COMPETITIVE BEHAVIORS AND NON-FINANCIAL OBJECTIVES:

ENTRY, EXIT AND PRICING DECISIONS IN CLOSELY-HELD FIRMS

BRIAN T. MCCANN *
Assistant Professor of Strategic Management
Owen Graduate School of Management
Vanderbilt University
401 21st Avenue South
Nashville, TN 37203
Tel: (615) 343-7702
Fax: (615) 343-7177
e-mail: brian.mccann@owen.vanderbilt.edu

GOVERT VROOM
Associate Professor of Strategic Management
IESE Business School
University of Navarra
Avenida Pearson, 21
08034 Barcelona, Spain
Tel: +34.932534200
Fax: +34.932534343
e-mail: vroom@iese.edu

FORTHCOMING IN ORGANIZATION SCIENCE

(Accepted May 2013)

* Corresponding author

Keywords: competitive behavior; closely-held firms; objectives; entry; exit; pricing.

ABSTRACT

Because of the predominance of the assumption of profit maximization as the goal of the firm and its decision makers, especially in the competitive strategy literature, research has yet to investigate how differences in objectives might influence competitive actions such as entry, exit, and pricing decisions. This represents an important gap in the literature given the fundamental role of objectives in decision making and widespread evidence that many firms, especially those that are closely-held, are motivated by non-financial objectives in addition to an interest in financial returns. To further our understanding of firms' competitive strategy decisions, we discuss how the presence of non-financial objectives in closely-held firms leads to a weakening of the relationship between economic indications of profitability and competitive behaviors. Using a unique data set of nearly 4,000 closely-held and non-closely-held establishments engaged in local competition in the Texas hotel industry, we find that the entry, exit, and pricing decisions of closely-held establishments are less responsive to economic indicators of profit potential compared to non-closely-held establishments.

INTRODUCTION

Studying heterogeneity in firm competitive behaviors, such as entry, exit, pricing, and other types of competitive actions, is a central topic in management research. Critical to the inquiry of understanding *how* firm decision makers act, i.e., the particular competitive choices they make, is the assumption of *why* they take these actions. The predominant assumption in the field of strategic management is that the objective of the firm and its decision makers is to maximize financial returns. Competitive decisions are made in the quest to establish advantageous positions that result in increased financial returns (e.g., Porter, 1980; Smith, Ferrier, and Ndofor, 2001). Despite the advances that have been made in understanding the determinants of competitive behaviors pursuant to this approach, the predominance of the profit maximization assumption has resulted in limited investigation of whether variance from this primary objective plays any role in explaining differences in competitive behaviors such as entry, exit, and pricing. This is a concerning oversight given the fundamental role that objectives play in driving decisions and the wealth of evidence indicating that many firms pursue a variety of objectives beyond financial returns.

Existing literature particularly indicates that closely-held firms, i.e., those firms in which there is a high degree of overlap in ownership and management, often possess non-financial objectives in addition to financial goals. For example, the entrepreneurship literature demonstrates that entrepreneurs pursue a variety of non-pecuniary returns, such as autonomy, self-realization, innovation, job security, and independence (e.g., Gatewood, Shaver, and Gartner, 1995; Kuratko, Hornsby, and Naffziger, 1997; Amit, MacCrimmon, and Zietsma, 2001). Similarly, the family-business literature indicates that family-owned firms tend to favor the preservation of family control and the protection of socioemotional wealth, even at the expense of financial gains (Gomez-Mejia, Haynes, Nunez-Nickel, Jacobson, and Moyano-Fuentes, 2007). While prior research has studied the impact of these non-financial objectives on several types of attitudes and decisions, including growth attitudes (Wiklund, Davidsson, and Delmar, 2003), growth intentions (Cassar, 2007), risk-taking behaviors (Gomez-Mejia *et al*., 2007), and environmental performance (Berrone, Cruz, Gomez-Mejia, and Larraza-Kintana, 2010), we know very little about the impact of closely-held firms' non-pecuniary objectives on competitive behavior. The ubiquity of non-financial motives and the evidence that they affect a

variety of decisions suggest that a failure to consider these objectives leaves us with at best an incomplete understanding of the determinants of competitive behaviors.

Our aim is to address this gap and to extend literature that considers how firm-level differences contribute to variance in competitive behavior. For example, work building from the resource-based view of the firm (Barney, 1991; Peteraf, 1993) argues that differences in firm resources and capabilities may account for variance in competitive behaviors such as entry (e.g., Kalnins and Chung, 2004), exit (e.g., Madsen and Walker, 2007), and pricing (e.g., Dutta, Zbaracki, and Bergen, 2003). Firm-level differences are also a central concern in the competitive dynamics literature (e.g., Chen, 1996; Smith, Ferrier, and Ndofor, 2001), which investigates how differences in firms' awareness, motivation, and ability affect their propensity to launch and react to competitive actions. Consistent with these approaches, but focusing at the more fundamental level of the objectives of firm decision makers, our central research question is how the presence of non-financial objectives influences entry, exit, and pricing decisions.

We begin with the assumption that firms in general are interested in making economically rational decisions that increase their payoffs through their competitive behaviors. We thus expect in general that they will be more likely to enter when markets are economically attractive; they will be more likely to exit when recent performance is poor; and, they will increase their prices as market conditions become more favorable. We move beyond the unitary assumption of a goal of profit maximization, however, and consider how these relationships are dependent upon the presence of non-financial objectives. Specifically, we argue that the presence of non-financial objectives in closely-held firms means that the relationship of entry, exit, and pricing behaviors to signals of profit potential will be weaker in closely-held firms. Adding non-financial objectives increases the complexity of decisions and limits the attention that decision makers can devote to achievement of financial objectives. More importantly, because financial and non-financial objectives are often in conflict, pursuing non-pecuniary returns implies at least partially sacrificing pecuniary returns.

We empirically investigate our expectations by comparing the competitive behaviors of closely-held and non-closely-held firms using data drawn from the Texas hotel industry, which includes a large number of

both closely-held and non-closely-held multiunit establishments.[1] Our empirical results are largely consistent with our theoretical predictions. On average, firms' entry, exit, and pricing behaviors are related to economic signals; however, these relationships are not as strong in closely-held firms.

This study contributes to the literature first by addressing an important gap in understanding the determinants of competitive behavior. We recognize non-financial objectives as an important influence in closely-held firms and theorize about how competitive behaviors may be affected by the presence of these non-pecuniary objectives. In doing so, our work provides a connection between the competitive strategy literature and literatures in entrepreneurship and family firms. While these latter literatures clearly acknowledge the importance of non-financial objectives, they have yet to investigate the competitive implications of this acknowledgement. We empirically demonstrate that closely-held firms differ in their competitive behavior from non-closely-held firms, consistent with our expectation that their non-pecuniary objectives make them less responsive to signals of economic attractiveness. In this respect, our work extends literature that relates differences in ownership structure to organizational decisions such as innovation behaviors (Hoskisson, Hitt, Johnson, and Grossman, 2002; Kochhar and David, 1996), R&D spending (e.g., Baysinger, Kosnik, and Turk, 1991), and risky investments (e.g., Sanders and Hambrick, 2007; Wright, Ferris, Sarin and Awasthi, 1996; Wright, Kroll, Lado, and Van Ness, 2002), to also show that ownership structure is associated with heterogeneity in competitive behaviors. It specifically responds to the call of scholars such as Daily, Dalton, and Rajagopalan (2003: 153) who note, "The differing objective functions attendant on various owner categories must be accounted for in any examination of the nature of the relationship between ownership structure and firm processes and outcomes." Finally, we hope that our study contributes to a more refined understanding of the motivating objectives of competitive agents and, ultimately, how this may affect the competitive landscape.

THEORETICAL BACKGROUND AND HYPOTHESIS DEVELOPMENT

The predominant assumption in the field of strategic management of the goal of the firm is

[1] Interestingly, agency theory (Jensen and Meckling, 1976) suggests that non-closely held corporations may also depart from profit-maximizing behavior due to the non-financial objectives of managers. In developing our hypotheses, we explain in detail why we anticipate that agency problems will be minimized for the particular decisions we study.

maximization of financial returns, an assumption reflected in the field's more prominent theoretical perspectives related to competitive behavior. For example, Porter (1980: 34) describes competitive strategy as taking offensive or defensive actions to "yield a superior return on investment for the firm." Barney and Arikan (2001: 141) note that "resource-based logic adopts the assumption that firms are profit-maximizing entities," and the competitive dynamics perspective assumes that firms act creatively to "enhance or improve profits, competitive advantage, and industry position" (Smith, Ferrier, and Ndofor, 2001: 315). The field's leading textbooks also reveal the prevalence of the profit-maximization assumption. Grant's (2002: 38) text "assumes that the primary goal of the firm is profit maximization" and states that "for most practical purposes, strategic management can be defined as a quest for profitability."

It is relatively uncontroversial that for-profit firms are interested in financial returns. However, both existing theory and empirical studies support the view that closely-held firms, or firms that generally feature (i) a relatively small number of shareholders, (ii) a limited market for the shares of the firm, and (iii) active shareholder participation in the management of the firm[2], possess both financial and non-financial objectives, which they attempt to fulfill through operation of their businesses. Thus, the focus on a single financial objective in the strategy literature does not recognize the non-financial objectives present in closely-held firms nor does it investigate the implications of the presence of these additional objectives.

Non-Financial Objectives in Closely-Held Firms: Economic Theory

We first note that the importance of non-financial objectives in closely-held firms, perhaps surprisingly, is consistent with expectations from economic theory. In standard economic theory, resources may either be consumed by individuals or used by firms in production. Consumption takes place in the household while production takes place within the firm. Consumption creates utility, so household decisions are driven by utility maximization. Production does not create utility; thus, firm owners seek to have their

[2] See for example Donahue v. Rodd Electrotype Co. of New England, 328 N.E.2d 505, 511 (Mass. 1975), in which the court described a closely-held corporation as follows: "We deem a close corporation to be typified by: (1) a small number of stockholders; (2) no ready market for the corporate stock; and (3) substantial majority stockholder participation in the management, direction and operations of the corporation." The management literature (often implicitly) reflects a similar definition. For example, Gomez-Mejia, Nunez-Nickel, and Gutierrez (2001: 81) note the "personal involvement by owner-managers" in closely-held firms.

firms maximize profits. What can be obscured in the traditional application of economic theory is that the theory fundamentally rests on a utility maximization foundation. Firms maximize profits because firm owners can use those profits to consume and increase their utility. As Demsetz (1983: 378) notes, the "entire process is concerned with utility maximization, but some activities, identified as production (for use by others), deliver utility indirectly to factor owners through the easing of their household budget constraints." Thus, a key assumption underlying the typical view of firms as pursuing financial objectives is that owners' utility maximization goals are best served by firm profit maximization. We believe that the applicability of this assumption is affected by the ownership structure of the firm, where ownership structure concerns "the relative amounts of ownership claims held by insiders (management) and outsiders (investors with no direct role in the management of the firm)" (Jensen and Meckling, 1976: 305). This point is central to our arguments because closely-held and non-closely-held firms by definition differ in their ownership structures, specifically the amount of overlap in ownership and management. To illuminate this point, we compare the case of outside ownership versus inside ownership in more detail.

In the case of diffuse owners who do not also work in the firm, the assumption of the equivalence of utility to profit seems quite reasonable. Diffuse, external owners have no ability to extract utility directly from the operations of the firm. The only source of utility available to them is the stream of monetary rewards flowing from the firm that the owners can utilize for consumption and utility. So, in the case of diffuse external ownership (i.e., non-closely-held) using profit as a proxy for utility seems reasonable.

When we consider the case of internal ownership, however, the situation is quite different. Owner-managers[3] of closely-held establishments may utilize the firm for *both* consumption and production. Owner-managers will consume within the firm when the consumption possibilities offered there are not available elsewhere (e.g., utility gained from work autonomy or leading an organization) or when the cost of the utility received is lower than if consumption took place in the household (e.g., if tax policy allows certain expenses to be deducted from business but not personal income). Firms can provide their owner-managers with

[3] The term owner-manager includes either a single owner of the firm or one of multiple owners who also participates in the management of the firm.

"nonpecuniary income associated with the provision of general leadership and with the ability to deploy resources to suit one's personal preferences" (Demsetz and Lehn, 1985: 1161-1162). Jensen and Meckling (1976: 312) similarly note that an owner-manager's interests involve "not only the benefits he derives from pecuniary returns but also the utility generated by various non-pecuniary aspects of his entrepreneurial activities" such as the quality of the office environment, personal relationships with employees, purchasing inputs from friends, and other perquisites.

The assumption of profit maximization as the unitary objective for owners thus appears to be reasonable only for dispersed, outside owners. Owner-managers of closely-held firms, who wish to maximize their own utility, may take actions that are inconsistent with profit maximization if those actions serve to increase their individual utility. It is not that these owner-managers do not operate the firm in the "interests of owners" as concerned Berle and Means (1932). Rather, it is that the interests of inside owners are not restricted simply to profits. As Demsetz (1983: 382-383) observes, "It is clearly an error to suppose that a firm managed by its only owner comes closest to the profit-maximizing firm postulated in the model firm of economic theory. The owner-manager of such a firm may or may not be motivated only by the search for profit."

Non-Financial Objectives in Closely-Held Firms: Empirical Evidence

Broad evidence of the non-pecuniary objectives of the owners of closely-held firms exists in a number of related literature streams. Research in entrepreneurship indicates that the choice to engage in entrepreneurial activities is often influenced by non-pecuniary motives. First, studies of both prospective and current business owners indicate that businesses are considered and sustained for both financial and non-financial reasons. Gatewood, Shaver, and Gartner (1995) found the most common motives for starting a business among a sample of prospective entrepreneurs to be: autonomy/independence, desire to use knowledge and experience, enjoyment of self-employment, and desire to show that it could be done. Gimeno, Folta, Cooper, and Woo's (1997) results indicated that non-financial, intrinsic motives (e.g., maintaining autonomy and independence) led entrepreneurs to sustain their businesses even in the face of lower levels of economic performance. Among a sample of high-technology founders in British Columbia,

achieving a vision, doing something new or different, and achieving independence were the most important motives while wealth attainment ranked last (Amit, MacCrimmon, and Zietsma, 2001). Sine and Lee (2009) argued that the existence of a social movement around particular opportunities (e.g., wind energy) provided non-financial motivations for entrepreneurs to launch new ventures around those movements. Second, comparisons of self-employed and organizationally employed individuals also support the non-financial rewards of working for oneself (Benz and Frey, 2008; Hundley, 2001). These findings are consistent with earlier work by Aronson (1991) and Hamilton (2000) indicating that the majority of self-employed workers in the United States do not switch to paid employment despite greater income-earning opportunities there. Finally, studies of the economic returns to entrepreneurial activities beyond just self-employment generally indicate that the economic returns are insufficient to adequately compensate owners, leading to a suggestion that non-pecuniary returns make up the difference (e.g., Hamilton, 2000; Moskowitz and Vissing-Jorgensen, 2002). In sum, the prior literature broadly supports entrepreneurs' interest in non-pecuniary returns, even if they "conflict with the wealth maximization principle" (Wasserman, 2008: 104).

The family business literature also supports the importance of non-financial motivations to the owners of closely-held firms. Schulze, Lubatkin, Dino, and Buchholtz (2001), for example, argue that altruistic tendencies guide many of the decisions within family-run firms. Owners of family firms wish to be generous to other members of the family and can use the business as a vehicle to provide family members with secure employment and other benefits. Gomez-Mejia *et al*. (2007: 106) similarly argue that family firms' motivations include a desire to attain socioemotional wealth, or "non-financial aspects of the firm that meet the family's affective needs, such as identity, the ability to exercise family influence, and the perpetuation of the family dynasty."

Although they have not addressed the issue of competitive behaviors, the entrepreneurship and family business literatures have examined the impact of non-financial objectives on several other types of attitudes and decisions. For example, Wiklund, Davidsson, and Delmar (2003) discovered that non-financial concerns were a more important factor than expected financial outcomes in determining small business owners' attitudes toward growth. Nascent entrepreneurs' interest in achieving independence was negatively

associated with intended and realized employment growth (Cassar, 2007). Gomez-Mejia *et al.* (2007) showed that family firms are willing to accept greater risk in order to maintain family control even to the point of taking "bad or seemingly irrational risks to mitigate threats to their socioemotional wealth" (p. 130). Similarly, Berrone, Cruz, Gomez-Mejia, and Larraza-Kintana (2010) found that family-controlled firms have higher environmental performance, particularly at the local level, in order to protect socioemotional wealth.

Entry, Exit and Pricing Decisions in the Presence of Non-Financial Objectives

Despite the evidence of the prevalence and importance of non-financial objectives, the implications have not been examined in the context of the competitive behaviors of firms, where competitive behaviors represent actions undertaken by the firm to enhance its relative competitive position. They include, among others, market entry and exit, signaling behaviors, pricing decisions, marketing actions, new product introductions, and capacity investments. We concentrate on three types of competitive behaviors that have received significant attention in the literature: entry (e.g., McDougall and Robinson, 1990; Baum and Korn, 1996, Kalnins and Chung, 2004), exit (e.g., Barnett, 1993; Baum and Korn, 1996; Boeker, Goodstein and Murmann, 1997), and pricing (e.g., Evans and Kessides, 1994; Gimeno, 1999; Vroom and Gimeno, 2007).

In developing specific hypotheses, we build from the literature's baseline assumption that firms in general attempt to make economically rational decisions that generate financial returns through their competitive behaviors.[4] For the most part, we thus adopt a "black-box" view of firm decision making processes. That is, we focus our attention on the effects of variance in decision objectives and not of variance in decision processes. We recognize, however, a wealth of important literature that describes and investigates the nuances and complexities of strategic decision making processes across organizations (see Eisenhardt and Zbaracki (1992) and Hutzschenreuter and Kleindienst (2006) for partial reviews of this literature). In particular, a significant portion of this literature examines the rationality of organizational

[4] Because the objectives of firm decision makers are typically not measurable, we infer those objectives via the actions taken by the firm. This approach is comparable to revealed preference approaches utilized in discrete choice models of consumer behavior. Similar to individuals in the consumer choice literature, firms' competitive behaviors are assumed to be driven by underlying objectives. Given that these objectives are largely unobservable, one of the virtues of this paper is a rich empirical context that allows us to observe a variety of behavioral consequences of unobservable objectives.

decision making processes. Most prominently, Simon (1947) discusses the "boundedly rational" capabilities of decision makers that lead to settling on satisfactory outcomes ("satisficing"). Cyert and March (1963) describe how goals may be inconsistent within organizations and how solution search often remains local rather than extending to the pursuit of global optima. Mintzberg, Raisinghani, and Theoret (1976) question whether decisions always proceed sequentially through identification, development, and selection stages as anticipated by rational decision making models. While potential differences in the process of decision making are not the focus of this paper, we anticipate that actors with different objectives might also follow different decision-making processes. As Simon (1947: 50) notes "the decision making process must start with … the objective of the organization in question," which implies that differences in objectives lead to difference in process. We acknowledge that the effects of differences in ownership on behavior likely operate through variations in both objectives and process; we will reference both types of variation in the course of developing our arguments. Ultimately, our data do not permit us to disentangle the effects of these variations; it may be fruitful for future scholars to explore such issues more fully, and we return to that particular point in the discussion.

Turning to the specific decisions being considered here, our expectation is that firms will be more likely to enter when markets are economically attractive and less likely to exit when recent performance is strong; finally, we expect that firms will adjust prices in response to local market conditions. However, as we discuss in detail below, we argue that these relationships will be weaker in closely-held firms due to the added presence of non-pecuniary objectives. The core idea is that owners of closely-held firms value both pecuniary and the various non-pecuniary aspects of operating their firms discussed above. Because "trying to maximize one imperils achievement of the other" (Wasserman, 2008: 104), they must trade off between the two in order to increase satisfaction.

Decisions become more difficult when they involve several competing objectives. First, the mere presence of additional objectives increases the complexity of the decision. It requires the potential actions to be evaluated on multiple dimensions rather than a single dimension. Moreover, it also requires the decision maker to assess the relative importance of the different dimensions. The actions that decision makers take

are influenced by the issues and objectives that draw their attention (Ocasio, 1997). Given the bounded rationality of decision makers (Simon, 1947) and the presence of market and environmental uncertainty, multiple objectives limit the attention that decision makers can devote to achievement of any single objective. Adding additional objectives, then, implies that decisions will be less responsive to factors associated with each individual existing objective.

Second and more importantly, the conflicting nature of financial and non-financial objectives implies that optimal multi-objective choices will involve sacrifices relative to optimal single-objective choices. Multiple objectives cannot be simultaneously maximized unless the objectives are either strictly increasing or strictly decreasing functions of each other. As Jensen (2010: 34) describes, "It is logically impossible to maximize in more than one dimension at the same time unless the dimensions are what are known as 'monotonic transformations' of one another." This observation indicates that the mere presence of multiple objectives implies conflict between them. If the objectives were not conflicting (i.e., the dimensions were monotonic transformations of one another), the two objectives could simply be consolidated into one objective. Conflicting objectives means decision makers are ultimately "faced with the proposition that further achievement on one objective can only be accomplished at the expense of achievement on the other" (Keeney and Raiffa, 1976: 34). When two objectives require trade-offs, achieving more of one implies sacrificing returns on the other, i.e., the presence of multiple conflicting objectives reduces the ability to maximize any one particular objective.

This necessary trade-off between financial and non-financial returns serves as an explanation for a number of the noteworthy empirical findings mentioned above. For example, Hamilton (2000: 629) concludes that the difference in wages between self-employed and organizationally employed individuals "reflects entrepreneurs' willingness to sacrifice substantial earnings in exchange for the nonpecuniary benefits of owning a business." Similarly, Gimeno *et al.* (1997: 771) conclude that intrinsically motivated entrepreneurs "are simply more likely to accept a lower level of economic performance to remain in business." We turn next to specific hypotheses that consider how the non-financial objectives of owners of closely-held corporations result in a weakening of the relationship between profitability signals and the

specific competitive behaviors of entry, exit, and pricing. Before doing so, we offer a final clarification.

Our above arguments compare closely-held firms to the theoretical ideal of a pure profit maximizing firm. In developing specific testable hypotheses, we realize the difficulty in capturing such a theoretical ideal in an empirical setting. Our hypotheses will compare closely-held firms to non-closely-held firms, and we realize that the non-closely-held firms in our sample might not be perfectly profit maximizing. More specifically, it could be argued that potential agency problems exist in non-closely-held firms. One of the central tenets of agency theory (Jensen and Meckling, 1976) is that the ownership structure of the modern corporation, namely the separation of ownership and control, results in the divergence of interests between owners and managers. With this divergence, managers tend to appropriate perquisites out of the firm's resources for their own consumption. Studies motivated by agency theory abound in the management literature, as it has become "the dominant conceptual foundation for corporate governance research" (Dalton, Hitt, Certo, and Dalton, 2007: 34). It has been applied to a wide variety of issues such as how managerial behavior may generally be influenced via incentives, monitoring, and risk-bearing arrangements (Beatty and Zajac, 1994), the relationship between CEO hubris and acquisition overpayment (Hayward and Hambrick, 1997), and the relationship between ownership and firm risk-taking behavior (Wright, Ferris, Sarin and Awasthi, 1996). In general, separation of ownership and control can create agency issues that the firm must address to align owner and manager interests, and firm actions may not be fully consistent with profit maximization to the extent that the agency problems are not completely solved. Thus, both the pursuit of non-financial objectives by owners of closely-held firms and the agency problem of managers in non-closely-held firms can lead to decision-making inconsistent with profit maximization.

Although our primary interest in this research is the former effect, empirical settings where the latter effect is totally absent most likely do not exist. For example, Landier, Nair and Wulf's (2009) study of division layoffs and divestitures in publicly traded US firms suggests that headquarters managers in non-closely-held firms may derive non-pecuniary benefits from applying more favorable layoff and divestiture policies to certain divisions. Similarly, Cronqvist, Heyman, Nilsson, Svaleryd and Vlachos (2009) provide evidence that employees of more entrenched CEOs have higher wage levels, suggesting that CEOs gain non-

pecuniary benefits from paying higher wages. Thus, to focus on the mechanism of non-financial objectives of closely-held firms, we need an empirical context in which agency issues, if still present in non-closely-held firms, should be minimized.

We expect these problems to be minimized in our context because our non-closely-held establishments are members of geographically dispersed, multiunit organizations. As Fama and Jensen (1983) describe, one important approach to control agency problems is to separate the management (initiation and implementation) and control (ratification and monitoring) of decisions. This separation of management and control removes decision rights from individuals who can personally benefit from the decisions. In the case of hierarchically organized multiunit organizations, decision rights concerning competitive strategy decisions – such as entry, exit, and pricing – are generally assigned to managers other than those who would directly gain from particular decisions. For example, while local managers of a geographically dispersed organization potentially gain non-pecuniary benefits from certain decisions at the local level, those decision rights can be assigned to higher-level managers who do not benefit from the local non-pecuniary payoffs. Specifically in the setting of our study, managerial decisions surrounding establishment-level entry, exit, and pricing behaviors may be made by or require the ratification of regional- or corporate-level managers or even owners or their representatives (e.g., board members). In contrast to multiunit managers, owner-managers of closely-held-organizations are in the position of both making the decision and directly benefitting from the financial and non-financial consequences of that decision. Thus, by choosing an empirical setting in which the decision makers are different from those who could potentially benefit from the decisions, the effect of agency problems on firm decision making should be reduced.

To verify that local managers of non-closely-held organizations possessed restricted decision-making authority in our empirical context, we undertook a survey of 50 owners and managers of closely-held and non-closely-held establishments. We asked about the level of decision-making authority related to pricing, opening of new establishments, and closing of existing establishments. Respondents rated the amount of local decision making authority on a 1-5 scale where the numbers corresponded to no authority (1), limited authority (2), moderate authority (3), large authority (4), and total authority (5). Consistent with the above

discussion, we found that local decision making authority was significantly lower in non-closely-held compared to closely-held establishments for pricing (μ=2.44 versus 4.04; p<0.01), entry (μ=1.72 versus 3.88; p<0.01), and exit (μ=2.12 versus 3.76; p<0.01) decisions. One owner of a non-closely-held establishment described how "I listen to what [the local manager] has to say, but the final decision is mine." Another owner of multiple, non-closely-held establishments noted that "Our pricing policies are set at the regional level and local managers are not allowed to deviate from those prices more than five percent." Overall, this survey evidence supports the view that decision rights about entry, exit, and pricing are constrained for local managers of non-closely-held establishments.[5]

We realize that, as with many other proposed solutions to agency problems, separation of decision making is a less than perfect solution; however, this separation should at a minimum reduce the magnitude of the problem. Indeed the research cited above concerning managers' realization of non-pecuniary benefits in non-closely-held firms indicates that these effects are weakened as geographic distance increases. Preferential layoff and divestiture policies apply less to geographically distant divisions compared to divisions located closer (Landier, Nair and Wulf, 2009). The higher wage payments to employees by entrenched CEOs weaken when employees are located in a different municipality than the CEO (Cronqvist *et al*., 2009). Although these studies indicate that geographic separation does not eradicate the potential for agency-related issues, the effects are significantly weakened as distance increases. Separation therefore helps minimize the effect of agency problems on competitive behavior in non-closely held firms, creating a context of comparison firms conducive to investigating the effect of non-financial objectives of owners of closely held firms.[6] We turn now to our specific hypotheses.

Entry. In the traditional economic perspective, entry is expected to occur when incumbent firms are earning above-normal returns. That is, firms pursuing financial returns evaluate the attractiveness of entering

[5] We thank an anonymous reviewer for the suggestion to gather this survey evidence.
[6] We provide more detail of how agency problems are muted regarding pricing, entry, and exit in the Methods section. Moreover, in the Discussion we return to the particular conditions affecting the relative strength of the two causal mechanisms discussed (non-financial objectives of owner-managers and agency problems). We thank an anonymous reviewer for the questions that caused us to think more carefully about the relationship between non-financial objectives in closely-held firms and agency problems within non-closely-held firms.

a particular market based on the likelihood of earning abnormal profits. A firm will enter a market when the expected discounted value of future profits exceeds entry costs. While the speed of entry in response to profitable opportunities has been described as "fairly slow", the weight of empirical evidence does indicate a positive relationship between expected profitability and entry (Geroski, 1995: 428). Thus, we would expect that firms, on average, will be more likely to enter when market conditions are more attractive.

Entry decisions of firms who also possess non-financial motives will not purely be evaluated on the basis of expected future profits, however. As one example of non-financial returns that might impact decision making in closely-held firms, an owner may derive psychic enjoyment from operating a business near friends and family (Dahl and Sorenson, 2009), in his or her hometown, or in a particularly physically attractive location; this owner would thus consider both market profitability and utility gained from locating in a particular geographic area in the evaluation of the entry decision into a particular market. The focus of owners of closely-held firms on non-financial returns will result in a weaker relationship between measures of market attractiveness and the probability of entry.

Hypothesis 1: The positive relationship between the economic attractiveness of a market and likelihood of entry will be weaker for closely-held establishments than for non-closely-held establishments.

Exit. We also consider the relationship between economic performance and the likelihood of exit. Exit is also a very common part of the empirical landscape of business (Geroski, 1995). As in the case of entry, we expect that firms will evaluate the net present value of continuing in business and that these estimates are informed by their recent performance. On average, they will be less likely to exit when performance is strong and more likely to discontinue operations when prior performance is poor.

We contend, however, that the exit decisions of owners of closely-held firm may be less responsive to performance indicators because of potential non-financial benefits or costs such as loss of reputation or imposing unemployment on family or friends. The importance of such psychic income is consistent with the work of Gimeno *et al*. (1997) who found a negative association between psychic income and propensity to exit in a sample of small business owners. We expect that the interest in non-pecuniary benefits leads to a weakening of the negative relationship between recent performance and the probability of exit.

Hypothesis 2: The negative relationship between prior performance and likelihood of exit will be weaker for closely-held establishments than for non-closely-held establishments.

Pricing. In the economic view of competition within markets, prices and quantities sold are outcomes of the interplay of supply and demand. Holding supply constant, as demand increases, firms have the ability to charge higher prices. We therefore expect that establishments that are located in more economically attractive markets characterized by higher levels of demand will have higher prices in general.

We predict, however, that this relationship will not be as strong for closely-held establishments because their owners' objective functions are not solely concerned with economic returns. For example, these owners might gain non-pecuniary returns from setting higher prices that they feel would signal to friends or family that the owner runs a higher quality establishment, raising the owners' reputations (Scott Morton and Podolny, 2002). Alternatively, if they were to gain non-pecuniary benefits from achieving higher revenues, as would be the case if they wish to be perceived as running a busier, more successful business, they would set lower prices. Differences in objectives between closely-held and non-closely-held firms might also manifest themselves through differences in how final decisions are made. For example, as owner-managers of closely-held firms are concerned with both financial and non-financial returns, they may be more or less willing to negotiate with customers leading to higher or lower absolute price levels.

Our interest, however, is not in differences in the absolute price levels but in how the relationship between market attractiveness and pricing is weakened in closely-held firms. In other words, we do not investigate the main effect relationship between closely-held status and absolute price levels but rather we examine how closely-held status moderates the relationship between economic attractiveness and pricing. To the extent that the above discussed pricing decisions in the closely-held firm are the consequence of non-financial objectives that compete with the goal of maximizing financial returns, the trade-off among the two makes the firm less responsive to each of these objectives individually. Interest in the non-pecuniary returns of business would also restrict the amount of their limited attention span that is devoted to monitoring market signals and responding with changes in pricing practices. Therefore, independent of whether the absolute level of prices on average is higher or lower, we expect that the relationship between prices and measures of

market attractiveness will be weaker in closely-held firms.

Hypothesis 3: The positive relationship between the economic attractiveness of a market and firm prices will be weaker for closely-held establishments than for non-closely-held establishments.

METHODS

Sample

Investigation of our research questions requires an empirical setting that includes observation of the exit, entry, and pricing behavior of both closely-held and non-closely-held firms along with measures of firm performance and market attractiveness. The hotel industry provides a particularly appropriate setting because it consists of a wide range of firms from owner-managed hotels to individual units of large, broadly-held corporations. Local competition characterizes this industry, as hotels compete with others in the same geographic area but not with hotels in other parts of the state or country (Baum and Mezias, 1992). We draw our sample from the hotel industry in the state of Texas over 34 quarters covering the years 1997 through mid-2005. A mix of independent and chain hotels comprised the sample; the hotel chains operate branded units both through franchise relationships and by company ownership of individual units.

Two primary sources provided the data for our analyses. The first is a publicly available tax file from the State of Texas Comptroller's Office, which provides quarterly reporting of the state's Hotel Occupancy Tax along with the hotel name, hotel location, owner name/address, hotel capacity, and quarterly revenues. The second data source is a private database from Source Strategy, Inc., a leading hotel consultant that maintains data on Texas hotels from 1976 through the present. This database included the same hotels and also reports quarterly. In addition to the hotel name, their data also included the average quarterly occupancy rate, price, and revenue per available room for each hotel.[7] The first database has been used among others by Chung and Kalnins (2001) while the second database has been used in previous studies such as Conlin and Kadiyali (2006) and Vroom and Gimeno (2007). To focus on hotels and motels as opposed to other types of lodging options that are included in the data set (such as bed and breakfasts and recreational

[7] The average room price (average daily rate or ADR), the occupancy rate, and the average revenue per available room (RevPAR) are the three most commonly used performance indicators in the hotel industry. The relationship between these three measures is as follows: revenue per available room = occupancy rate * average room price.

vehicle parks), independent hotels with average room capacities under ten were dropped from the data set.

We utilized the zip code as the definition of the boundaries of an establishment's local market. Although some of the prior literature has used broader county/city-level definitions (e.g., Conlin and Kadiyali, 2006), we believe that narrowing to the zip code level better approximates the choice set consumers review when selecting a hotel. This market definition is consistent with previous studies of the Texas hotel industry (Chung and Kalnins, 2001; Kalnins and Chung, 2004; McCann and Vroom, 2010). During the eight and one-half years included in the data, over 4,000 hotels operated across more than 850 local Texas markets, and the number of hotels grew by 3.3 percent annually.

Dependent Variables and Modeling Approach

Each of our hypotheses required a different dependent variable and modeling approach as described in more detail below.

Entry. We utilized conditional logit to investigate differences in the entry behavior of closely-held and non-closely-held establishments (McFadden, 1974). Conditional logit is suitable for location choice decisions among a large set of geographic options (e.g., Head, Ries, and Swenson, 1995; Shaver and Flyer, 2000; Kalnins and Chung, 2004), and it is appropriate for modeling how a broad set of covariates influences the choice of a particular location from a number of alternatives; we considered a variety of choice sets. We derived our dependent variable of interest, entry, from a focal hotel's first appearance in the database. Our definition of entry is restricted to the first appearance of an establishment and does not include cases such as the purchase of an existing establishment by a new owner nor a new branding of an existing establishment. Our sample includes a total of 1,081 entries.

Exit. Our dependent variable for the exit models was a binary dependent variable coded "1" if the hotel exited during a particular quarter and "0" otherwise. We consider only shutdowns as exits and not cases of sales to other owners or re-branding of hotels. To avoid potential bias that might result from censored cases, we analyzed the hazard of exit using both semiparametric and parametric survival models with time-varying covariates. To accommodate time variation in the covariates, we divided the data into quarterly spells, resulting in 105,037 establishment-quarter observations in the total sample.

Pricing. The dependent variable in these analyses was the logged average daily price of an individual hotel room. To control for potential unobserved sources of heterogeneity that might impact prices, we utilized hotel-level fixed effects regression to model prices. The sample includes 108,153 establishment-quarter observations.[8]

Independent and Control Variables

Our primary independent variable is a dichotomous measure of whether an individual hotel establishment is closely-held or not. To construct this measure, we need an indication of whether owners are likely involved in the day-to-day decisions related to competitive behavior. A typical approach in both the finance literature (e.g., Coughenor and Deli, 2002; Hillier and McGolgan, 2008) and the family business literature (e.g., Dyer and Whetten, 2006; Miller, Le Breton-Miller, and Lester, 2011) is to use samples of public companies and define closely-held status based on the amount of overlap between management and ownership, i.e., how much stock managers own. However, as we are interested in competitive behavior at the local unit level, our data include both public and privately-held organizations. The use of only public firms would thus exclude a large portion of the establishments competing in the hotel industry. We are aware of no data source that provides establishment-level detail on the ownership shares of each of the 4,000 hotels operating in Texas; however, the nature of this industry does allow us to infer closely-held status from publicly available data that suggests whether there is a likely overlap between ownership and establishment management. First, we are able to infer the status from the ownership form of the establishment. In the hotel industry, individual establishments are either independent or affiliated with a particular chain. Chain-affiliated establishments may be owned by the chain (company-owned) or by franchisees. We defined all company-owned units to be non-closely-held, as it is clear that owners of these chains are not involved in establishment-level decision making.[9] Examples of such establishments include company-owned units of

[8] The exit sample is slightly smaller than the pricing sample due to deletion of observations with missing data on prior firm occupancy.

[9] Some hotel chains (e.g., Hyatt Hotels during the time frame of our study) feature partial separation of ownership and control in that some members of the founding family maintain ownership and managerial positions. Owners also include family members with no managerial roles and outside investors. We elected to include this type of chain in the non-closely-held category because of our interest in establishment-level competitive behavior. While family members

hotel corporations such as Amerisuites, Baymont Inn, Drury Inn, Hampton Inn, Holiday Inn, Hyatt, La Quinta, and Red Roof Inn. Of the 3,289 hotels operating at the mid-point of the data set, 535 (16 percent) were classified per this rule.

To determine whether owners of franchised and independent units were likely active participants in management, we investigated the location of the owner as reported in the State of Texas records relative to the location of the hotel establishment. Typically owners who also manage their hotel live relatively close to their establishment. Living nearby (e.g., in the same zip code) allows the owner to closely monitor and supervise their property, even if they have professional staff assisting them in the management of the hotel. In contrast, close supervision would not be feasible when living farther away and would require the use of control and decision-making systems similar to those of non-closely-held organizations. Our primary definition of closely-held status, then, relies on whether the owner and establishment are located in the same zip code. This is true for 1,799 of the 2,754 independent and franchised establishments, and approximately 95% of these establishments are single-owned (the owner of the hotel owns no other establishments). The remaining 955 independent and franchised establishments are classified as non-closely-held. These represent establishments in which the owner's location precludes active involvement in management. One example of such a case would be an establishment owned by an ownership group that purchased the hotel as a passive investment and outsourced the management to a set of professional managers. The mean (median) distance between the establishment and the owner for the non-closely-held franchise and independent hotels is 385 (154) miles.

Overall, the above classification scheme results in 1,799 (55 percent) of the hotels in operation at the mid-point of the data set being classified as closely-held while 1,490 (45 percent) were classified as non-closely-held. For robustness, we also considered two alternative definitions. In the first, we defined the hotels to be closely-held if the independent or franchise owner's zip code was within 25 miles of the hotel zip code. Sixty-three percent of the hotels were defined as closely-held under this definition. In the second, we

---

may have some involvement in the broad strategic decisions of such organizations, they are unlikely to be involved in the type of establishment-level competitive behaviors we study. Our substantive results remain unchanged if we drop these companies from the analysis.

defined hotels to be closely-held if the independent or franchised hotel owner lived within the state and owned no more than a single hotel because it seems unlikely that an out-of-state owner would be able to supervise and actively participate in the management of multiple hotels. This broader definition of closely-held resulted in 2,240 hotels (68 percent) being classified as closely-held.

As mentioned in the theoretical development section, the use of non-closely-held firms as a benchmark potentially raises the issue of agency problems. We argued above that, in our empirical setting, the removal of decision rights from local managers who can personally benefit significantly reduces this potential concern. In the hotel industry, entry and exit decisions are typically taken by area development managers, who work at regional or national headquarters. As they generally do not live or work in the same location as where a hotel will be opened or closed, they realize no non-financial benefits from the choice of a particular location. Moreover, the bonus of the area development manager is typically dependent on the performance of the hotels in the area which is typically measured either as revenues per available room (RevPAR) or as a profitability measure. Given the relative ease of comparing the performance of hotels across different areas, the area development manager has strong incentives to base entry and exit on performance consequences.

Pricing in the hotel industry at the local establishment level is guided by corporate pricing guidelines. As the corporate managers who develop these guidelines are not able to benefit directly from setting sub-optimally high or low prices, these managers will base their guidelines, explicitly or implicitly, on profit maximizing objectives. Local managers have to operate within these guidelines. In their study of managerial incentives and rivalry in the hotel industry, Vroom and Gimeno (2007) conducted field interviews to establish the nature of delegation and the level of discretion of local managers regarding pricing decisions. They concluded that, “Chains typically develop pricing policies within which local managers have to operate” (p. 905) and “local management had limited discretion in price setting” (p. 918). For example, they quote one manager at the headquarters of a hotel corporation saying, “We are very prudent with giving local management too much pricing discretion. In fact, local management is closely monitored and gets rewarded if it correctly follows the revenue management system’s recommendations.” Similarly, based on a

study of restaurant chains, Yin and Zajac (2004: 368) argue that local managers are subject to "control and monitoring from chain operators," reducing their opportunity to deviate from corporate guidelines to gain a personal benefit.

In conclusion, the specific decisions we focus on (entry, exit, and pricing) in our specific context (hotel industry) allow us to treat non-closely-held firms in our sample as approaching pure profit maximization. In the Discussion, we will consider the effect of agency problems on competitive behavior in a more general sense. We turn next to the definition of market attractiveness, prior performance, and control variables across the three regression approaches.

Entry models. Our measure of the attractiveness of a particular market is the average occupancy rate (the percentage of occupied rooms) across all hotels in a particular zip code. Mean occupancy rates reflect the strength of local market demand conditions. When demand is high relative to supply, market occupancy, market prices, and market profitability all tend to increase, suggesting that mean occupancy is a good indicator for the economic attractiveness of the market.

To control for differences in access to resources and capabilities across closely-held and non-closely-held establishments that may impact entry to markets, we calculated the total capacity (number of rooms) owned by each owner across all of its establishments ("owner capacity"). As groups of hotels under common ownership become larger, it makes more sense for the group to develop centralized resources (e.g., standardized organizational processes) that individual establishments may draw upon. Also, establishments that are part of larger organizations may have access to greater financial resources and these larger organizations may be more willing and able to invest in the development and transfer of managerial capabilities throughout the organization. As access to greater levels of resources might influence responsiveness to economic conditions, we decided to include this variable as control. We also controlled for other factors, including a measure of market concentration, calculated as the sum of the squared market shares of all hotels in the zip code, and the logarithm of market capacity (the total number of rooms of all hotels in the zip code) to control for variations in supply conditions. Market mean occupancy and the other time variant market-level controls were lagged four periods (one year) to reflect the fact that entry decisions

are made well in advance of the actual observation of the opening of the hotel. We also controlled for whether other hotels of the same chain are located within the market because brands often avoid locating multiple hotels in the same market. We also measured the degree of multimarket contact available to the entrant in each potential market, as the multi-market literature (e.g., Gimeno, 1999) suggests that rival firms may seek out contact across multiple markets to establish mutual forbearance.[10]

Other market-level controls include a dummy variable indicating whether the market was in a rural location and measures of the level of economic activity within the zip code, drawn from the 2002 Zip Code Business Patterns available from the U.S. Census Bureau (number of retail and gas establishments in the zip code). We also controlled for the income level, population, and number of housing units within the zip code using data drawn from the 2000 U.S. Census. The Census measures were all log-transformed.

Exit models. To capture responsiveness to recent performance, our primary independent variable is the establishment's occupancy level in the prior quarter; occupancy is a measure that is frequently used in the industry as a performance indicator. The exit models also include the same set of control variables as the entry models, although the market-level measures were lagged one period instead of four due to the fact that exit decisions are likely made more closely in time to the observation of exit in the data set. In addition, we added controls for the segment in which the hotels operated to capture any differences in exit behavior across hotels of different size and quality. We utilized the Smith Travel Research (STR) Chain Scales to classify hotels into four segments (Economy, Midscale, Upscale, and Luxury).[11] Independent hotels (not chain-affiliated) were classified into these segments based on their average room price over the life of the data set.

Pricing models. Similar to entry, we used the average occupancy level in the local market as the

[10] We also considered the inclusion of a measure of distance to the owner's headquarters as owners may prefer to locate new establishments closer to headquarters to facilitate monitoring (Kalnins and Lafontaine, 2004). We elected not to include this measure in the reported results because of the preponderance of single-owner entries in our data for whom distance to headquarters for the first hotel is not a meaningful measure. In unreported models, however, the variable had the expected negative significant effect and our substantive results did not change. Exit and pricing results were similarly unaffected by the inclusion of a distance to headquarters control.

[11] All results using segment effects are robust to using all six categories of the STR Chain Scales (our four segments combine Midscale with Food & Beverage and Midscale and also combine Upper Upscale and Upscale). The results were also robust to the use of segment effects based on ten segment deciles. Under this approach, we assigned each hotel to one of ten quality tiers based on its average price over the length of the dataset and utilized these quality tier dummies as segment fixed effects.

market attractiveness measure. In addition to hotel-level fixed establishment effects that control for unobserved sources of heterogeneity, these regressions included fixed segment and period effects. Market-level controls included market capacity and concentration as described above. These measures were lagged one period as was the measure of market occupancy. We also included controls for whether the hotel was a franchised or company-owned unit (with independent being the excluded category).[12]

RESULTS

We begin with some descriptive statistics comparing closely-held and non-closely-held establishments. In general, Table 1 indicates that the non-closely-held hotels tend to be larger, and they also exhibit higher occupancy levels, prices, and quality levels. Their owners tend to own a number of additional hotels as well; on average, a non-closely-held establishment shares common ownership with 15 other establishments. Finally, they exhibit a mix of ownership forms, including company-owned, franchised, and independent units. The closely-held establishments are a mix of both franchised and independent units, and the average number of establishments owned is slightly larger than one. At the market level, non-closely-held units tend to be located in stronger markets; their markets have higher capacity, occupancy, prices, and quality levels, but slightly lower concentration. The average population, income, and number of competing establishments are also higher. Overall, the descriptive statistics suggest that closely-held establishment owners are willing to accept lower performance levels, an outcome consistent with our arguments that part of the "return" earned by these owners is non-pecuniary.

---------- Insert Table 1 about here----------

We next review some descriptive statistics related to our choice of mean market occupancy and prior firm occupancy as measures of economic attractiveness. First, we compared prices and entry activity across markets above and below the median market occupancy level. The average daily price of a hotel room in more attractive markets ($59.25) is over 19 percent higher than the average price in less attractive markets ($49.52), and attractive markets draw nearly twice as many entrants (685 vs. 396). These descriptive

[12] We excluded any time-invariant measures from the fixed effects regressions because these time-invariant effects are captured by the fixed establishment effects. Segment and franchise / company-owned controls are included because some hotels switch segments and ownership form over the course of the data set.

statistics support mean market occupancy as an indicator of market attractiveness, and the results are consistent with our expectations of the direct effects of this measure. Second, a comparison of average prior firm occupancy rates for firms who exited (40.05%) versus those who survived (54.40%) also supports the choice of firm occupancy for the exit regressions.

Entry

Table 2 presents the results of the conditional logit entry analyses. We provide the results from choice sets of the nearest 250 and 200 markets; the results, however, are robust to a variety of choice sets, including ones as small as the nearest ten markets and on choice sets based on a variety of radial distances (10, 20, and 50 miles). We also confirmed that a Hausman test failed to reject the conditional logit model's assumption of Independence of Irrelevant Alternatives (p=0.19). The positive coefficient on *Market Occupancy* in Model 1 supports our starting assumption that firms, on average, are influenced by signals of market attractiveness. Firms are more likely to enter markets with higher levels of occupancy. Specifically, the coefficient of 0.020 indicates that a one percentage point increase in market occupancy is associated with a two percent increase in the odds that a market will be chosen for entry.

We now turn to the potential moderating influence of closely-held status. Model 2 introduces the interaction of *Closely-Held * Market Occupancy*.[13] The negative interaction effect supports Hypothesis 1 and its prediction that the positive relationship between market occupancy and probability of entry would be weaker for closely-held establishments. Panel A of Figure 1 presents this result graphically, showing that increases in market occupancy levels have a more positive relationship to log odds of entry for non-closely-held firms in comparison to closely-held firms. To ensure that this relationship was not merely proxying for a difference in the relationship across firms of different resource levels, Model 3 introduces an interaction with the owner capacity variable. The coefficient on this variable is positive, but not significant. While the *Closely-Held * Market Occupancy* interaction is slightly reduced, it remains negative and significant. The results are quite similar in Models 4 – 6, which are based on the smaller choice set. Overall, the models

[13] We do not include the main effect of Closely-Held in the specification. The effect is inestimable in the conditional logit model because the variable does not vary within choices.

support a conclusion that the relationship between entry behaviors and market attractiveness is weaker for closely-held firms.[14]

These results were robust to a number of alternative specifications, including both of our alternative definitions of closely-held status. We also investigated different lags of market occupancy, including an average going back an additional year. In addition, we examined models that defined markets based on segments within zip codes because competition may be closest within the same segments. In these models, we replaced the market occupancy, concentration, and capacity measures (aggregated at the zip code level) with measures aggregated at the segment level of the entrant (Economy, Midscale, Upscale, or Luxury) within each zip code. The substantive results of the analysis were robust to all of these alternative specifications and provided broad support for Hypothesis 1. Overall, the relationship between market attractiveness and entry is weaker for closely-held firms.

---------- Insert Table 2 and Figure 1 about here----------

Exit

Table 3 provides the results of our exit analyses, which include both Cox proportional hazards (semiparametric) and Weibull (parametric) survival models. Because we have multiple observations per zip code, the models utilized robust standard errors, clustered to adjust for intrazip correlation. The negative coefficient on *Prior Unit Occupancy* in Model 7 supports our baseline expectation that the hazard of exit decreases at higher levels of establishment occupancy. The coefficient of -0.062 indicates that a one percentage point increase in establishment occupancy is associated with a six percent decrease in the hazard of exit.[15] The effect is quite similar in the Weibull model results (Model 10).

Models 8 and 11 add the interaction of *Closely-Held* * *Prior Unit Occupancy*. The significant

[14] The issue of marginal effects in non-linear models is one that has been gathering increasing attention in the literature (e.g., Ai and Norton, 2003; Hoetker, 2007; Wiersema and Bowen, 2009). We are unaware of literature that addresses calculation of these effects in the conditional logit model. As an alternative specification, we conducted a logit analysis of the probability of entry into each possible market-period combination. Following the suggested approaches in the recent literature, we calculated marginal effects of both the direct and interaction relationships. The results of these calculations supported the positive main effect of market occupancy and the negative interaction effect of market occupancy and closely-held status on the probability of entry.

[15] The baseline hazard is multiplicatively increased by exp(-0.062) or 0.94 , which represents an approximate six percent decrease.

positive interactions imply that the negative main effect of prior unit occupancy is weaker (less negative) for closely-held establishments, supporting Hypothesis 2. The difference in the relationships between prior unit occupancy and likelihood of exit is shown in Panel B of Figure 1. While both types of firms are more likely to exit as unit occupancy decreases, this relationship is weaker for the closely-held establishments. The result is unchanged even controlling for the interaction with the resource level of the owner (owner capacity) as shown in Models 9 and 12.

Our exit results were robust to both of our alternative definitions of closely-held status and to a variety of alternative specifications. We examined binary logit, random effects logit, and complementary log-log models of the exit decision, all of which produced similar results. The results were also similar using a measure of average firm occupancy over the prior four quarters as well as using a market occupancy measure (average occupancy level in the zip code) rather than a firm-level measure. Overall, the relationship between prior performance and exit is weaker for closely-held firms.

---------- Insert Tables 3 and 4 about here----------

Pricing

Table 4 presents the results of our analysis for the pricing behavior of hotels using a fixed effects regression specification with robust standard errors, clustered to adjust for intrafirm correlation. Results of a Hausman test indicated that the fixed effects specification was preferred to a random effects specification, although the substantive results were unchanged across the specifications. The positive coefficient on *Market Occupancy* in Model 13 indicates that hotels in markets with higher prior quarter occupancy levels have higher prices as expected by our baseline assumption that firms' pricing behaviors are, on average, responsive to market attractiveness. The coefficient of 0.0021 in Model 13 indicates that a one standard deviation increase in *Market Occupancy* (11.41 percentage points) is associated with prices that are 2.39% higher. The significant negative coefficient of -0.0007 on the interaction of *Closely-Held* * *Market Occupancy* in Model 14 indicates that the positive main effect is weaker for closely-held establishments, consistent with the prediction of Hypothesis 3. The Model 14 results indicate that the prices of non-closely-held establishments are 2.89% higher when market occupancy levels increase one standard deviation while

the prices of closely-held establishments are 2.07% higher. This difference of 0.82% has a meaningful economic impact. For the average hotel in our data set with a capacity of 91 rooms and an occupancy level of 55 percent, increasing price 0.82% above its average level translates into an annual revenue increase of just under $10,000. While both types of establishments price higher when demand conditions are more favorable, this relationship is weaker for the closely-held establishments. The results in Model 15 indicate that this effect is robust to the inclusion of an interaction with the owner capacity variable. While the *Closely-Held * Market Occupancy* interaction is reduced in magnitude, it remains negative and significant. These results were robust to both the alternative definitions of owner-manager as well as to the use of segment-based market measures. Overall, the relationship between market attractiveness and pricing is weaker for closely-held firms.

Alternative Explanations

We now consider potential alternative explanations for our findings. First, we wanted to ensure that the difference in relationships between economic signals and entry, exit, and pricing behaviors we observed across closely-held and non-closely-held establishments were not merely capturing differences across company-owned and franchised hotel establishments. To investigate this potential, we ran a series of regressions restricted to only company-owned and franchised hotels. In these regressions, we interacted organizational form (a franchise dummy) with our economic signal measures. The interaction effects were insignificant in the exit and pricing regressions, indicating that our reported exit and pricing results are not capturing an organizational form effect. The entry regressions indicated the presence of both an organizational form effect and a closely-held effect. That is, the relationship between market occupancy and probability of entry varies across both franchise versus company-owned and closely-held and non-closely-held. Again, these results indicate that the main reported results are not simply capturing an organizational form effect.[16]

Second, one might argue that a key difference between closely-held and non-closely-held firms is their access to resources and capabilities, and this difference might explain the variance in their behaviors.

[16] Additional regression results are available upon request from the authors.

We do note that all of our results included a control to proxy for the resources and capabilities available to the firm. Obviously, this control is an imperfect proxy and while our data do not allow us to entirely rule out this alternative explanation, we do not believe that heterogeneity in access to financial resources or managerial capabilities accounts for the differences we observe in competitive behaviors for several reasons. We first consider financial resources. If more economically attractive markets are more expensive to enter and non-closely-held firms have better access to financial resources, this could also explain the relationship we observe; however, the data do not appear to support this alternative. First, as one rough measure of the cost of entry into different markets, we examined entry patterns into rural and metropolitan markets. If resource differences constrain the entry ability of closely-held firms, we would expect to see much lower rates of closely-held entry into metropolitan markets relative to the entry rates of non- closely-held firms into these markets. We found that 86.6 percent of the non-closely-held entries were into metropolitan markets while 81.7 percent of the closely-held entries were into metropolitan markets. While closely-held firms do enter more costly metropolitan markets at lower rates, they still enter at very high rates and the difference between the two types of firms is not particularly large. Second, and more importantly, financial resource differences would not provide an alternative explanation for the exit and pricing findings. In particular, if closely-held firms are more resource-constrained, we would expect to see their exit decisions be *more* responsive to the recent performance, not less responsive as we observed.

We also consider differences in managerial capabilities. A concern may be that we observe weaker responsiveness to economic conditions from closely-held establishments because they are not sophisticated or knowledgeable enough to understand the correct response.[17] Knowledge differences might, for example, be associated with the fact that many of the non-closely-held establishments are members of chain organizations, and the experiences of the organization can serve as a source of learning for all members of the chain (Baum and Ingram, 1998). Again, we cannot rule this explanation out with the data we have

[17] This alternative explanation would assume that closely-held establishments have the objective to maximize profits but lack the skills or capabilities to respond correctly. In fact, the "correct" response depends on objectives, as a decision "is correct if it selects appropriate means to reach designated ends" (Simon, 1947: 61). If the objectives are truly different, the correct response will vary and it is not clear that one set of capabilities is uniformly superior.

available; however, we do argue that an alternative explanation relying on differences in knowledge or cognitive abilities is somewhat implausible in our context. We specifically chose obvious measures of economic performance that are available to both types of firms, and we believe it does not take a high level of knowledge or sophistication for any manager to understand that markets with higher occupancy provide more attractive economic conditions and that low unit occupancy rates are indicative of a struggling hotel.

Finally, we note that some might argue that time horizons might vary across the two types of firms. Non-closely-held firms might be more concerned with short-term results due to increased focus on short-term goals such as quarterly earnings in public firms, or even in private firms that closely monitor short-term performance targets. In contrast, closely-held firms might be more likely to focus on the longer term, especially if the business is part of a legacy that will eventually be handed down to future generations. This particular consideration might not affect our results for two reasons. First, we can conceive an argument for the opposite perspective. Closely-held firms, who may be liquidity constrained, may be forced to focus on the short-term in order to ensure sufficient capital to maintain operations. Moreover, in the absence of a next generation to take over a business, owners of closely-held firms who are looking to retire or otherwise exit from the business are unlikely to take a long-term perspective. Therefore, we do not believe it is clear *ex ante* which type of firm might be more focused on short-term results. Second, it is unclear how a difference in time horizons might account for our findings. If we accept the argument that non-closely-held firms are more interested in short-term results, how would this lead them to be more responsive to market conditions? One would expect that being responsive to the economic attractiveness of the firm's market would make sense regardless of a desire to maximize short- or long-term results.

As a final exploration of our results, we investigated the relationship between closely-held status and performance. We note that one should interpret this examination with care as differences other than heterogeneity in objectives between closely-held and non-closely-held firms might also play a role. Nevertheless, less emphasis on financial objectives by owner-managers of closely-held firms would be expected ultimately to lead to lower financial performance. To examine this, we regressed revenue per available room (RevPAR), a commonly used performance indicator in the hotel industry, on closely-held

status and a variety of control variables, including market demographics, establishment characteristics (size, age, branded, rural location, and segment dummies), and time dummies. The analysis reported in Table 5 indicates that closely-held firms do on average generate lower revenue levels, providing evidence consistent with our arguments of the non-financial objectives of closely-held firms.

---------- Insert Table 5 about here----------

DISCUSSION

A wealth of research has addressed the question of understanding heterogeneity in firm competitive behaviors. These studies, however, largely share a common assumption that firms' competitive behaviors reflect the goal of maximizing financial performance. While our purpose was not to question whether firms and their decision makers are interested in financial returns, we argued that the prevalent evidence of the non-financial objectives of organizational decision makers suggests that our understanding of differences in competitive behaviors like entry, exit, and pricing will remain incomplete without considering the influence of these objectives. In an attempt to build our understanding in this area, we set out with the purpose of testing whether and how the presence of non-financial objectives affects competitive behaviors. Specifically, we investigated whether the relationship of entry, exit, and pricing behaviors to market conditions differed across closely-held and non-closely-held firms. We argued that the importance of non-financial objectives in closely-held firms reduces their attention to the attainment of financial goals and requires them to make trade-offs between pecuniary and non-pecuniary returns in their competitive actions. Our empirical analyses indicated that the entry, exit, and pricing decisions of closely-held establishments are less responsive to economic conditions relative to the decisions of non-closely-held establishments.

We believe it is important to clarify the implications of our work relative to agency theory. As an initial foray into the question of whether and how the presence of non-financial objectives might influence competitive behaviors, we believe our work provides an interesting complement to agency theory. Much of the prior agency literature concentrates on how ownership structure affects the objectives of only one class of firm actors: managers. As a complement, our discussion has highlighted how *owner* objectives might vary across different ownership structures.

We do not interpret our results to be in conflict with predictions based on principal-agent problems. Indeed, we expect that both the presence of non-financial objectives and the existence of agency problems will result in competitive behaviors being less than fully responsive to economic signals. In order to illuminate the potential role of non-financial objectives, we selected a context in which we expected agency problems to be relatively negligible. In other contexts, it is possible that agency problems will be the stronger effect. The issue of what types of firms will be more or less responsive to economic signals depends on the relative strength of the two effects across particular contexts.

We first consider factors that likely increase the influence of non-financial objectives in closely-held firms. We expect that this effect will be strengthened with qualities of the industry environment. As an example, characteristics of our empirical context, including the availability of franchising, the limiting of competition to local areas, the relatively low requirements for specialized skills, and the critical importance of location (relative to individual skills) in the hotel industry, may all combine to create an environment more conducive to closely-held firms that are less profit-focused. More generally, we believe that more munificent environments, industries that are more likely to offer non-pecuniary returns, and industries with low entry barriers might result in a higher level of closely-held firms that place an emphasis on non-financial objectives. As these objectives become stronger and more significant parts of owners' overall goals for the firm, firm behavior becomes more likely to depart from profit-seeking.

The strength of the effect of agency problems on competitive behavior first depends on the potential for decision-making managers in non-closely-held firms to gain non-pecuniary benefits from the outcomes of their decisions. As just one example, this force has featured prominently in the debate regarding corporate managers' proclivities to over-diversify the firm (e.g., Amihud and Lev, 1999; Denis, Denis, and Sarin, 1999; Lane, Cannella, and Lubatkin, 1999). Growth through diversification may deliver non-financial benefits to managers such as reduced employment risk and/or increased power and prestige. In contexts where personal benefits to managers are more likely, we expect that non-closely-held firms will depart more from profit-seeking behaviors.

The strength of agency-related effects will also depend on the degree to which the firm has instituted

measures to control agency problems. We noted that decision making control can be separated from the locus of utility benefits by separating decision management (initiation and implementation) and control (ratification and monitoring) as suggested by Fama and Jensen (1983). Additionally, incentive pay, use of which is becoming more widespread (Byrd, Parrino and Pritsch, 1998; World at Work, 2008), can be used to align the goals of managers toward profit maximization. Firms who use lower levels of incentive pay can compensate with other agency controls, such as higher monitoring (Beatty and Zajac, 1994). Finally, a host of other non-monetary incentives exist that encourage profit-seeking behavior on the part of managers such as the desire to avoid punishment, the quest to advance in intra-company "promotion tournaments" (Lazear and Rosen, 1981), and the need to establish a good reputation in the managerial labor market (Gibbons and Murphy, 1992). To the extent that effective measures are in place to align interests of owners and managers, non-closely-held firms are more likely to portray a strong relationship between market conditions and their competitive behavior, compared to closely-held firms. Overall, this suggests a potentially interesting area for future research. While our research has compared closely-held and non-closely-held firms, this point suggests that the severity of agency problems within firms in general should affect competitive behaviors.

We invite more research into the relative strength of these distortions away from profit maximizing behavior in other empirical contexts. As a first step, our research indicates that the objective heterogeneity associated with different ownership types is an important source of firm heterogeneity that contributes to differences in competitive behavior. Our comparison of closely-held to non-closely-held firms is particularly important given the significant role played by firms in which ownership and control are unlikely to be fully separated. The U.S. Census Bureau estimates that there are over 22 million private businesses in the U.S., accounting for 40 to 60 percent of GDP (Scott Morton and Podolny, 2002). Moskowitz and Vissing-Jorgensen (2002) estimate that individuals' investments in private business equal $5.7 trillion, only slightly trailing investments in public equity of $7.3 trillion. Overall, our research suggests that it is valuable to consider how investigating objectives beyond profit maximization might advance our understanding of competitive behaviors. More generally, the strategy literature might find it useful to more fully investigate variance in objectives to further the quest to understand firm performance heterogeneity.

Our work provides a complement to studies of variance in organizational decision making across different types of ownership structure (e.g., Baysinger, Kosnik, and Turk, 1991; Hoskisson, Hitt, Johnson, and Grossman, 2002; Kochhar and David, 1996; Sanders and Hambrick, 2007; Wright, Ferris, Sarin and Awasthi, 1996; Wright, Kroll, Lado, and Van Ness, 2002). We add to this literature stream with our demonstration that considering ownership structure, specifically whether an organization is closely-held or not, also helps understand differences in decisions made concerning the firm's competitive behaviors.

As mentioned earlier, we have not focused on potential differences in decision making processes across closely-held and non-closely-held organizations. This emphasis should not be interpreted as a belief that these processes are necessarily similar across the two ownership types nor should it be interpreted as a contention that these processes are either incidental or instantaneous; in fact, it seems plausible that the decision making processes of closely-held and non-closely-held organizations are different, likely in part due to differences in objectives. Overall, we believe that an interesting extension to our work would be to consider the inter-relationships among ownership structure, objectives, decision making processes, and decision outcomes.[18] A healthy stream of literature examines the antecedents of different decisions making processes (see Hutzschenreuter and Kleindienst, 2006 for a review). A few studies have suggested that who owns the firm can affect decision processes, whether it be comparing less formal American and more formal British subsidiaries (Mallory, Butler, Cray, Hickson, and Wilson, 1983) or the amount of state involvement (Papadakis, Lioukas and Chambers, 1998). Our work suggests that it may be fruitful to more broadly consider to what extent differences in ownership profiles relate to differences in making decisions. If decision making processes are indeed different across closely-held and non-closely-held firms, for example, it would be interesting to examine how much of that variance is associated with differences in objectives versus other factors. Hutzschenreuter and Kleindienst (2006) note several different dimensions of strategic decision making that have been emphasized in the literature, including strategists' static characteristics, strategists' personal and cognitive contexts, issue characteristics, and process characteristics. It would be

[18] We thank an anonymous reviewer for the suggestion to more fully consider variance in decision making processes across different ownership types.

useful to understand how these specific characteristics might vary across ownership structures. For example, might there be differences in how closely-held and non-closely-held firms make use of qualitative and quantitative data in decision making or in the speed of their decision making processes? Another potentially promising area of investigation would be to consider how variance in decision delegation affects the decision making process and the actual decisions being made. Strategic delegation literature (e.g., Vickers, 1985; Sengul, Gimeno, and Dial, 2011) suggests that delegation of decision making authority across decision makers with different objectives can affect the decision making process. As owner-managers of closely-held establishments are more likely to be dealing directly with customers compared to owners of non-closely-held establishments, ownership structure (i.e., closely-held status) may through delegation and commitment affect the competitive behavior of firms. Finally, we suggest further research into how different decision making processes might lead to different sorts of competitive behaviors.

Our findings also provide a link between the competitive strategy and family business literatures. This latter literature has begun to investigate how the desire to attain and maintain socioemotional wealth affects decisions such as risk-taking (Gomez-Mejia *et al*., 2007) and environmental performance (Berrone *et al*., 2010). Our results suggest that the level of interest in attaining socioemotional wealth would also influence competitive behaviors, suggesting an interesting extension to this literature stream. Similarly, Schulze *et al*. (2001) find that "good" governance practices within family firms are associated with higher financial performance, suggesting that these practices lead to better alignment of financial objectives. A useful extension to this research would be to investigate the link between these governance practices and the competitive behaviors of family firms.

Our findings also relate to research in the competitive dynamics literature. This research stream investigates competitive interactions among firms and posits three implicit drivers of competitive action or response – a firm's awareness of a competitive relationship and/or competitors' initiatives, its motivation or incentive to act or respond, and its capability to act or respond (Chen, 1996; Chen, Su, and Tsai, 2007; Smith, Ferrier, and Ndofor, 2001). Our work relates strongly to the motivation driver, and a promising extension of our work would be to more fully integrate it with the competitive dynamics literature to examine whether

objective heterogeneity affects other factors studied closely in this research stream such as the propensity to initiate and/or respond to competitive actions and the speed at which moves are made.

Although our focus in this paper has been on the comparison of competitive behaviors of closely-held and non-closely-held establishments, another interesting extension of this work would be to examine how the presence of closely-held establishments affects the competitive actions of non-closely-held establishments. Are closely-held firms seen as weaker competitors because of their lack of profit-seeking behavior such that non-closely-held firms might seek them out as easy prey? How might the lower responsiveness of closely-held establishment prices to market conditions affect pricing strategies of non-closely-held firms? These are just a few of the questions that might extend this work to provide a richer view of the impact of closely-held firms on the nature of competition within a particular industry or market.

CONCLUSION

This research addresses a fundamental issue in the field of management generally and competitive behavior more specifically, namely the desire to understand why firms act and perform differently. The quest to explain differences in firm performance is inextricably linked to assumptions about the objectives driving those actions. Despite the focus of fields such as strategic management on heterogeneity across firms, we have argued that much of the research conducted on competitive behavior has largely adopted the profit maximization assumption. The main claim of our research is that the field needs to recognize and investigate the impact of another level of heterogeneity across firms, heterogeneity in objectives. This is critical because the quest to explain differences in firm performance is inextricably linked to assumptions about the motives and objectives driving those actions, and research in other areas such as entrepreneurship and family business clearly indicate that owners possess non-pecuniary as well as financial objectives. Our empirical evidence indicates that the presence of these additional objectives in closely-held firms is associated with predictable differences in their competitive behaviors. Specifically, the entry, exit, and pricing decisions of closely-held firms are all relatively less responsive to the underlying economic attractiveness of the markets in which they operate. Overall, our understanding of heterogeneity in competitive behaviors will be furthered by deeper consideration of how variance in objectives contributes to that heterogeneity.

REFERENCES

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

Amihud, Y., Lev, B. 1999. Does corporate ownership structure affect its strategy towards diversification? *Strategic Management J*., 20 (11): 1063–1069.

Amit R., K.R.MacCrimmon, C. Zietsma. 2001. Does money matter? Wealth attainment as the motive for initiating growth-oriented technology ventures. *J. of Bus. Venturing*, 16 (2), 119-143.

Aronson R.L. 1991. *Self-Employment: A Labor Market Perspective*. Ithaca, NY: ILR Press.

Barnett W.P. 1993. Strategic deterrence among multipoint competitors. *Indust. and Corporate Change*, 2 (1): 249–278.

Barney J.B. 1991. Firm resources and sustained competitive advantage. *J. of Management*, 17 (1): 99–120

Barney J.B, A.M. Arikan. 2001. The resource-based view: Origins and implications. In M.E. Hitt, R.E. Freeman, & J.S. Harrison (Eds), *The Blackwell Handbook of Strategic Management*: 124-188. Oxford, UK: Oxford

Baum J.A.C., P. Ingram. 1998. Survival-enhancing learning in the Manhattan hotel industryy, 1898-1980. *Management Sci.,* 44 (7): 996-1016.

Baum J.A.C., H.J. Korn. 1996. Competitive dynamics of interfirm rivalry. *Acad. of Management J.*, 39 (2): 255–291.

Baum J.A.C., S.J. Mezias. 1992. Localized competition and organizational failure in the Manhattan hotel industry, 1898-1990. *Admin. Sci. Quart.,* 37 (4): 580-604.

Baysinger, B.D., Kosnik, R.D., Turk, T.A. 1991. Effects of board and ownership structure on corporate R&D strategy. *Acad. of Management J.*, 34 (1): 205-214.

Beatty R.B., E.J. Zajac .1994. Managerial incentives, monitoring, and risk bearing: A study of executive compensation, ownership, and board structure in initial public offerings. *Admin. Sci. Quart.*, 39 (2): 313-335.

Benz M., B.S. Frey. 2008. Being independent is a great thing: Subjective evaluations of self-employment and hierarchy. *Economica,* 75 (298): 362-383.

Berle, A.A., Means, G.C. 1932. *The Modern Corporation and Private Property*. New York: Macmillan.

Berrone P., C. Cruz, L.R. Gómez-Mejía, M. Larraza-Kintana. 2010. Socioemotional wealth and corporate responses to institutional pressures: Do family-controlled firms pollute less? *Admin. Sci. Quart.*, 55(1): 82-113.

Boeker W., J. Goodstein, J. Stephan, J.P. Murmann. 1997. Competition in a multimarket environment: The case of market exit. *Organ. Sci.*, 8 (2): 126–142.

Byrd J., R. Parrino, G. Pritsch. 1998. Stockholder-manager conflicts and firm value, *Financial Analysts J.*, 54 (3): 14-30.

Cassar G. 2007. Money, money, money? A longitudinal investigation of entrepreneur career reasons, growth preferences and achieved growth. *Entrepreneurship and Regional Development*, 19 (1): 89-107.

Chen M.J. 1996. Competitor analysis and interfirm rivalry: Toward a theoretical integration. *Acad. of Management Rev.* 21 (1): 100-134.

Chen M.J., K.H. Su, W. Tsai. 2007. Competitive tension: The awareness-motivation-capability perspective. *Acad. of Management J.,* 50 (1): 101-118.

Chung W., A. Kalnins. 2001. Agglomeration effects and performance: A test of the Texas lodging industry. *Strategic Management J.,* 22 (10): 969-988.

Conlin M., V. Kadiyali. 2006. Entry-deterring capacity in the Texas lodging industry. *J. of Economics & Management Strategy,* 15 (1): 167-185.

Coughener J.F., D.N. Deli. 2002. Liquidity provision and the organizational form of NYSE specialist firms. *J. of Finance*, 57(2): 841-869.

Cronqvist H., F. Heyman, M. Nilsson, H. Svaleryd, J. Vlachos. 2009. Do entrenched managers pay their workers more? *J. of Finance*, 64(1): 309-339.

Cyert R.M., March J.G. 1963. *A Behavioral Theory of the Firm*. Englewood Cliffs, NJ: Prentice Hall.

Dahl M.S., O.Sorenson. 2009. The embedded entrepreneur. *Eur. Management Rev.*, 6(3): 172-181.

Daily C.M, Dalton D.R. Rajagopalan, N. 2003. Governance through ownership: Centuries of practice, decades of research. *Acad. of Management J.*, 46 (2): 151-158.

Dalton D.R., M.A. Hitt, S.T. Certo, C.M. Dalton. 2007. The fundamental agency problem and its mitigation. *Acad. Of Management Annals*, 1(1): 1-64.

Demsetz H. 1983. The structure of ownership and the theory of the firm. *J. of Law and Economics*, 26 (2): 375-390.

Demsetz H., K. Lehn. 1985. The structure of corporate ownership: Causes and consequences. *J. of Political Econom.*, 93 (6): 1155-1177.

Denis D.J., Denis D.K., Sarin A. 1999. Agency theory and the influence of equity ownership structure on corporate diversification strategies. *Strategic Management J.*, 20 (11): 1071–1076.

Dutta S., M.J. Zbaracki, M. Bergen. 2003. Pricing process as a capability: a resource-based perspective. *Strategic Management J.*, 24 (7): 615-630.

Dyer W.G., D.A. Whetten. 2006. Family firms and social responsibility: Preliminary evidence from the S&P 500. *Entrepreneurship Theory and Practice*, 30(6): 785-802.

Eisenhardt, K.M., Zbaracki, M.J. 1992. Strategic decision making. *Strategic Management J.*, 13 (S2): 17-37.

Evans W.N., I.N. Kessides. 1994. Living by the "Golden Rule": multimarket contact in the U.S. airline industry. *Quart. J. of Economics*, 109 (2): 341–366.

Fama E.F., M.C. Jensen. 1983. Separation of ownership and control. *J. of Law and Economics*, 26 (2): 301-325.

Gatewood E.J., K.G. Shaver, W.B. Gartner. 1995. A longitudinal study of cognitive factors influencing start-up behaviors and success at venture creation. *J. of Bus. Venturing*, 10 (5): 371–391.

Geroski P.A. 1995. What do we know about entry? *Internat. J. of Indust. Organ.,* 13 (4): 421-440.

Gibbons R., K.J. Murphy. 1992. Optimal incentive contracts in the presence of career concerns: Theory and evidence. *J. of Political Economy*, 100(3): 468-505.

Gimeno J. 1999. Reciprocal threats in multimarket rivalry: Staking out 'spheres of influence' in the U.S. airline industry. *Strategic Management J.*, 20(2): 101–128.

Gimeno J., T.B. Folta, A.C. Cooper, C.Y. Woo. 1997. Survival of the fittest? Entrepreneurial human capital and the persistence of underperforming firms. *Admin. Sci. Quart.*, 42(4): 750-783.

Gomez-Mejia L.R., K.T. Haynes, M. Nunez-Nickel, K.J.L. Jacobson, J. Moyano-Fuentes. 2007. Socioemotional wealth and Bus. risks in family-controlled firms: Evidence from Spanish olive oil mills. *Admin. Sci. Quart.*, 52 (1): 106-137.

Gomez-Mejia L.R., M. Nunez-Nickel, I. Gutierrez. 2001. The role of family ties in agency contracts. *Acad. of Management J.*, 44 (1): 81-95.

Grant R.M. 2002. *Contemporary Strategy Analysis*. Fourth edition. Malden, MA: Blackwell Publishers, Inc.

Hamilton B. 2000. Does entrepreneurship pay? An empirical analysis of the returns of self-employment. *J. of Political Economy*, 108 (3): 604-631.

Hayward M.L.A., D.C. Hambrick 1997. Explaining the premiums paid for large acquisitions: Evidence of CEO hubris. *Admin. Sci. Quart.*, 42(1): 103-127.

Head K., J. Ries, D. Swenson. 1995. Agglomeration benefits and location choice: Evidence from Japanese manufacturing investments in the United-States. *J. of Internat. Economics*, 38(3-4): 223-247.

Hillier D., P. McGolgan. 2008. An analysis of majority owner-managed companies in the UK. *Accounting and Finance*, 48 (4): 603-623

Hoetker G. 2007. The use of logit and probit models in strategic management research: Critical issues. *Strategic Management J.*, 28(4): 331-343.

Hoskisson, R.E., Hitt, M.A., Johnson, R.A., Grossman, W. 2002. Conflicting voices: The effects of institutional ownership heterogeneity and internal governance on corporate innovation strategies. *Acad. of Management J.*, 45 (4): 697-716.

Hundley G. 2001. Why and when are the self-employed more satisfied with their work? *Indust. Relations*, 40 (2): 293–316.

Hutzschenreuter, T., Kleindienst, I. 2006. Strategy-process research: What have we learned and what is still to be explored. *J. of Management*, 32 (5): 673-720.

Jensen M. 2010. Value maximization, stakeholder theory, and the corporate objective function. *J. of Applied Corporate Finance*, 22 (1): 32-42.

Jensen M., W. Meckling. 1976. Theory of the firm: managerial behavior, agency costs and ownership structure. *J. of Financial Economics,* 3(4): 305-360

Kalnins A., W. Chung. 2004. Resource-seeking agglomeration: A study of market entry in the lodging industry. *Strategic Management J.,* 25 (7): 689-699.

Kalnins A., F. Lafontaine. 2004. Multi-unit ownership in franchising: evidence from the fast-food industry in Texas. *RAND J. of Economics*, 35(4): 747-761.

Keeney R.L., H. Raiffa 1976. *Decisions with Multiple Objectives*. New York: Wiley.

Kochhar, R., P. David. 1996. Institutional investors and firm innovation: A test of competing hypotheses. *Strategic Management J.*, 17 (1): 73-84.

Kuratko D.F., J.S. Hornsby, D.W. Naffziger. 1997. An examination of owner's goals in sustaining entrepreneurship. *J. of Small Bus. Management*, 37(1):24–33.

Landier A., V.B. Nair, J. Wulf. 2009. Trade-offs in staying close: Corporate decision making and geographic dispersion. *Rev. of Fin. Studies,* 22(3): 1119-1148.

Lane, P.J., Cannella, A.A., Lubatkin, M.H. 1999. Ownership structure and corporate strategy: one question viewed from two different worlds. *Strategic Management J*., 20 (11): 1077–1086.

Lazear E.P., S. Rosen. 1981 Rank-order tournaments as optimal labor contracts. *J. of Political Economy*, 89(5): 841-864.

Madsen T.L., G. Walker. 2007. Incumbent and entrant rivalry in a deregulated industry. *Organ. Sci.*, 18 (4): 667-687.

Mallory, G.R., Butler, R.J., Cray, D., Hickson, D.J., Wilson, D.C. 1983. Implanted decision-making: American owned firms in Britain. *J. of Management Stud*., 20 (2): 191–211

McCann B.T., G. Vroom 2010. Pricing response to entry and agglomeration effects. *Strategic Management J.,* 31 (3): 284-305.

McDougall P., R.B. Robinson, Jr. 1990. New venture strategies: An empirical identification of eight 'archetypes' of competitive strategies for entry. *Strategic Management J.*, 11 (6): 447-467.

McFadden D. 1974. Conditional logit analysis of qualitative choice behavior. In *Frontiers in Econometrics*, Zarembka P (ed). Academic Press: New York; 105–142.

Miller D., I.Le Breton-Miller, R.H. Lester. 2011. Family and lone founder ownership and strategic behaviour: Social context, identity, and institutional logics. *J. of Management Stud.,* 48 (1): 1–25.

Mintzberg, H., Raisinghani, D., Theoret, A. 1976. The structure of "unstructured" decision processes. *Admin.*

Sci. Quart., 21(2): 246-275.

Moskowitz T.J., A. Vissing-Jorgensen 2002. The returns to entrepreneurial investment: A private equity premium puzzle? *Amer. Econom. Rev.*, 92(4): 745-778.

Ocasio W. 1997. Toward and attention-based view of the firm. *Strategic Management J.*, 18 (S1): 187-206.

Papadakis, V.M., Lioukas, S., Chambers, D. 1998. Strategic decision-making processes: The role of management and context. *Strategic Management J.*, 19 (2): 115-147.

Peteraf M.A. 1993. The cornerstones of competitive advantage: A resource-based view. *Strategic Management J.*, 14 (3): 179–191.

Porter M.E. 1980. *Competitive Strategy*. NY: Free Press.

Sanders, W.G., Hambrick, D.C. 2007. Swinging for the fences. The effects of EXO stock options on company risk taking and performance. *Acad. of Management J.*, 50(5): 1055-1078.

Schulze W.S., M.H. Lubatkin, R.N. Dino, A.K. Buchholtz. 2001. Agency relationships in family firms: Theory and evidence. *Organ. Sci.*, 12(2): 99–116.

Scott Morton F.M., J.M. Podolny. 2002. Love or money? The effects of owner motivation in the California wine industry. *J. of Indust. Economics*, 50 (4): 431-456.

Sengul, M., Gimeno, J., Dial, J. 2011 Strategic delegation: A review, theoretical integration, and research agenda. *J. of Management*, forthcoming.

Shaver J.M., F. Flyer 2000. Agglomeration economies, firm heterogeneity, and foreign direct investment in the United States. *Strategic Management J.* 21 (12): 1175-1193.

Simon H.A. 1947. *Administrative Behavior*, New York: The Free Press

Sine W.D., B.H. Lee. 2009. Tilting at windmills? The environmental movement and the emergence of the US wind energy sector. *Admin. Sci. Quart.*, 54(1): 123-155.

Smith K.G., W.J. Ferrier, H. Ndofor. 2001. Competitive dynamics research: Critique and future directions. In *Blackwell Handbook of Strategic Management*, Hitt MA, Freeman ER, Harrison JS (eds). Blackwell Publishing: Malden, MA: 315-361.

Vickers, J.1985. Delegation and the theory of the firm. *Econ. J.*, 95: 138-147.

Vroom G., J. Gimeno. 2007. Ownership form, managerial incentives, and the intensity of rivalry. *Acad. of Management J.,* 50 (4): 901-922.

Yin, X., Zajac E.J. 2004. The strategy/governance structure fit relationship: Theory and evidence in franchising arrangements. *Strategic Management J.*, 25 (4): 365-383

Wasserman N. 2008. The founder's dilemma. *Harvard Bus. Rev.*, 86(2): 102-109

Wiersema M.F., H.P. Bowen. 2009. The use of limited dependent variable techniques in strategy research: Issues and methods. *Strategic Management J.*, 30 (6): 679-692.

Wiklund J., P..Davidsson, F. Delmar. 2003. What do they think and feel about growth? An expectancy-value approach to small business managers' attitudes toward growth. *Entrepreneurship Theory and Practice*, 27 (3): 247-270.

World at Work. 2008. *2008-2009 Salary Budget Survey*. Washington, DC: World at Work.

Wright, P., Ferrris, S.P., Sarin, A., Awasthi, V. 1996. Impact of corporate insider, blockholder and institutional equity ownership on firm risk taking. *Acad. of Management J.*, 39(2): 441-463.

Wright, P., Kroll, M., Lado, A., van Ness, B. 2002. The structure of ownership and corporate acquisition strategies. *Strategic Management J.*, 23 (1): 41-53.

Table 1. Comparison of non-closely-held and closely-held establishments

Measure	Non-Closely-Held Establishments	Closely-Held Establishments	Difference	
Establishment-Level Averages				
Capacity (Rooms)	121	66	55	**
Occupancy Rate (%)	59.15	50.60	8.55	**
Average Daily Rate (US $)	60.59	49.88	10.71	**
Segment (Ranges from 1-4)	1.87	1.55	0.32	**
# of Hotels Owned by Owner	15.22	1.04	14.17	**
% Franchise	40.60	38.63	1.97	
% Company-Owned	35.88	0.00	35.88	**
% Independent	23.49	61.37	-37.88	**
	n=1,490	*n=1,799*		
Market-Level Averages				
Capacity (Rooms)	531	418	113	**
Occupancy Rate (%)	54.79	52.07	2.72	**
Average Daily Rate (US $)	53.08	49.56	3.52	*
Segment (Ranges from 1-4)	1.61	1.52	0.09	*
Market Concentration (HHI)	0.46	0.51	-0.05	**
Population	22,941	20,214	2,727	**
Household Income	20,675	18,882	1,793	*
Number of Establishments	5.37	4.67	0.70	*
	n=518	*n=647*		

** $p<0.05$, ** $p<0.01$*

Comparison as of period 17 (mid-point of data)

Table 2. Entry conditional logit models

	Choice Set: 250 Closest Markets			*Choice Set: 200 Closest Markets*		
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
Market Occupany	0.020 ***	0.036 ***	0.034 ***	0.021 ***	0.038 ***	0.035 ***
	(0.003)	(0.005)	(0.005)	(0.003)	(0.005)	(0.005)
Closely-Held * Market Occupancy		-0.031 ***	-0.029 ***		-0.032 ***	-0.029 ***
		(0.006)	(0.006)		(0.006)	(0.006)
Owner Capacity * Market Occupancy			0.007			0.009 +
			(0.004)			(0.005)
Market Concentration	-0.686 **	-0.719 ***	-0.724 ***	-0.686 **	-0.720 ***	-0.728 ***
	(0.211)	(0.211)	(0.211)	(0.210)	(0.210)	(0.210)
Market Capacity	0.361 ***	0.357 ***	0.357 ***	0.360 ***	0.356 ***	0.355 ***
	(0.051)	(0.051)	(0.051)	(0.050)	(0.050)	(0.050)
Num. of Hotels of Same Chain	-1.521 ***	-1.527 ***	-1.529 ***	-1.524 ***	-1.529 ***	-1.538 ***
	(0.207)	(0.207)	(0.207)	(0.207)	(0.207)	(0.208)
Multi-Market Contact	0.114 ***	0.103 **	0.096 **	0.113 ***	0.102 **	0.093 **
	(0.034)	(0.034)	(0.034)	(0.034)	(0.034)	(0.034)
Rural	-0.155	-0.158	-0.159	-0.090	-0.090	-0.090
	(0.100)	(0.100)	(0.100)	(0.101)	(0.101)	(0.101)
Zip Code Retail Establishments	0.122 +	0.122 +	0.123 +	0.108 +	0.108 +	0.109 +
	(0.063)	(0.063)	(0.063)	(0.063)	(0.063)	(0.063)
Zip Code Gas Establishments	0.183 *	0.188 *	0.188 *	0.221 **	0.225 **	0.225 **
	(0.080)	(0.080)	(0.080)	(0.080)	(0.080)	(0.080)
Zip Code Housing Units	0.392 ***	0.387 ***	0.386 ***	0.437 ***	0.431 ***	0.429 ***
	(0.115)	(0.113)	(0.113)	(0.119)	(0.117)	(0.117)
Zip Code Income	-0.339 ***	-0.341 ***	-0.342 ***	-0.366 ***	-0.364 ***	-0.363 ***
	(0.090)	(0.090)	(0.090)	(0.091)	(0.092)	(0.092)
Zip Code Population	-0.507 ***	-0.502 ***	-0.501 ***	-0.565 ***	-0.558 ***	-0.557 ***
	(0.125)	(0.124)	(0.124)	(0.130)	(0.128)	(0.128)
Log-Likelihood	-5532.66	-5518.38	-5516.90	-5298.27	-5283.48	-5281.47
Wald Chi-Squared	674.25 ***	687.63 ***	687.32 ***	662.15 ***	676.51 ***	675.96 ***
Number of Entries	1,081	1,081	1,081	1,081	1,081	1,081
Average Alternatives per Entry	235	235	235	188	188	188
Number of Observations	254,563	254,563	254,563	203,670	203,670	203,670

*+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001*

Table 3. Exit hazard models

	Cox Proportional Hazard Models			*Weibull Models*		
	Model 7	**Model 8**	**Model 9**	**Model 10**	**Model 11**	**Model 12**
Prior Unit Occupany	-0.062 ***	-0.067 ***	-0.067 ***	-0.058 ***	-0.063 ***	-0.063 ***
	(0.004)	(0.005)	(0.005)	(0.004)	(0.004)	(0.005)
Closely-Held	-0.602 ***	-1.116 ***	-1.117 ***	-0.64 ***	-1.136 ***	-1.14 ***
	(0.127)	(0.275)	(0.277)	(0.132)	(0.267)	(0.268)
Closely-Held * Prior Unit Occupancy		0.013 *	0.013 *		0.013 *	0.013 *
		(0.006)	(0.006)		(0.006)	(0.006)
Owner Capacity * Prior Unit Occupancy			0.000			0.000
			(0.000)			(0.000)
Market Occupancy	0.025 ***	0.024 ***	0.024 ***	0.039 ***	0.038 ***	0.038 ***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Market Concentration	-0.774 *	-0.751 +	-0.75 +	-0.685 +	-0.667 +	-0.666 +
	(0.386)	(0.386)	(0.386)	(0.395)	(0.394)	(0.395)
Market Capacity	-0.437 ***	-0.427 ***	-0.427 ***	-0.458 ***	-0.449 ***	-0.449 ***
	(0.099)	(0.100)	(0.100)	(0.100)	(0.101)	(0.101)
Num. of Hotels of Same Chain	0.571	0.575	0.575	0.576	0.577	0.576
	(0.591)	(0.595)	(0.595)	(0.597)	(0.601)	(0.600)
Multi-Market Contact	0.020	0.023	0.023	0.013	0.017	0.017
	(0.048)	(0.048)	(0.048)	(0.050)	(0.050)	(0.050)
Rural	-0.454 **	-0.445 **	-0.445 **	-0.429 **	-0.424 **	-0.424 **
	(0.157)	(0.156)	(0.156)	(0.163)	(0.162)	(0.162)
Owner Capacity	-0.194 +	-0.181 +	-0.186	-0.211 *	-0.199 *	-0.225
	(0.102)	(0.099)	(0.141)	(0.104)	(0.101)	(0.140)
Midscale Segment	-0.415 **	-0.398 *	-0.398 *	-0.462 **	-0.451 **	-0.451 **
	(0.157)	(0.158)	(0.158)	(0.160)	(0.160)	(0.161)
Upscale Segment	-0.892 ***	-0.853 **	-0.853 **	-0.897 ***	-0.862 **	-0.862 **
	(0.264)	(0.263)	(0.263)	(0.271)	(0.268)	(0.268)
Luxury Segment	-0.898 **	-0.881 **	-0.881 **	-0.917 **	-0.894 **	-0.895 **
	(0.336)	(0.335)	(0.335)	(0.345)	(0.345)	(0.345)
Zip Code Retail Establishments	-0.019	-0.022	-0.022	-0.037	-0.04	-0.04
	(0.130)	(0.131)	(0.131)	(0.135)	(0.136)	(0.136)
Zip Code Gas Establishments	0.203	0.204	0.204	0.209	0.21	0.21
	(0.153)	(0.153)	(0.153)	(0.155)	(0.155)	(0.155)
Zip Code Housing Units	0.891 **	0.888 ***	0.887 ***	0.962 ***	0.958 ***	0.957 ***
	(0.271)	(0.265)	(0.266)	(0.284)	(0.278)	(0.279)
Zip Code Income	0.092	0.103	0.103	0.051	0.063	0.064
	(0.189)	(0.189)	(0.189)	(0.195)	(0.195)	(0.195)
Zip Code Population	-0.898 ***	-0.895 ***	-0.894 ***	-0.975 ***	-0.972 ***	-0.971 ***
	(0.227)	(0.223)	(0.224)	(0.234)	(0.230)	(0.230)
Constant	N/A	N/A	N/A	-1.817	-1.729	-1.728
				(2.254)	(2.249)	(2.249)
Log-Likelihood	-2295.36	-2293.23	-2293.23	-1203.2	-1201.13	-1201.12
Wald Chi-Squared	376.538 ***	416.926 ***	418.596 ***	344.096 ***	385.937 ***	388.955 ***
Number of Hotels	4,149	4,149	4,149	4,149	4,149	4,149
Number of Exits	306	306	306	306	306	306
Number of Observations	105,037	105,037	105,037	105,037	105,037	105,037

*+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001*

Robust standard errors in parentheses, clustered on market

Table 4. Fixed effects regression analysis of firm pricing

	Model 13	Model 14	Model 15
Market Occupany	0.0021 ***	0.0025 ***	0.0022 ***
	(0.0001)	(0.0001)	(0.0001)
Closely-Held	-0.0061	0.0307 **	0.0154
	(0.0048)	(0.0111)	(0.0115)
Closely-Held * Market Occupancy		-0.0007 ***	-0.0004 *
		(0.0002)	(0.0002)
Owner Capacity * Market Occupancy			0.0000 ***
			(0.0000)
Market Concentration	-0.0098	-0.0102	-0.0095
	(0.0208)	(0.0208)	(0.0208)
Market Capacity	-0.0060	-0.0056	-0.0057
	(0.0079)	(0.0079)	(0.0079)
Num. of Hotels of Same Chain	-0.0259 +	-0.0253 +	-0.0251 +
	(0.0149)	(0.0150)	(0.0150)
Multi-Market Contact	-0.0017 *	-0.0017 *	-0.0015 *
	(0.0008)	(0.0008)	(0.0007)
Rural	-0.0318 **	-0.0315 **	-0.0313 **
	(0.0114)	(0.0114)	(0.0114)
Owner Capacity	-0.0000	-0.0000	-0.0000 ***
	(0.0000)	(0.0000)	(0.0000)
Franchised Hotel	0.0674 ***	0.0675 ***	0.0677 ***
	(0.0113)	(0.0113)	(0.0113)
Company-Owned Hotel	0.0784 ***	0.0778 ***	0.0792 ***
	(0.0151)	(0.0152)	(0.0151)
Midscale Segment	0.1073 ***	0.1072 ***	0.1073 ***
	(0.0127)	(0.0127)	(0.0127)
Upscale Segment	0.1359 ***	0.1350 ***	0.1354 ***
	(0.0311)	(0.0313)	(0.0312)
Luxury Segment	0.1881 ***	0.1870 ***	0.1877 ***
	(0.0476)	(0.0482)	(0.0479)
Constant	3.6887 ***	3.6626 ***	3.6796 ***
	(0.0539)	(0.0539)	(0.0539)
Fixed Establishment Effects	YES	YES	YES
Fixed Time Effects	YES	YES	YES
Number of Observations	108,153	108,153	108,153
Number of Hotels	4,249	4,249	4,249
F-Value	109.920 ***	106.804 ***	105.748 ***
R-Sq-Between	0.5937	0.5919	0.594
R-Sq-Within	0.0614	0.0621	0.0634

*+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001*

Robust standard errors in parentheses, clustered on unit

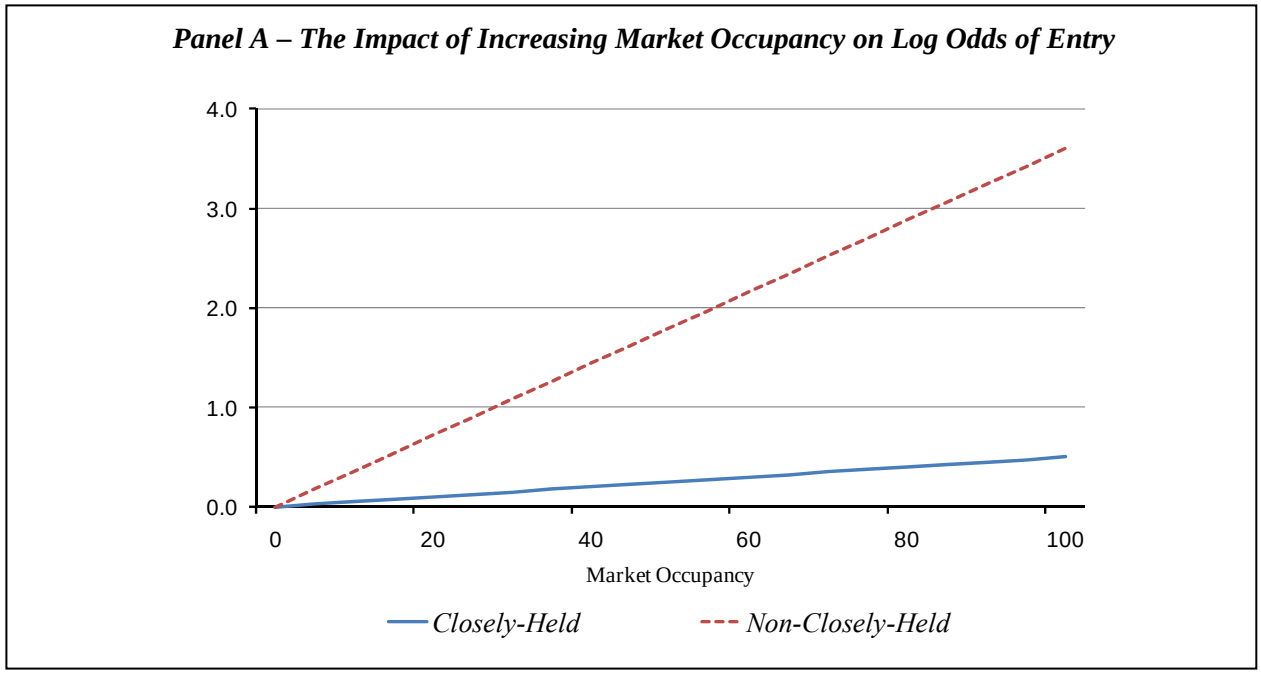
Table 5. Analysis of revenue per available room (RevPAR)

	OLS	Random Effects
Closely-Held	-1.5581 *	-0.8012 *
	(0.6462)	(0.3922)
Market Concentration	2.0623	0.1775
	(1.5496)	(1.4610)
Market Capacity	-0.1455	-0.3913
	(0.4464)	(0.4042)
Num. of Hotels of Same Chain	4.1292 *	1.2842
	(1.6877)	(1.2248)
Multi-Market Contact	0.0198	-0.0166
	(0.0805)	(0.0651)
Rural	-0.4806	-0.4205
	(0.4874)	(0.4154)
Owner Capacity	-0.0863	-0.0708
	(0.0671)	(0.0546)
Establishment Size	0.0011	0.0038
	(0.0042)	(0.0040)
Establishment Age	0.0014	0.0207
	(0.0573)	(0.0460)
Branded Establishment	7.1687 ***	6.7491 ***
	(0.4669)	(0.4026)
Midscale Segment	12.2435 ***	11.3798 ***
	(0.3947)	(0.3940)
Upscale Segment	26.7631 ***	24.8589 ***
	(0.8015)	(0.7768)
Luxury Segment	51.6011 ***	47.8272 ***
	(2.0280)	(1.8784)
Zip Code Total Establishments	1.6569 +	2.059 *
	(0.9531)	(0.8994)
Zip Code Retail Establishments	1.6947 *	1.6668 *
	(0.7765)	(0.7346)
Zip Code Gas Establishments	-2.9079 ***	-3.1664 ***
	(0.6104)	(0.6196)
Zip Code Housing Units	0.164	0.0226
	(0.4701)	(0.4481)
Zip Code Income	1.3008 +	1.7479 *
	(0.7358)	(0.6926)
Zip Code Population	-0.7142	-0.636
	(0.6057)	(0.5684)
Constant	-0.958	-4.0063
	(7.8152)	(7.1468)
Fixed Time Effects	YES	YES
Number of Observations	107,884	107,884
Number of Hotels	4,213	4,213
F-Statistic	251.6 ***	N/A
Chi-Squared	N/A	5,667.7 ***

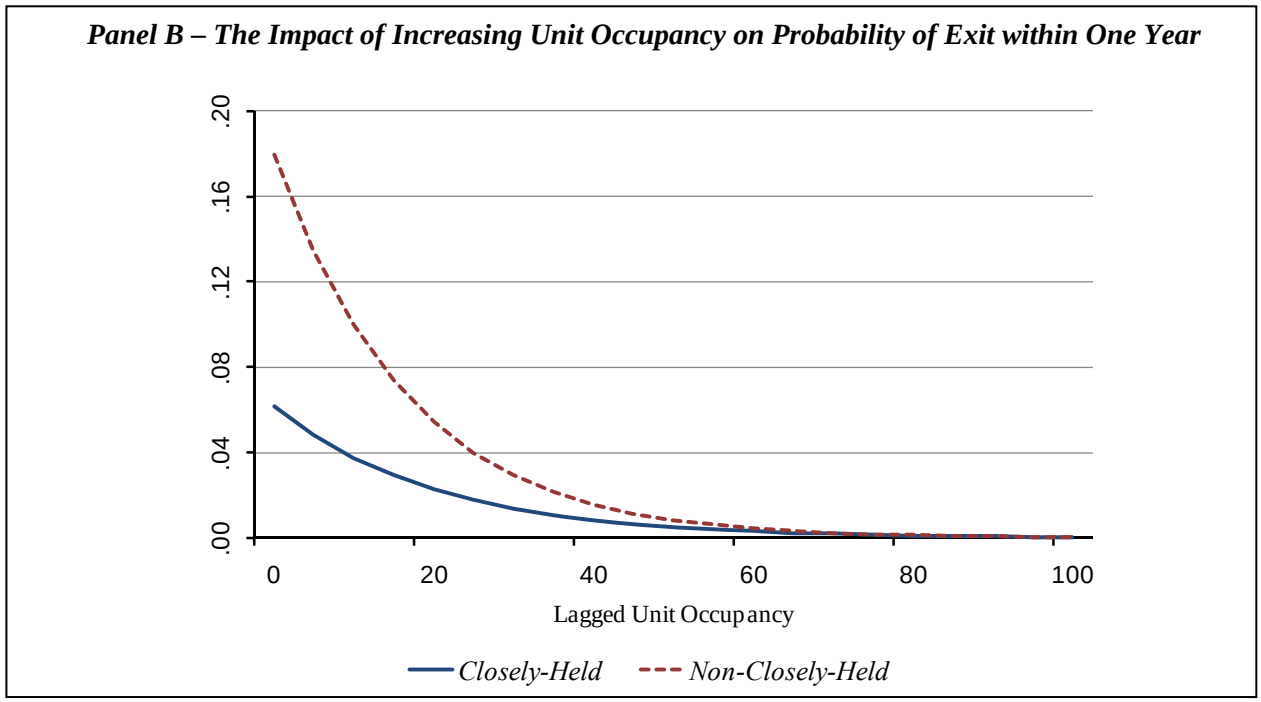
*+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001*

Robust standard errors in parentheses, clustered on unit

Figure 1. Moderating effects of closely-held status on entry and exit behaviors



Note: figure created from results of Model 2



Note: figure created from results of Model 9