and financial slack would likely provide support for a first mover to create resources through the pre-emption of assets. Typically, although the rent from these types of resources is likely to go to the firm, these types of resources may be the easiest to copy (i.e., the least sustainable). Thus,

Hypothesis 2c2: *The positive impact of slack technological assets and slack human resources on the performance effects of first moves is greater than that of slack physical and financial assets, but less than that of reputational slack.*

The Moderating Role of Environmental Dynamism

In Street *et al.*'s (2010) model, the level of environmental dynamism is related to the moderating effect of organizational capacity on the relationship between first moves and resources, a three-way interaction. In particular, they hypothesize that the level of environmental dynamism will dictate the strength of the effect of socialization capabilities, coordination capabilities, and leadership capacity on the first move-performance relationship.

Socialization capabilities, one type of combinative capability, concern shared ideology and norms of action (Van den Bosch *et al.*, 1999). When a first move is made in a particularly dynamic environment, the information that needs to be integrated from the first move is likely to be more divergent from the norm than it would be in a more stable environment. The culture present when socialization capabilities are strong may be less accepting of such divergent thought (Van den Bosch *et al.*, 1999) and thus may not be as beneficial to a first mover trying to create performance enhancing resources. That is,

Hypothesis 3a: *In a more dynamic environment, higher levels of socialization capabilities lead to smaller increases in the performance effects of first moves than in a less dynamic environment.*

Another type of combinative capability, coordination capabilities, concerns how training, informal relationships, and participation in decision processes impact knowledge integration in firms (Van den Bosch *et al.*, 1999). When a firm's coordination capabilities are high, employees have a lot of job knowledge, and can readily integrate more knowledge (Van den Bosch *et al*., 1999). Thus, they may be well suited to facilitating the integration of the broad array of knowledge that is more likely to be available to first movers in dynamic environments. As such, it is expected that

Hypothesis 3b: *In a more dynamic environment, higher levels of coordination capabilities lead to larger increases in the performance effects of first moves than in a less dynamic environment.*

In general, leaders may have more of an impact in environments that are less stable and therefore less deterministic (e.g., Finkelstein and Hambrick, 1996; Eisenmann and Bower, 2000). If leaders can better use their leadership capacity in more dynamic environments, it is in such environmental conditions that they will be able to better facilitate the integration of first moves, thereby helping the firms see increased performance. That is,

Hypothesis 4: *In a more dynamic environment, higher leadership capacity leads to larger increases in the performance effects of first moves than it does in a less dynamic environment.*

Finally, Street *et al.* (2010) argue that certain resources are likely to result from first moves that rely upon particular slack assets. Further, the relationship between these resources and the firm's ability to capture performance benefits from these first moves differs based on the level of environmental dynamism. In particular, reputational, physical, and financial slack assets will differ in their effect on the first move-performance relationship when the level of environmental dynamism differs.

Consider reputational slack assets. A firm's reputation is considered a "summary statistic" about the firm (Teece *et al.*, 1997: 521). In a more dynamic environment, stakeholders may not have time to do a full assessment of a firm before decisions need to be made. As such, they may rely more heavily on a summary like the reputation of a firm. For instance, in a dynamic environment, the potential consumers of a first mover's products may be more influenced by the reputation of the firm, which is reinforced by the firm's reputation prior to the first move. So, reputational assets may be more important to a firm's performance in a more dynamic environment. Accordingly, it is expected that

Hypothesis 5a: *In a more dynamic environment, stronger reputational assets lead to larger increases in the performance effects of first moves than they do in a less dynamic environment.*

However, being locked in to strategically specific assets, which is how financial and physical slack most likely help a first mover, may have the opposite effect. In a dynamic environment, these assets may quickly become irrelevant or obsolete. For that reason, it is expected that

Hypothesis 5b: *In a more dynamic environment, a given level of physical and financial assets leads to smaller increases in the performance effects of first moves than they do in a less dynamic environment.*

METHODS

Sample

For this project, the method to identify first moves is based on that used by Schomburg (1992). His approach used two criteria: (1) sufficient data available that could be collected on a number of firms in the industry and (2) the industry contexts differed to maximize the study's generalizability. Thus, using this approach, 223 usable first moves are identified from news articles over the years 1995-2004. The sample from which these moves are identified is limited to firms in five industries: the auto, biotechnology, brewing, PC, and pharmaceutical industries. (For more on industry definition, selection, and final sample size calculation, contact the authors.)

Event Study Methodology to Test Hypothesis 1

In order to test the first hypothesis - whether first moves increase performance - event study methodology is employed. This objective measure of performance is considered a valuable tool for management research (McWilliams and Siegel, 1997) and is used to determine if particular types of unexpected actions of firms result in changes in firms' stock prices (Kalyanaram *et al.*, 1995). In this study, a first move is announced (the event), then the market works to reflect expectations of the first move's impact on the firm. According to Hypothesis 1, since they are desirable, it is expected that when a first move is announced, the stock price will increase more than would be predicted from normal variation in the stock price.

Event study methods have four main steps. First, a market model is estimated for each security. Next, the cumulative abnormal return for each security is found by calculating each security's daily (standardized) abnormal returns for the event window, and then summing the values for each security. Third, the mean cumulative abnormal return is calculated across securities' cumulative abnormal returns. Finally, the mean cumulative abnormal return is statistically tested to see if it is significantly different from zero. (Methodology compiled from Brown and Warner (1985), Combs and Skill (2003), Davidson III *et al.* (2001), Henderson (1990), Lee (1995), Lee *et al.* (2000), McWilliams and Siegel (1997).) Here, Patell *Z*, the statistical test from Patell (1976), is used to assess these aggregated returns.

Regression Analysis Methodology to Test Hypotheses 2-5

In order to test the remaining hypotheses, ordinary least squares regression is used. Here, the goal is to test the hypotheses by examining if the variance in the cumulative abnormal returns (CARs) at the time of the first move announcement can be accounted for by the predictor variables, organizational capacity and environmental dynamism, or by a combination of the two. Prior to running the regression analysis, the variables for the interaction terms are centered to help control for potential multicollinearity (Aiken and West, 1991). Additionally, centering can aid in the interpretation of the main effects (Dallal, 2003).

Dominance analysis (Azen and Budescu, 2003; Budescu, 1993) is the planned method for testing the ordinal hypothesis (Hypothesis 2c2). Unfortunately, only one of the coefficients of the main effects of slack assets is statistically significant, so this analysis is not done.

Variable Measurement and Descriptions

Table 1 shows the measures of the variables. A description of each variable can be found in the Appendix.

Table 1
Measures

Hypothesis 1 independent variable	
First Moves	Moves identified from news wires and dailies in *Lexis-Nexis*. (Confirmed by industry experts in all industries except the brewing, which is reviewed by an additional researcher.)
Hypothesis 1 dependent variable	
Stock Price Reaction	Daily stock returns corresponding to qualified first moves obtained from the CRSP database for the event window.
Hypotheses 2-5 independent variables	
Socialization Capabilities	Using the item "The firm appears to have strong *Socialization Capabilities*." Average ratings for two raters (ICC = 0.70) of news articles about a first mover (for six months prior to a first move) containing keywords about socialization capabilities. (centered)
Coordination Capabilities	Using the item "The firm appears to have strong *Coordination Capabilities*." Average ratings for two raters (ICC = 0.67) of news articles about a first mover (for six months prior to a first move) containing keywords about coordination capabilities. (centered)
System Capabilities	Using the item "The firm appears to have strong *System Capabilities*." Average ratings for two raters (ICC = 0.70) of news articles about a first mover (for six months prior to a first move) containing keywords about system capabilities.
Leadership Capacity 1	CEO tenure at the time of the first move (in days). (centered)
Leadership Capacity 2	Total CEO compensation divided by firm size measured in terms of number of employees. (centered)
Physical Slack	Firm PPE divided by total assets minus industry PPE divided by total assets. (centered)
Financial Slack	The natural logarithm of the current ratio. (centered)
Technological Slack	Firm R&D per employee minus industry R&D per employee for the biotechnology, pharmaceutical, and auto industries; firm cost of machinery and equipment per employee minus the industry cost of machinery and equipment per employee for the brewing and pc assembly industries. (Standardized per type.)
Human Slack	Firm employee per sales minus industry employee per sales (inverted to account for potential $0 sales).
Reputational Slack	Firm prior year ROA minus industry prior year ROA. (centered)
Environmental Dynamism	Regressing industry sales over five years prior to the first move on time and then taking the antilog of the standard error from the growth equation. (centered)
Hypotheses 2-5 dependent variable	
Stock Reaction at First Move	Standardized cumulative abnormal returns from the event study.
Hypotheses 2-5 control variables	
Industry	Dummy variables to indicate industry, with the pharmaceutical industry as the reference industry.
Firm Size	Natural logarithms of total assets.
Year	Dummy variables to indicate year, with 2004 as the reference year.

RESULTS

Event Study Results

Hypothesis 1 predicts positive stock returns from first move announcements. Event study analysis is used to test this hypothesis. A Patell Z of 4.72 indicates that firms announcing first moves exhibited statistically significant ($p \leq 0.001$) positive abnormal returns over the three-day event window. Additionally, the generalized sign test is significant ($p \leq 0.05$) in the positive direction (123 positive to 100 negative returns). The average cumulative abnormal return is 2.07% over the event window. This evidence supports Hypothesis 1.

Table 2
Descriptive Statistics[a]

	Mean	Standard Deviation
Standardized CARS	0.32	1.45
Size	21.19	2.99
Auto Ind. Dummy	0.07	0.26
Biotech Ind. Dummy	0.20	0.40
Brewing Ind. Dummy	0.05	0.22
PC Industry Dummy	0.23	0.42
Year 1995 Dummy	0.11	0.32
Year 1996 Dummy	0.10	0.30
Year 1997 Dummy	0.09	0.29
Year 1998 Dummy	0.10	0.30
Year 1999 Dummy	0.13	0.34
Year 2000 Dummy	0.10	0.30
Year 2001 Dummy	0.15	0.36
Year 2002 Dummy	0.05	0.23
Year 2003 Dummy	0.07	0.25
Soc. Capabilities	4.28	0.74
Coord. Capabilities	4.95	0.78
System Capabilities	4.49	0.88
Leadership - Tenure	2,222.41	2,119.83
Leadership - Comp.	7,507.28	15,793.84
Physical Slack	-0.12	0.21
Financial Slack	1.00	0.90
Technological Slack	0.00	1.00
Human Res. Slack	-1,876.56	247,091.49
Reputational Slack	-20.18	42.88
Enviro. Dynamism	1.05	0.02

[a]n = 223

Table 3
Correlations[a]

	Standardized CARS	Size	Auto Ind. Dummy	Biotech Ind. Dummy	Brewing Ind. Dummy	PC Industry Dummy	Year 1995 Dummy	Year 1996 Dummy	Year 1997 Dummy	Year 1998 Dummy	Year 1999 Dummy	Year 2000 Dummy	Year 2001 Dummy	Year 2002 Dummy	Year 2003 Dummy	Soc. Capabilities	Coord. Capabilities	System Capabilities	Leadership - Tenure	Leadership - Comp.	Physical Slack	Financial Slack	Technological Slack	Human Res. Slack	Reputational Slack
Size	-0.15*																								
Auto Ind. Dummy	-0.05	0.48**																							
Biotech Ind. Dummy	0.22**	-0.33**	-0.14*																						
Brewing Ind. Dummy	-0.04	0.02	-0.06	-0.11																					
PC Industry Dummy	-0.10	0.40**	-0.15*	-0.27**	-0.13																				
Year 1995 Dummy	-0.11	0.14*	0.07	-0.10	0.05	0.21**																			
Year 1996 Dummy	-0.01	-0.11	-0.09	-0.13	0.06	-0.04	-0.12																		
Year 1997 Dummy	0.22**	-0.06	-0.03	0.03	-0.07	0.00	-0.11	-0.11																	
Year 1998 Dummy	-0.02	-0.02	0.02	-0.09	0.06	0.03	-0.12	-0.11	-0.11																
Year 1999 Dummy	0.01	-0.01	0.00	0.01	-0.03	-0.06	-0.14*	-0.13	-0.12	-0.13															
Year 2000 Dummy	0.02	0.04	0.02	0.06	-0.01	0.07	-0.12	-0.11	-0.11	-0.11	-0.13														
Year 2001 Dummy	-0.04	0.09	0.13	0.08	0.02	-0.08	-0.15*	-0.14*	-0.13*	-0.14*	-0.16*	-0.14*													
Year 2002 Dummy	0.06	-0.04	0.01	0.03	-0.05	-0.13*	-0.08	-0.08	-0.08	-0.08	-0.09	-0.08	-0.10												
Year 2003 Dummy	-0.03	-0.05	-0.07	0.14*	-0.06	0.02	-0.10	-0.09	-0.09	-0.09	-0.10	-0.09	-0.11	-0.06											
Soc. Capabilities	0.10	-0.02	-0.24**	0.05	0.25**	0.02	0.04	0.04	-0.01	-0.11	0.05	-0.06	0.04	-0.05	0.02										
Coord. Capabilities	0.11	0.13	-0.32**	0.09	-0.01	-0.01	-0.05	0.01	0.00	-0.13*	0.11	-0.02	0.08	-0.10	0.03	0.34**									
System Capabilities	-0.06	0.11	-0.07	0.03	0.04	-0.02	-0.04	0.05	0.07	0.01	0.01	-0.05	0.08	-0.15*	0.03	0.41**	0.42**								
Leadership - Tenure	-0.01	-0.07	-0.14*	0.06	0.43**	-0.06	-0.04	0.09	-0.03	0.11	-0.03	0.00	-0.09	0.06	0.03	0.20**	-0.06	0.09							
Leadership - Comp.	-0.02	-0.47**	-0.13*	0.27**	-0.10	-0.22**	-0.12	-0.05	-0.04	-0.05	-0.04	0.06	0.13	-0.01	0.03	-0.02	-0.02	-0.06	-0.01						
Physical Slack	-0.02	0.18**	-0.01	0.17*	0.44**	-0.24**	0.00	-0.01	-0.04	-0.09	-0.03	-0.07	0.11	0.04	0.01	0.17*	0.21**	0.11	0.19**	-0.14*					
Financial Slack	0.11	-0.69**	-0.37**	0.38**	-0.19**	-0.36**	-0.12	0.02	0.08	-0.07	-0.01	0.06	-0.02	0.04	0.08	-0.06	-0.07	-0.12	-0.01	0.38**	-0.34**				
Technological Slack	-0.01	-0.28**	-0.18**	-0.08	-0.02	0.01	-0.08	-0.02	0.04	-0.09	-0.11	0.08	0.08	-0.07	0.03	-0.11	-0.08	-0.13*	-0.01	0.46**	-0.16*	0.27**			
Human Res. Slack	-0.08	0.51**	0.05	-0.25**	-0.06	0.55**	0.12	-0.04	-0.01	0.00	0.04	-0.05	-0.02	0.03	-0.10	0.09	-0.02	0.02	0.00	-0.27**	-0.11	-0.46**	-0.19**		
Reputational Slack	-0.03	0.61**	0.13	-0.13*	0.11	0.30**	0.16*	0.04	0.02	0.03	-0.01	-0.10	0.08	-0.04	-0.14*	0.13*	0.14*	0.18**	0.03	-0.36**	0.19**	-0.39**	-0.39**	0.46**	
Enviro. Dynamism	0.03	-0.22**	-0.25**	0.49**	-0.17**	-0.01	-0.23**	-0.14*	-0.04	-0.17*	-0.09	-0.11	0.01	0.15*	0.43**	0.03	0.07	-0.07	0.00	0.14*	0.08	0.22**	0.00	-0.11	-0.20**

[A]n = 223; * $p \leq 0.05$, two-tailed; ** $p \leq 0.01$, two-tailed

Regression Results

Descriptive statistics and zero-order correlations are presented in Table 2 and Table 3. To better show the nature of the data, the means and standard deviations are of the uncentered data. The two highest correlations are both with size, -0.69 for financial slack and 0.61 for reputational slack. However, the tolerance values and collinearity diagnostics do not indicate collinearity to be an issue for interpretation.

Table 4 shows the results of hierarchically regressing the performance effects of first moves on the control, the predictor, and interaction terms. Note that the change in the coefficient of determination for the last step (with the interaction terms) is not statistically significant, indicating that it cannot be said that the amount of variance explained by the third step of the model is not likely due to chance. Thus, the hypotheses with the interactions of combinative capabilities and environmental dynamism may not have any practical significance. However, finding significant interaction terms is consistent with theory, and thus these are discussed below.

The results for hypotheses 2-5 are summarized in Table 5. One should also note that the coefficients for system capabilities and leadership in terms of compensation are not statistically significant since a one-tailed test of significance is employed and the coefficients are in the disconfirming direction.

Additionally, although the change in the coefficient of determination for the final step of the regression is not significant, the significant interaction effects require more detail. The coefficient for the interaction of the leadership capacity variable using compensation and environmental dynamism is statistically significant (β = 0.127, $p \leq$ 0.10). A slope analysis using Stata (Simons, 2004) indicates that slopes at low and moderate levels of dynamism are statistically significant (for low dynamism, t = -2.46, $p \leq 0.05$; for moderate dynamism, t = -2.49, $p \leq 0.05$). A graphical representation of this analysis is shown in Figure II.

The coefficient for the interaction of environmental dynamism and financial slack is statistically significant (β = -0.176, $p \leq 0.05$). A slope analysis using Stata (Simons, 2004) indicates that the slope at the high level of dynamism is statistically significant (for high dynamism, t = -2.28, $p \leq 0.05$). A graphical representation of this analysis is shown in Figure II.

Table 4
Results of Regression Analysis of Performance Effects of First Moves (CARS) on Organizational Capacity, Environmental Dynamism, and Interactions[a]

	Controls[b]	Controls and main effects[b]	Controls, main effects and interractions[b]
Step 1: Controls			
Firm Size	-0.072	-0.332*	-0.320*
Auto Industry Dummy	0.022	0.151	0.211+
Biotech Industry Dummy	0.190**	0.288**	0.337**
Brewing Industry Dummy	0.006	-0.018	0.005
PC Industry Dummy	-0.002	0.002	0.003
Year 1995 Dummy	-0.016	-0.100	-0.091
Year 1996 Dummy	0.062	-0.005	-0.002
Year 1997 Dummy	0.244**	0.193*	0.186+
Year 1998 Dummy	0.053	0.017	0.061
Year 1999 Dummy	0.066	-0.018	-0.004
Year 2000 Dummy	0.066	0.028	0.059
Year 2001 Dummy	0.019	-0.024	-0.027
Year 2002 Dummy	0.090	0.080	0.093
Year 2003 Dummy	-0.012	0.012	0.047
R^2	0.112		
F (R^2)	1.868*		
Step 2: Main effects			
Socialization Capabilities		0.149*	0.145*
Coordination Capabilities		0.226**	0.218**
System Capabilities		-0.208	-0.188
Leadership Capacity 1 – as Tenure		-0.011	-0.013
Leadership Capacity 2 – as Compensation		-0.192	-0.229
Physical Slack		-0.107	-0.108
Financial Slack		-0.137	-0.141
Technological Slack		0.104	0.129+
Human Resource Slack		-0.017	-0.031
Reputational Slack		0.125+	0.118
Environmental Dynamism		-0.124	-0.115
ΔR^2 with addition of Main effects		0.087	
F (ΔR^2) with addition of Main effects		1.944*	
R^2		0.199	
F (R^2)		1.954**	
Step 3: Interactions			
Socialization Capabilities X Environmental Dynamism			-0.018
Coordination Capabilities X Environmental Dynamism			-0.057
Leadership Capacity 1 X Environmental Dynamism			0.065
Leadership Capacity 2 X Environmental Dynamism			0.127+
Physical Slack X Environmental Dynamism			-0.035
Financial Slack X Environmental Dynamism			-0.176*
Reputational Slack X Environmental Dynamism			0.079
ΔR^2 with addition of Interactions			0.027
F (ΔR^2) with addition of Interactions			0.953
R^2			0.226
F (R^2)			1.732*

[a]n = 223, One-tailed test for hypothesized relationships, two-tailed test for all others
[b]Standarized Regression Coefficients for variables
+$p \leq 0.10$; *$p \leq 0.05$; **$p \leq 0.01$

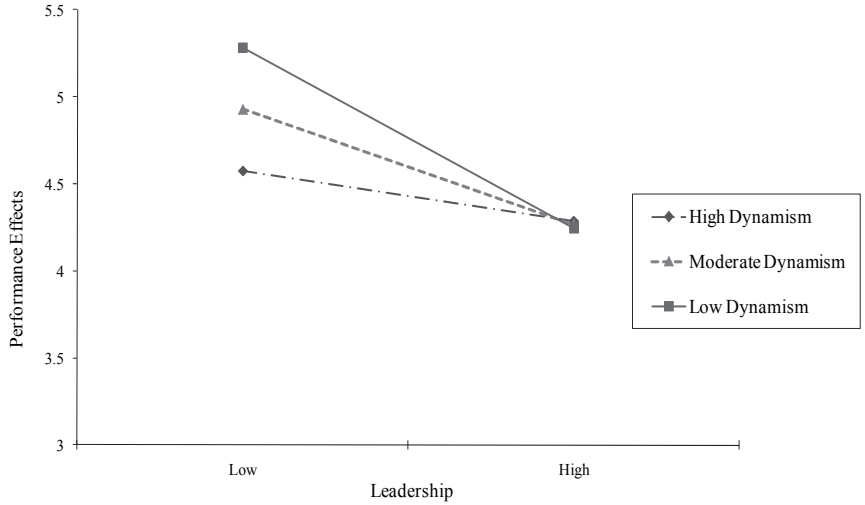
Table 5
Review of Hypotheses 2-5 Results

Hypothesis 2a	Higher levels of combinative capabilities lead to more positive performance effects of first moves.	*support for socialization capabilities* ($\beta = 0.145$, $p \leq 0.05$)*; support for coordination capabilities* ($\beta = 0.218$, $p \leq 0.01$)
Hypothesis 2b	Greater leadership capacity leads to more positive performance effects of first moves.	*not supported*
Hypothesis 2c1	More slack assets lead to more positive performance effects of first moves.	*weak support for technological slack* ($\beta = 0.129$, $p \leq 0.10$)
Hypothesis 2c2	The positive impact of slack technological assets and slack human resources on the performance effects of first moves is greater than that of slack physical and financial assets, but less than that of reputational slack.	*NA*
Hypothesis 3a	In a more dynamic environment, higher levels of socialization capabilities lead to smaller increases in the performance effects of first moves than they do in a less dynamic environment.	*not supported*
Hypothesis 3b	In a more dynamic environment, higher levels of coordination capabilities lead to larger increases in the performance effects of first moves than they do in a less dynamic environment.	*not supported*
Hypothesis 4	In a more dynamic environment, higher leadership capacity leads to larger increases in the performance effects of first moves than it does in a less dynamic environment.	*potential weak support*[a] *for leadership as compensation* ($\beta = 0.127$, $p \leq 0.10$)
Hypothesis 5a	In a more dynamic environment, stronger reputational assets lead to larger increases in the performance effects of first moves than they do in a less dynamic environment.	*not supported*
Hypothesis 5b	In a more dynamic environment, a given level of physical and financial assets lead to smaller increases in the performance effects of first moves than they do in a less dynamic environment.	*potential support*[a] *for financial slack* ($\beta = -0.176$, $p \leq 0.05$)

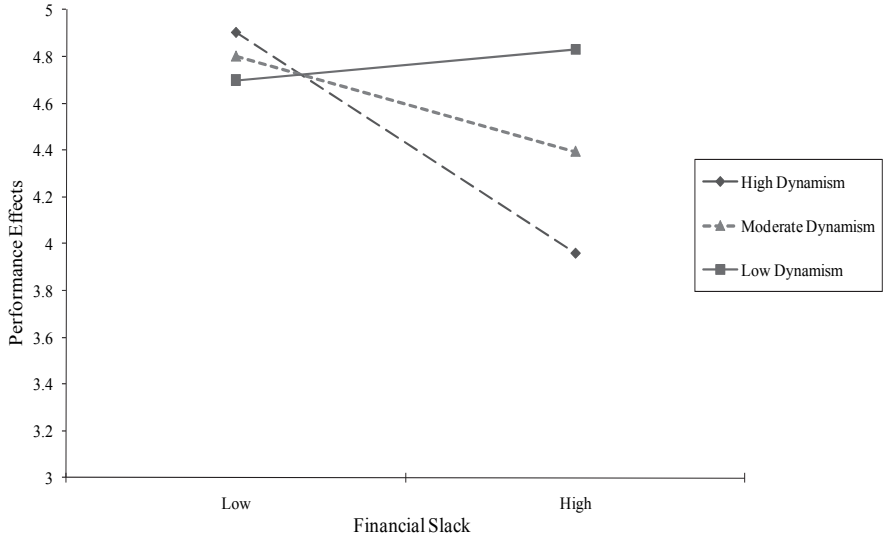
[a] *Regression analysis indicates that the coefficients for these variables are statistically significant, potentially supporting the hypotheses. A closer look at the nature of the interactions can be seen with the interaction graphs and slope analyses below.*

Figure II
Interactions

Interactive Effects of Environmental Dynamism and Leadership Capacity on the Performance Effects of First Moves



Interactive Effect of Environmental Dynamism and Financial Slack on the Performance Effects of First Moves



DISCUSSION

Throughout the following discussion it should be noted that the findings for technological slack and the interaction of leadership capacity and environmental dynamism are marginally supportive at best. As such, the conclusions drawn about these constructs should be looked on with caution, as further research is needed to fully establish these relationships. This issue will be further addressed when limitations of the study and areas for future research are discussed. That being said, taking the findings as a whole, technology and knowledge seem to be the keys to successful first moves. Technological slack and certain knowledge integration abilities (socialization and coordination capabilities) enable first movers to create resources that can lead to performance gains. On the other hand, there also appear to be constraining factors (leadership capacity, systems capabilities, and financial slack) that can inhibit the creation of appropriate resources, and thus, affect performance.

The influence of these constraining factors, an important and unexpected finding of this study, sheds light on one of the inadequacies of the RBV. In as much as the RBV tends to focus on positive effects regarding resources, the presence of constraining factors establishes boundary conditions for the RBV as it relates to the model of first mover advantages. As described below, a job demand approach is found to be a useful tool for explaining this set of findings.

The Impact of First Moves on Firm Performance

The stock price reactions to first move announcements are examined in this study. Over a three day period around the announcement of the first move, first-moving firms had average stock returns 2.07% above and beyond any normal fluctuation in returns that would have been expected by firms. Not only does this have statistical significance, but also practical significance. Many investors would be happy if they could invest in a portfolio of firms that are first movers and earn 2.07% more than they would with a similar portfolio of non-first movers. However, many other studies have pointed out that first-mover advantages are neither universal nor never ending (e.g., Boulding and Christen, 2001; VanderWerf and Mahon, 1997), and that they are not as straightforward as one might initially believe (e.g., Kerin *et al*., 1992; Lieberman and Montgomery, 1998; VanderWerf and Mahon, 1997).Thus, it is important to understand under what conditions a first-moving firm is successful. Some of these conditions are considered next.

Enabling Factors

Knowledge and technology-related components of organizational capacity appear to be important factors that enable a first mover to create resources that lead to increased performance. Three such enabling factors support the resource-based model of first-mover advantage in this study. These are socialization capabilities, coordination capabilities, and technological slack.

Socialization and coordination capabilities. The findings in the current study support the notion that a first mover's socialization and coordination capabilities can facilitate superior firm performance. Firms can draw upon an atmosphere of learning (socialization capabilities) where informal relationships and participative processes are valued (coordination capabilities) in order to fully leverage the new information that is being discovered during the first-move process. For example, one of the potential resources from first moving is that by being first, the firm can have influence over buyer behavior. A firm that is receptive to forecasts and initial buyer impressions (high in socialization capabilities) as well as being able to assimilate knowledge from multiple sources like marketing professionals, consultants, trade organizations, and other such sources (high in coordination capabilities) will more likely be able to influence buyer behavior and, subsequently, will experience better performance than will a firm that may not be as adept in these areas.

Technological slack. In this study, technological slack is found to be positively related to the performance effects of first moves. This indicates that first movers are able to leverage technological slack to become a leader in the marketplace. An important advantage from technological leadership involves securing learning curve effects and economies of learning (Dos Santos and Peffers, 1995; Kerin *et al*., 1992; Lieberman and Montgomery, 1988) so that later movers have to play catch up. Similarly, the complexities of technological leadership may not be easily established or understood by the first mover's competitors, thereby increasing the time it takes imitations to get to market. Thus, by perpetuating technology in the firm, technological slack can help first movers with superior performance gains.

The findings here are consistent with the assertion that there are internal characteristics of the firm that can be critical when a firm makes a first move (e.g., Eisenmann and Bower, 2000; Mascarenhas, 1992). Additionally, these findings partially fit into the framework of first-move effects on performance that is grounded in the RBV. As described by Street *et al.* (2010), the proposed mechanism through which these characteristics influence performance is by helping the first-moving firm to build sources of advantage from the first move. From the perspective of the RBV, these sources of advantage are resources of the firm which can lead to superior firm performance.

Constraining Factors

In addition to the enabling factors described above, the findings of the study indicate that there may also be factors that constrain a first mover's ability to create resources and performance gains. These factors are system capabilities, leadership capacity, and financial slack. A job demands perspective helps to explain those areas where the resource-based predictions prove inadequate.

Job demands require that a worker "work fast and hard and have much to do in a short time, or permanently have a great deal of work to do" (Janssen, 2001: 1040) or that the worker has "to deal with role ambiguity and/or with conflicting role demands" (Janssen, 2001: 1040). The negative effects of job demands that may come with certain aspects of first moving may act as constraints in the first mover's ability to create

resources. Examining job demands in relation to the system capabilities, leadership capacity, and financial slack of a first mover sheds light on the constraining effects imposed by these internal characteristics.

System capabilities. In contrast with the findings for the other two types of combinative capabilities which are in support of the resource-based approach to the relationship between first moves and performance, the data presented here do not support the idea that system capabilities play a positive role. However, if the relationship between system capabilities and the performance effects of first moves are hypothesized to be in the opposite direction, it would have been statistically significant. A feasible explanation for this observation is that systems capabilities, being explicit and formalized, are too constraining (Van den Bosch *et al.*, 1999) to handle the relatively radical knowledge that often comes from first moves. Such capabilities may better allow the application and synthesis of everyday incremental knowledge gains than they can for this more radical knowledge.

To better understand the role of systems capabilities of first movers, consider this role in relation to job demands and job decision latitude. It is likely that employee job demands will increase as they try to successfully integrate the knowledge gains associated with the first move. However, strong systems capabilities may, as indicated above, inhibit how employees can decide to deal with the new, radical knowledge resulting from the first move. As such, job demands for the employees are high, but job decision latitude is low. As Karasek (1979) demonstrates, such a combination of demands and decision latitude can have a deleterious effect in the workplace, a result consistent with the findings here.

Leadership capacity. To reiterate, first moves are something new to a firm, as well as to the marketplace. This implies that substantial changes may need to be made within a firm in order to capitalize on the first move. In times of change, organizational leaders tend to be of critical importance (e.g., Adner and Helfat, 2003). The capacity of a leader (Leavy, 1996) to have strategic influence when a firm is making a first move may affect the first move's impact on performance.

The idea that a first mover's leadership capacity can facilitate superior firm performance is not supported by the study findings. Interestingly, if the relationship between leadership capacity and the performance effects of first moves are hypothesized to be in the opposite direction, it would have been significant for the compensation-based measure. As is the case for system capabilities, this contrary finding can also be accounted for by adopting a job demands perspective. In particular, the executive job demands approach set forth by Hambrick *et al.* (2005a, b) is particularly useful.

Executive job demands are "the degree to which a given executive experiences his or her job as difficult or challenging" (Hambrick *et al.*, 2005a: 473). A first move is likely difficult and challenging for firm leaders and, thus, will create high job demands for them. Further, Hambrick *et al.* (2005a) point out that executives who have high performance aspirations, frequently executives with high leadership capacity, face even greater job demands than other executives.

Although there are assertions to the contrary (Ganster, 2005), Hambrick *et al.* contend "that very high executive job demands cause behavior and performance degradation" (2005b: 504). They say leaders faced with high demands may take shortcuts and/or act in an undesirable manner. This may indeed be the case for strong leaders of first moving firms. For instance, selective perception and escalating commitment may become problematic for them.

As a result of their extensive review of the literature on strategic leadership, Finkelstein and Hambrick (1996) propose that strong leaders (in particular, those with personality characteristics associated with charisma) experience high levels of selective perception. All managers have specific fields of vision which may limit the information of which they take heed, i.e., they selectively perceive information (Hambrick and Mason, 1984). A strong leader's belief system may be such that they filter out any information that is not consistent with these beliefs, resulting in a very narrow field of vision. A first move is likely to bring a wide array of new information to the firm and its leader and is likely to greatly increase the level of job demands on the leader, especially if the leader is high in leadership capacity. Because of the tendency to filter out information, a strong leader may miss information that is necessary for the first move to be effectively integrated into the firm. A different leader may take all new information gained from the first move into account and be able to more effectively integrate the first move. This is also consistent with the idea that overconfidence has been shown to be related to pioneering moves (Simon and Houghton, 2003). Thus, in this manner, a negative effect of leadership may be evidenced on the performance effects of first moves.

In a similar vein, escalating commitment also may play a role when strong leaders are faced with high job demands. Escalating commitment is a phenomena in which an individual stays the course with a decision, even when an objective assessment of the situation calls for different action (Staw, 1981). Escalating commitment can result, in part, from the aforementioned selective perception of strong leaders. These leaders filter out negative information about the move causing them to stay committed to the course of action. Additionally, when leaders articulate their views on an action, they are more likely to stay committed to it (Finkelstein and Hambrick, 1996). Given that strong leaders are likely to declare their beliefs to their followers and loathe admitting failure, they would be subject to the escalating commitment phenomena. In the context of first movers, a leader may stay committed to making a first move even though there is evidence that making the move may not be a wise decision. In such an instance, it would not be surprising to find strong leaders under high job demands escalating their commitment to bad first moves more often than leaders with less leadership capacity.

Another interesting point again involves the idea of job decision latitude. When executive decision latitude is low, such as in a stable environment where executives face diminished discretion (Finkelstein and Hambrick, 1996), one might expect to see even worse results for the firm. In fact, the results of this study are consistent with this line of reasoning. The harmful effects of higher leadership capacity are more pronounced in a more stable environment than they are in a more dynamic environment. This is also parallel to previous research assertions that firms may need

to rely on CEOs more in turbulent environments to get advantages from first moves (Eisenmann and Bower, 2000).

As such, because a strong leader of a first-moving organization may face strong job demands, the resultant hindered behavior and performance may act as a constraint on the firm's ability to create resources from the first move. Furthermore, this constraint is even stronger in a more stable environment than in one that is more dynamic.

Financial slack and environmental dynamism. A firm does not make a first move in a vacuum. Consequently, the firm's environment is likely to play a role in the success of the first move (e.g., Covin *et al.*, 2000). Environmental dynamism can influence how effectively the resources created by a first move are converted into performance benefits appropriated by the firm. That is, how readily firms actually see performance gains from the resources they create can be dependent upon the dynamism of the environment. Tangible resources, in general, are less effective than intangible resources because they can be easily copied (Barney, 1991), and competitors may be quicker to do so in a dynamic environment as opposed to a stable environment. Similarly, tangible resources may lose their relevance more quickly in a dynamic environment than in a stable environment. Because a first mover's physical and financial slack are most likely to support a first move in creating resources of a tangible nature (i.e., pre-empting assets), it follows that these slack assets will not be particularly helpful in a dynamic environment. Unfortunately, the results of the study do not exactly support this view.

In more stable environments there appears to be no statistically significant linear relationship between the performance effects of first moves and the amount of the firm's financial slack. However, when environmental dynamism is high, the relationship between financial slack and the performance effects of first moves appears to be negative. This indicates that financial slack in these circumstances is detrimental to the performance effects of first moves.

As financial slack is likely under the control of executives in the organization, the executive job demands perspective can help to explain this phenomenon too. In a more dynamic environment, executives should have more and more opportunities constantly opening to them for which they could use the money to support the first move. For example, an executive might have the choice to use the financial slack to enhance the first move to keep up with some rapidly evolving customer demand. Furthermore, the nature of a more dynamic environment makes the right choice of what to do with the extra money to support the first move far less clear than it would be in a more stable environment. These challenges represent job demands for the executives of a first moving firm. Thus, the decrease in performance exhibited in this study may be the result of these demands.

Contributions to Research

This research makes two main contributions to management research. First, a resource-based model of the effects of first moves on performance is tested. Recall that Street *et al*. (2010) theorize that organizational capacity helps to support a first mover in creating resources that can lead to increased performance. Some support for this

conception is found. Second, presented below is a new model based on this support, as well as on some of the findings in the disconfirming direction. The latter findings are a fortuitous contribution of the study that point to the inadequacies and boundary conditions of the RBV (Priem and Butler, 2001) as it relates to the model of first-mover advantages. In general, RBV researchers are concerned with how resources are built. It is proposed that what are termed here as "constraining" factors exist. The "constraining" effect of these factors is ultimately exhibited through the negative effects on performance shown in Figure III. In this figure, the study's findings that are consistent with expectations from a resource-based perspective of the relationship between first moves and performance are portrayed on the left, while the other findings are portrayed on the right. Note that the increase/decrease of resources indicated in the figure is not actually tested in the current study. Rather, it is theorized that organizational capacity works to facilitate the building of resources (or perhaps even destruction of resources as in the new model) in order for first moves to affect performance.

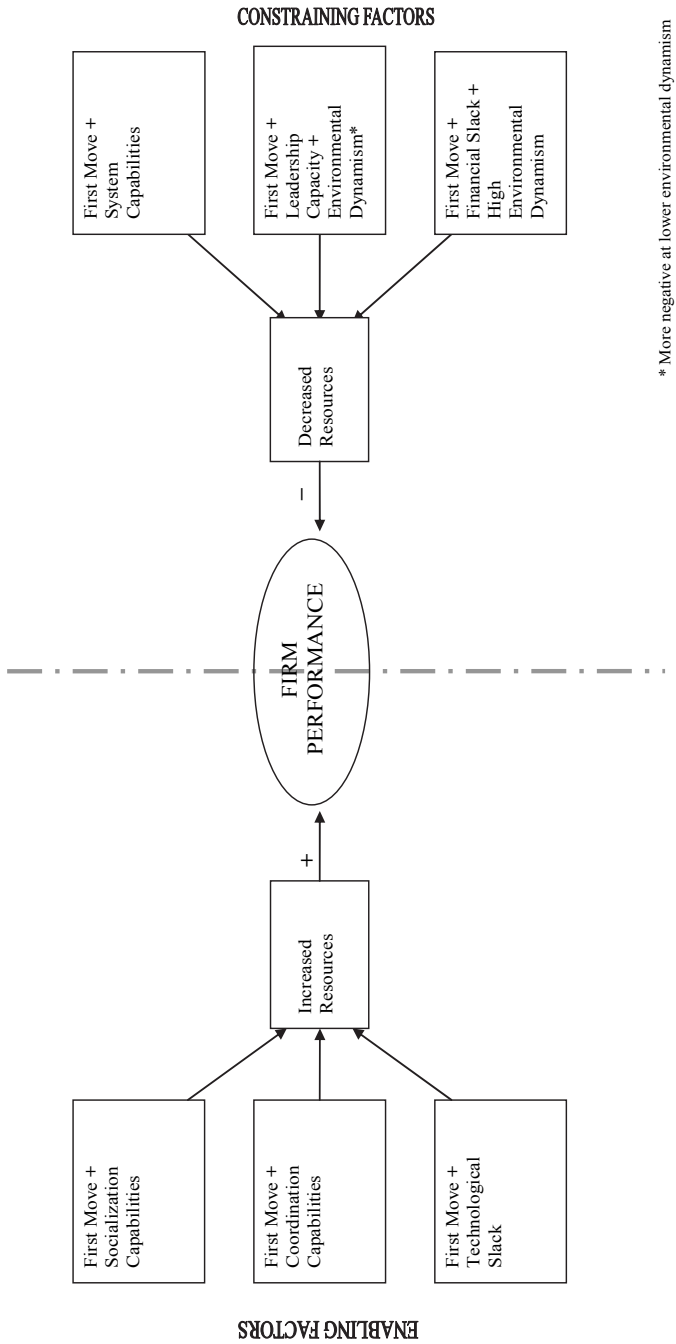
Under certain conditions, systems capabilities, leadership capacity, and financial slack may actually constrain a firm's ability to create resources from a first move. Negative effects such as these are generally not considered by the RBV, since, traditionally, that approach is concerned with factors that enable firms to create resources. In fact, these findings (of negative effects) differ from positive resource-based predictions in two ways. First, they address factors that constrain (rather than enable) the building of resources. Second, since these constraining factors may be considered resources of the firm themselves, they should be viewed as resources that have a negative effect. As a mechanism to account for this situation, a job demand approach is drawn on to complement the RBV in explaining these effects.

Implications for Practice

The decision to undertake pioneering actions can be an important part of a firm's competitive strategy. Such a decision is not always clear cut, however. Even though firms might derive resources from a first move, they are inherently risky corporate initiatives and are not suitable for many firms (Lieberman and Montgomery, 1988). In order to achieve sustained first-mover advantages, a firm must create some unique source of advantage. Although some areas of this study are only weakly supported and further research may be warranted before companies take action, the model presented here may provide some preliminary insight as to how managers can better determine when is appropriate and what action to take in order to secure these resources. One important lesson for managers is to recognize that the firm must have the requisite combinative capabilities and slack if it hopes to be successful.

In the case of combinative capabilities, managers would do well to monitor their potential to assimilate knowledge from the first move. For example, they should foster an environment of openness and participation about learning (as parts of socialization and coordination capabilities), but make sure that they do not have rules for learning that unintentionally prohibit the integration of the potentially radical new information gleaned from a first move.

Figure III
Positive and Negative Factors Affecting First Mover Performance



In terms of slack assets, technological slack, in general, may be the most valuable in supporting a first move. Leveraging existing technological slack to create an advantage from leadership in the technology arena seems particularly wise. Thus, if a firm is deficient in the area of technological slack, it may want to consider taking the role of a later entrant, rather than being a first mover.

Taken as a whole, it seems that firms should focus on technology and knowledge integration when considering a first move. These seem to be the keys to success of a first move.

LIMITATIONS AND FUTURE RESEARCH

It is important to consider the context and limitations of this study when evaluating its findings. Four main limitations are discussed here. First, selecting a non-random sample limits the generalizability of the study. In this study, first moves are collected for five industries. If a first mover's industry matters to its success, then the findings of the study are applicable for those particular industries. It should be noted, however, that the chosen industries such that they vary somewhat, in an attempt to increase the generalizability of the study. The significance of the coefficients for some of the industry dummy variables indicates that there are industry differences. So, industry does indeed seem to matter, and thus, the generalizability of the study is limited.

Next, some of the measures could be more refined. In particular, there could be concern with the combinative capabilities and leadership measures. Though solidly based, the measure for combinative capabilities is completely new, and requires a lot of individual judgment. But, as is mentioned in the Appendix, some support for various types of validity for the measure in question is found. The leadership capacity measures are also of concern. Tenure and compensation are but rough proxies for leadership capacity.

Further, some of the findings of the study are weak. Two of the tests for significance are only at the $p \leq 0.10$ level using a one-tailed test. Additionally, although the coefficients are statistically significant for two of the interaction terms, the change in coefficient of determination for the interaction step in the regression analysis is not significant. As such these should be considered preliminary, and future research should be conducted to further explore these relationships.

Finally, another consideration is that only a single measure of performance, abnormal returns as calculated from an event study, is considered. For strategic management research in general, it may be best to look at multiple firm performance measures since performance is often considered to be multidimensional (Venkatraman and Ramanujam, 1986). However, using this measure allows for a research design where the effects of the first move could be isolated from the many other strategic actions that a firm might make. These other actions would impact a performance measure not capturing a discrete time, such as annual profitability.

This study lays the groundwork for future research in the area of first-mover advantages. In particular, it is suggested that scholars consider three areas for future study. First, researchers can take a more fine-grained approach utilizing case studies, for example, to further examine the resources created and/or constrained when a firm

makes a first move. Second, scholars should examine the generalizability of the current model by applying it in a different context and by using a different measure of performance. Finally, researchers can examine the role of later movers, drawing on the model and findings presented here.

Appendix
Variables Descriptions

Hypothesis 1 independent variable

First moves. First moves that are truly unique (not just incremental changes) would likely be announced in the news media. Since a timely release of information is desired, several news wires and dailies on *Lexis-Nexis* are examined. For all industries except brewing, industry experts review the first moves collected to see if they find them reasonable. For the brewing industry, an additional researcher reviews each first move. Based on the expertise of these individuals, six of the first moves initially identified are not first moves, and one first move is corrected.

Hypothesis 1 dependent variable

Stock price reaction. Daily stock returns corresponding to qualified first moves are obtained from the CRSP database for the event window. These data are used to calculate the stock price reaction to the first move.

Hypotheses 2-5 independent variables

Combinative capabilities. To estimate the levels of the various combinative capabilities present in a firm at the time of the first move, firm-specific news items are examined and coded. Previous studies have used measures like news article counts (e.g., Chang, 2004; Kotha *et al.*, 2001) and ratings (e.g., Bach *et al.*, 2008) to measure firm characteristics. Here, ratings of articles are used.

Database searches for articles relating to combinative capabilities are conducted for the firm making each first move for a six month period prior to the move. The searches utilize keywords derived from the descriptions of the various combinative capabilities provided by Van den Bosch *et al.*(1999). Based on these keywords, database searches are conducted over various publications as a function of the industry under consideration. Each article identified is examined for relevance, and discarded if there is not applicable material in the article.

Each of the aforementioned news articles about a first-moving firm in the sample are read and rated by two raters on a seven-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). The items used to rate the articles are: "The firm appears to have strong *Socialization Capabilities*," "The firm appears to have strong *Coordination Capabilities*," and "The firm appears to have strong *System Capabilities*." The item averages of the two raters assessments are used in the regression analysis. Intraclass correlation coefficients (ICC) are estimated (McGraw and Wong, 1996). The coefficients are 0.52 for socialization capabilities, 0.67 for coordination capabilities, and 0.70 for systems capabilities. As this is an early exploration of these measures, a

moderate reliability around 0.7 is typically considered reasonable (see Kerlinger and Lee, 2000). Since the reliability estimate for the socialization capabilities is low, the coders meet and discuss items for which their scores differed by more than two scale-rating points. After the scores are changed based on these discussions, the interrater reliability reaches a more acceptable level of 0.7.

It should be noted that the combinative capabilities construct is a little-researched variable in strategic management. Consequently, questions about its measurement are legitimate and should be addressed by scholars employing the construct. In this study, some support for several different types of validity, including face, discriminant, and criterion-related are found.

Leadership capacity. Leadership capacity is concerned with a leader's experience, credibility, willingness to assume responsibility, ability to tolerate stress, and assertiveness. Since the CEO is typically the individual most responsible for strategic decisions in a firm, in this study, two measures of CEO leadership capacity are employed.

First, CEO tenure in days is measured. The CEO's tenure can indicate influence over the firm's board of directors (Westphal and Zajac, 1994), and influence (Singh and Harianto, 1989) and power in general (Fredrickson *et al.*, 1988). As tenure increases, the CEO's familiarity with the firm's resources and operations increases, a general atmosphere of the CEO as ultimate leader grows, and there is an increase in the number of board members recommended by the CEO (Finkelstein and Hambrick, 1996; Singh and Harianto, 1989). Thus, in general, the longer a CEO is with a firm, the more leadership capacity is present. Tenure is calculated from the time that an individual became CEO to the time of the first move. The former date is collected from ExecuComp, proxy statements, or news releases about the company.

The second measure of leadership capacity involves CEO compensation. Specifically, strong, charismatic leaders are able to lead and change the status quo by force of their character (Conger and Kanungo, 1987). Further, such charismatic leadership has been shown to be related to CEO compensation. Tosi *et al.* (2004) found support for their hypothesis that more charismatic leaders received more total compensation than similar less charismatic CEOs. Further, it has been posited that CEOs use their skills to influence not only the company's actions, but also their pay packages (Tosi *et al.*, 2004; Westphal, 1998). Additionally, it is recognized that firm size is a large determinant of CEO compensation (Tosi *et al.*, 2000). Thus, total CEO compensation (divided by firm size, in terms of number of employees) is used as a proxy for leadership capacity. Total compensation includes cash compensation (salary plus bonuses), long-term incentive pay, and stock options (e.g., Hambrick and Finkelstein, 1995; Tosi *et al.*, 2004). Total compensation data for about half of the CEOs are available in ExecuComp. For the remainder, data on salary, bonuses, and long-term incentive pay are collected from company proxy statements and annual reports. The stock options are valued using a modified Black-Scholes valuation to match that used by ExecuComp. Data for the number of options, exercise prices, stock prices, and exercise dates granted to the CEOs in the relevant years are taken from company proxy statements and annual reports. Each company's dividend yield and stock volatility is calculated based on Compustat data. The risk-free rate is taken from ExecuComp documentation. The data for the number of employees for the firms are

taken from Compustat, company annual reports, *Hoover's Company Reports*, and *Hoovers Handbook of World Business*. Finally, analysis reveals that the two measures for leadership described above are not significantly correlated with each other.

Slack assets. *Physical slack* includes excess tangible assets (plant, land, equipment, etc.) that a firm owns. A ratio of the value of the property, plant, and equipment (PPE) of the firm to the total assets of the firm, both gathered from Compustat, is used (Kotha *et al.*, 2001). When the target level of an asset (i.e., zero slack) cannot be readily determined, as is the case for physical assets, the industry level of the asset may be appropriate (Mishina *et al.*, 2004). Thus, the industry's PPE to its total assets is subtracted from the firm's to determine the slack in relation to this target.

Financial slack refers to funds that can be used by the firm. The current ratio is a measure of available financial slack and can give an indication as to the firm's cushion accessible for immediate investment (Combs and Ketchen, 1999; Hambrick and D'Aveni, 1988). In this study, the natural logarithm of the current ratio is used for financial slack. This ratio is calculated from data in Compustat or annual reports for the year of the relevant first move.

Technological slack is concerned with a firm's ability to innovate. More funds toward R&D are likely to give firms more chances to innovate, thus, research and development expenditures have been used as a proxy for innovation (DeCarolis, 2003; Hill and Snell, 1988). In particular, R&D per employee (for the relevant year) is often considered a good proxy for innovation (Hill and Snell, 1988). This measure is used for the innovation intensive biotechnology, pharmaceutical, and auto industries. Other industries are not really focused on R&D. For example, the brewing industry consists of capital-intensive manufacturers (Xia and Buccola, 2003), which may indicate that technology lies more in equipment and other such investments, rather than in R&D. Thus, in this study, the cost of machinery and equipment per employee is used for the brewing industry and the PC assembly industry. As with physical slack, the target level against which slack is determined is the industry levels of the corresponding variables. After these levels of slack are calculated, the measures are standardized per type of measure so they could be used in combination in the analysis. R&D and machinery and equipment data are gathered from Compustat and company annual reports. Number of employees is gathered from Compustat, company annual reports, *Hoover's Company Reports*, and *Hoovers Handbook of World Business*.

Human resource slack concerns human skill and labor available to the company. Following Mishina *et al.* (2004), human resource slack can be thought of in terms of the number of employees available to generate sales. Specifically, those scholars measured human resource slack as the firm's number of employees per sales and they subtracted out the same ratio at the industry level to get a measure relative to a target level. Here, these ratios are inverted because a firm can have $0 in sales, but not zero employees. As such, the coefficient in the regression equation for human resource slack is expected to be negative. Sales figures are from Compustat. Numbers of employees are from Compustat, company annual reports, *Hoover's Company Reports* and *Hoovers Handbook of World Business*.

Reputational slack concerns the opinions and perceptions of the firm and its brand names. Stakeholders form positive opinions (a superior reputation) of a firm when the firm's financial performance is high (Brown and Perry, 1994; Roberts and Dowling,

2002). Although some scholars argue that more than financial measures need to be considered when studying reputation (see Chun, 2005, for a detailed discussion on this point), financial measures do likely account for a large part of the variance in reputation (Chun, 2005). Thus, a firm's return on assets (ROA) lagged one year from the firm's first move is used as a proxy for reputation in this study. As with some of the other slack variables, the industry value for this measure is used as the baseline against which to determine slack. Thus, the slack is prior year ROA for the firm minus prior year ROA for the industry. ROA is calculated from Compustat data.

Environmental dynamism. Environmental dynamism is the unpredictability of change and degree of instability outside the firm (Gopesh and Ward, 2004). In particular, the unpredictability of change within the firm's industry represents the most relevant and readily analyzed dimension of the task environment (Dess and Beard, 1984; Keats and Hitt, 1988). The (non-cyclical) volatility of sales is the indication of instability used in this research. Regressing industry sales on time and then taking the antilog of the standard error from the growth equation gives the measure of dynamism (Keats and Hitt, 1988). Sales values for five years prior to the relevant first move announcement, obtained from Compustat, are used for the regression.

Hypotheses 2-5 dependent variable

Stock reaction at time of first move. As described above, event study methodology is used to analyze the stock price reaction to first moves as a means of assessing the veracity of the first hypothesis. A measure of the stock performance at the time of the first move, the standardized (by firm) cumulative abnormal return (CAR) of the firm is calculated during this analysis (e.g., Lee *et al.*, 2000). These data now become the criterion variable for the regression analysis to test Hypotheses 2-5.

Hypotheses 2-5 control variables

Industry. To help account for differences due to industry influence, dummy variables to indicate industry are included. The pharmaceutical industry is used as the reference industry (the one left out from the coding).

Firm size. Information concerning an event (such as a first move) of a large company is likely to spread more quickly reaching more investors than is that of a smaller company (Combs and Skill, 2003). Thus, firm size should be controlled. The natural logarithms of total assets (obtained from Compustat) are used to measure firm size (Finkelstein and Hambrick, 1989).

Year. To help account for differences over time, dummy variables to indicate year are included. The year 2004 is used as the reference year (the one left out from the coding).

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The *JMI* in Brief

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Human Resource Professionals' Perceptions of Interviewer Training 250
Richaurd R. Camp, Eric Schulz, Mary E. Vielhaber, and Fraya Wagner-Marsh

The employment interview is the most frequently used selection device, but managers who conduct interviews often have little or no training in the process. This lack of training seems puzzling given the strong evidence that managers often commit numerous errors during the interview process and in making hiring decisions. Human Resource (HR) professionals can play a key role in advocating for interviewer training in organizations. The results of this study demonstrate that HR professionals who have experience in staffing or talent assessment as well as experience in participating in a number of interviews are positive about the benefits of interviewer training. Additionally, HR professionals who have made an attempt to advocate for interviewer training have a more positive attitude toward interviewer training than those who have never attempted to advocate. Finally, women HR professionals rate interviewer training as providing more positive benefits than men and are more likely to be advocates for interviewer training.

An Empirical Investigation of the Influence of Organizational Capacity and Environmental Dynamism on First Moves 269
Vera L. Street, Hugh Marble III, and Marc D. Street

Even though firms that are first to market often maintain a performance advantage over later entrants, this is not always the case. There are important contingencies that affect whether a first move will be successful or not. Here, two such contingencies, organizational capacity and environmental dynamism, are examined. Hypotheses focused on how these contingencies affect the first move-performance relationship are tested. These hypotheses are derived from the resource-based model of first-mover advantages by Street *et al.* (2010). Consistent with this model grounded in the resource-based view, the findings of these tests indicate that technology and knowledge integration enable the success of first moves. Additionally, and largely in contrast to predictions based in the resource-based view, there is evidence that there may be constraining factors that could inhibit the creation of appropriate resources from the first move. Application of the job demands model provides insight into these constraining factors. Finally, the findings presented here help explain how first moves can create value for firms by leading to increased performance.