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# **What if Your Owners Also Own Other Firms in Your Industry? The Relationship between Institutional Common Ownership, Marketing, and Firm Performance**

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# **What if Your Owners Also Own Other Firms in Your Industry? The Relationship between Institutional Common Ownership, Marketing, and Firm Performance**

## **Abstract**

The growth in institutional holdings of public firms has led to increased interest in the concept of common ownership, in which the same investor owns stakes in multiple firms within the same industry. Economic theory suggests that common ownership could affect firm performance, but little empirical research has examined the nature of this effect or how a firm's extant marketing potentially relates to this effect. This paper addresses this gap by proposing a relationship between common ownership and firm performance that is moderated by the firm's extant marketing capabilities and its relative marketing strategic emphasis. Our empirical approach employs data from over 43 million institutional holdings to develop a measure of common ownership and accounts for empirical issues like endogeneity and unobserved heterogeneity. The results document a positive relationship between common ownership and firm performance and provide some evidence that this effect is stronger for firms with lower marketing capabilities and a relative strategic emphasis towards R&D spending. These results suggest that public policymakers should consider the firms' extant strategic marketing when assessing regulations on common ownership.

**Keywords: institutional investors; agency theory; marketing-finance interface; marketing capabilities; strategic emphasis; common ownership**

“In 1950, institutional investors owned about 7 percent of the United States stock market; today they own almost 70 percent. If you count them as a single investor, BlackRock, Vanguard and State Street are the largest owner of 88 percent of the companies in the Standard & Poor’s 500. Control of the economy has not been this concentrated since the Gilded Age.”

---Posner, Morton, and Weyl (2016), in a New York Times Editorial

## 1. Introduction

Institutional investors, i.e., organizations such as banks, insurance companies, foundations, and mutual, hedge, and pension funds that manage at least \$100 million in equity, are a mainstay of the U.S. economy (Azar et al., 2018). Institutional investors own approximately 75% of the outstanding equity in the 1,000 largest U.S. companies (Aguilar, 2013) and directly manage trillions of dollars of shareholdings (Federal Trade Commission, 2018). Their importance and overall clout in the economy has generated considerable interest from regulators and scholars across business and economic disciplines (e.g., Hansen & Hill, 1991; McCahery et al., 2016).

One consequence of the increasing concentration of overall equity holdings by institutional investors is that such investors now often own large stakes in multiple firms in the same industry, even when firms may be direct competitors (Kang et al., 2018). Consider the case of the two largest institutional investors: BlackRock and Vanguard. In the tech industry, BlackRock and Vanguard are the two largest shareholders for Microsoft *and* Apple. In the retail banking industry, BlackRock and Vanguard are among the three largest shareholders of Bank of America, Citigroup, JPMorgan Chase, PNC Bank, US Bancorp, *and* Wells Fargo (Posner et al., 2016). In the airline industry, in the soft drink industry, and even in smaller and less well-publicized industries, such as cooking appliances, this pattern of relatively large ownership stakes across firms within industries continues (Posner et al., 2016).

Recently, regulators (e.g., Federal Trade Commission, 2018), the popular press (e.g., Authers, 2016), *and* academics across the fields of business, economics, and law (e.g., Azar et

al., 2018) have expressed concern regarding the potential consequences of the practice of institutional common ownership, where institutional investors own large and influential stakes in multiple and sometimes competing firms in an industry. For example, Noah Joshua Phillips, the U.S. Federal Trade Commission (FTC) Commissioner, stated in a 2018 public policy conference:

“I am interested, in particular, to see how common ownership impacts a broad set of industries, whether a clear mechanism of harm can be identified, a rationale for why managers put the interests of one set of shareholders above the others and a rigorous weighing of the pro-competitive effects of institutional shareholding. For now, I do not believe we know enough to warrant policy changes.”

Commissioner Phillips also noted:

“This debate is not just academic. In December 2017, the OECD held hearings [on the topic of institutional common ownership]; and European antitrust enforcers have begun putting common ownership theory into practice.”

Further outlining concerns regarding institutional common ownership, Robert Jackson, the U.S. Securities and Exchange Commission (SEC) Commissioner, suggested that the debate on the consequences of institutional common ownership is centrally about “competition and consumer protection in the 21st Century” (Federal Trade Commission, 2018). Marketing, serving as the connection between the firm and consumers, is crucially related to competition and the resulting impact on consumer welfare. Thus, marketing academics can provide a unique perspective on *how* institutional common ownership may affect firm performance. Marketing academics possess a unique understanding of the interconnected relationships between owners, firms, managers, and customers, and how such relationships can impact firm performance (e.g., Joseph & Richardson, 2002; Srinivasan et al., 2018). This knowledge and perspective is crucial in developing theory-based knowledge, tactics, and strategies for how regulators should assess institutional common owners. In addition, extant research has demonstrated that institutional common ownership can affect firm profitability, competition, and consumer welfare via marketing related issues such as the firm’s pricing strategies (e.g., Azar et al., 2018) and

innovation productivity (e.g., He & Huang, 2017), indicating marketing's potential as an important determinant of the consequences of institutional common ownership.

However, despite its potential importance to public policy, to our knowledge, marketers have been absent from such debates, with no research in marketing heretofore investigating the concept of common ownership (see Table 1). This paper takes a first step to addressing this gap by introducing the topic of institutional common ownership to the marketing literature and proposing a conceptual model that examines the relationship between institutional common ownership and firm performance and explores how two high level strategic marketing variables potentially moderate that relationship.

Central to our proposed model is the agency theory-based principal–agent paradigm (e.g., Jensen & Meckling, 1976). Institutional common owners (principals) often regularly engage with managers (agents) from firms to optimize firm actions that produce results with their customers, discuss how such results are driven by tactics regarding costs and revenues, and better understand why firms may not be performing as well as some of their competitors (Edmans et al., 2019). Further, institutional common owners regularly engage with managers (agents) from the multiple firms they own in an industry, which, enables common owners to accumulate and then provide greater insights to each of these firms than investors that have stakes in one firm (Park et al., 2019). Hence, institutional common owners possess a unique ability to influence the productivity of each of their individual firm's operations (Kang et al., 2018), and a capability to provide greater market knowledge and a reduction in barriers to collaboration between their commonly owned firms (He & Huang, 2017). However, institutional common owners' also have unique incentives due to their fiduciary responsibilities to maximize the performance of their entire portfolio of firms, which could come at the expense of individual firms (Backus et al., 2019). Further, for firms that are already producing better results with customers, institutional

common owners may have a lesser ability to help by providing greater industry best practice knowledge.

Therefore, we build on these conflicting theorized effects on whether institutional common owners' impact on individual firm performance is positive (e.g., He & Huang, 2017) or negative (e.g., Azar et al., 2018) to propose a model to assess the impact of common ownership. We identify two strategic marketing characteristics as moderators or determinants of the relative effects of institutional common ownership on firm performance. The first moderator, the firm's marketing capabilities, or ability to efficiently convert marketing inputs into sales outputs (Dutta et al., 1999), is proposed based on institutional common owners' ability to provide gains in efficiencies and productivity (e.g., He et al., 2019) and their direct involvement and monitoring of a greater number of firms in the industry (Fich et al., 2015; Kang et al., 2018). The second moderator, the firm's relative marketing strategic emphasis, or its spending on value-appropriating (advertising) in relation to its spending on value creating (research and development [R&D]) activities (Mizik & Jacobson, 2003), is proposed based on institutional common owners' ability to enhance long-term value creation activities (e.g., Connelly et al., 2018) by affecting the productivity of the firm's risk-taking with their ability to reduce barriers to collaboration (Faccio et al., 2011; He & Huang, 2017). Taken together, from a theoretical point of view, these two marketing moderators are proposed because they provide strategic-level measures for how the firm allocates marketing expenditures and how the firm efficiently utilizes those expenditures to generate sales, which as described in a subsequent section, is often institutional common owners' main monitoring and engagement focus with their managers.

To empirically test our proposed model, we employ data from 1986-2016 on 43,063,833 institutional owner holdings across 22 industries to construct a measure of institutional common ownership. We find that, for a given firm, an increase in institutional common ownership is

significantly associated with an increase in firm performance. Further, we find this effect is stronger for firms possessing lower marketing capabilities and stronger, under some model specifications, for firms that have a strategic emphasis oriented towards R&D rather than advertising spending. The key implications of these results is that, despite the focus on negative consequences of institutional common owners in popular press (e.g., Posner et al., 2016) and notable academic articles (e.g., Azar et al., 2018), institutional common ownership's effects on competition and consumer protection are not uniform and, in fact, can be beneficial for certain firms. As such, public policy makers should account for the firm's extant marketing efficiency and the emphasis of their marketing expenditures when considering regulations to limit the potential negative effects of institutional common ownership.

The remainder of the paper is organized as follows. First, we provide background information on institutional investors and institutional common ownership. Subsequently, we describe our conceptual framework based on agency theory and develop our hypotheses. Then, we present and discuss the implications of our empirical analysis.

## **2. Background on Institutional Investors and Institutional Common Ownership**

### **2.1. Institutional Investors**

Institutional investors are predominately sophisticated professional investors that strive to earn long-term profits for their clients (Connelly et al., 2018). Due to institutional investors' holding size, investment strategies, influence on financial markets, and inability to sell underperforming firms, institutional owners often engage, directly or indirectly, with their firms (Edmans & Holderness, 2017).<sup>1</sup> Directly, institutions often engage with the firm's senior management and its

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<sup>1</sup> This includes the growing share of passive institutional *investors*, who prior research has demonstrated are not passive *owners*, in that they often engage and are active owners of their firms, despite their passive investing style (Appel et al., 2016). For example, Larry Fink, the CEO of BlackRock, stated that “[we] can’t sell those stocks even



board of directors about the firm’s direction and its strategic actions (Anton et al., 2018). For example, academic surveys on institutional investors (McCahery et al., 2016) and practitioner surveys on individual firms (Federal Trade Commission, 2018) have both reported that the vast majority of firms regularly engage in direct conversations with their institutional owners about the firm’s strategic actions. Further, institutional investors promote this engagement with firms as a core competitive advantage of employing their investment services. For instance, Vanguard, Blackrock, and State Street, the three largest institutional investors, have each promoted this capability on their websites, investment prospectuses, and executive communications (e.g., Posner et al., 2017).

Indirectly, the ability for institutional investors to provide incentives and enforce discipline on the firm is important in motivating and facilitating strategic actions and processes that they consider advantageous for the firm (Brav et al., 2008). Five tactics that institutions employ to indirectly affect firm practices are (i) the appointment of board members, (ii) risk oversight, (iii) adjustment of executive compensation, (iv) implementation of corporate governance structures, and (v) public criticism of the firm either via announcements in the media or in support of shareholder proposals (e.g., Connelly et al., 2010; Vanguard, 2017).<sup>2</sup> Consequently, through their direct and indirect engagements with the firm, institutional owners are able to exert an influence in firm decision making (Backus et al., 2019).

## **2.2. Institutional Common Owners**

Institutional investors often own considerable stakes in multiple firms in a single industry (Posner et al., 2016), a practice labeled as “institutional common ownership” (Azar et al., 2018). Institutional common owners have a fiduciary responsibility to their investors to maximize the

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if they are terrible companies. As an indexer, our only action is our voice and so we are taking a more active dialogue with our companies and are imposing more of what we think is correct” (Authers, 2016).

<sup>2</sup> Vanguard cast more than 171,000 votes at 18,000 shareholder meetings in 2017 alone (Vanguard, 2017).

returns of their entire portfolio of firms, rather than the returns of each individual firm (O'Brien & Waehrer, 2017). Hence, concerns have been raised that institutional common owners' interests and ability to influence firm activities can result in an adjustment to the principal-agent relationship that could lead to deviations from an optimal individual firm performance strategy (Azar et al., 2018; Backus et al., 2019). We expand on the theory underlying these concerns in the next section.

The recognition of conflicting interests and potential deviations from firm optimal strategies due to institutional common owners' or other owners' unique interests is not new (e.g., Gilo et al., 2006). However, the concerns related to institutional common ownership have recently expanded because of research that empirically highlighted both the extent of the current concentration of institutional ownership (e.g., Posner et al., 2016) and that institutional common ownership is potentially related to lower competitive intensity and higher pricing in the airline industry (Azar et al., 2018). Hence, as summarized in Table 1, researchers from accounting, finance, economics, law, management, and operations have investigated the potential consequences (both positive and negative) of common ownership by linking institutional common ownership to firm performance outcomes due to changes in individual firms' (i) competitive (or anti-competitive) strategies (e.g., Connelly et al., 2018; He & Huang, 2017), (ii) corporate governance policies (e.g., Lin et al., 2018; Kang et al., 2018), and (iii) mergers and acquisitions (e.g., Fich et al., 2015; Harford et al., 2011). Building on this prior research, we propose that a firm's extant marketing strategy is also likely to be an important consideration in determining the nature of the effects of institutional common ownership on firm performance.

### **3. Conceptual Framework**

Given the resource intensity and efficient allocation of resources required for firms to achieve sustained performance, principals such as institutional common owners are likely to play a major

role in how managers develop and implement firm processes and strategies. This notion is central to agency theory (e.g., Fama, 1980; Jensen & Meckling, 1976), in which principals are theorized to design systems that incentivize and reward agents for developing firm strategies that align managerial actions with the principals' best interests. In the traditional agency theory principal-agent paradigm, principals' interests are typically identified as maximizing the individual firm's performance in order to maximize their own returns (Fich et al., 2015). Thus, principals, such as institutional investors, attempt to align their agents' incentives to maximize the individual firm's performance. In contrast, since institutional common owners have a fiduciary obligation to maximize the profits of their entire portfolio, individual firm profit maximization may no longer be optimal for this set of the firm's principals (Backus et al., 2019). Hence, the presence of institutional common ownership could create a misalignment of principal's interests to focus on maximizing the performance of their overall portfolio of firms at the expense of individual firms (Azar et al., 2018). As such, institutional common owners, as principals, may attempt to influence their managers, as agents, to pursue policies and strategies that may not maximize individual firm performance.

Yet, individual firms are also likely to benefit from institutional common owners' experience monitoring multiple firms (Kang et al., 2018) and ability to share knowledge gained from this monitoring to improve the productivity or efficiency in individual firm operations (He & Huang, 2017). Further, individual firms should benefit from institutional common owners that can supply informed and incentivized advice and oversight to minimize inefficient aggressive firm actions, such as advertising or price wars (Park et al., 2019), and enable firms to substitute investments in marketing capabilities and R&D output by reducing barriers to collaboration across co-owned firms (Connelly et al., 2018). This potential ability to benefit individual firms'

productivity or efficiencies is likely dependent on individual firms' extant marketing capabilities, or ability to convert marketing inputs into sales outputs.

In addition, individual firms are likely to benefit from institutional common owners' ability to establish R&D and advertising collaborative partnerships with their other common owned firms in the industry (He & Huang, 2017). Further, individual firms with greater institutional common ownership should, on average, benefit from greater ability to manage risk due to more dispersed ownership stakes than firms with fewer institutional common owners that are less diversified and more risk averse (Faccio et al., 2011). Consequently, we expect that a firm's strategic emphasis on longer-term and riskier value creation activities, such as R&D, relative to shorter-term value appropriation activities, such as advertising, will influence the benefits provided by institutional common owners' ability to establish collaborative partnerships and encouragement to engage in greater risk-taking.

Thus, we expect institutional common ownership to be related to firm performance, and a firm's marketing capabilities and relative marketing strategic emphasis to moderate this relationship. However, the extant literature has not directly addressed this possibility. As such, we decided to augment our agency theory-based expectations with practitioner-based insights by conducting in-depth interviews with three institutional common owning fund managers that, respectively, manage several hundred million dollars, a couple billion dollars, and several billion dollars in holdings. Overall, the interviews revealed that the outcomes of institutional common owners' regular engagements with management is remarkably similar to how agency theory posits that principals monitor and interact with their managers in attempts to maximize the profitability of their portfolios. Importantly, topics related to marketing play a role in these engagements because institutional investors often engage with managers to understand and influence firm actions that produce results with their customers, and why firms may not be

producing the same level of results as some of their competitors. Further, institutional common owners' engagement with management is often focused on factors associated with generating the firm's costs and driving the firm's revenues, e.g., how these costs and revenues compare to other firms they own in the industry and how the firm is actively managing these processes (i.e., the firm's spending/resource allocation and the efficiency of such spending). Therefore, based on agency theory and our interviews, we propose the conceptual model depicted in Figure 1. Next, we provide further rationale for each of our hypotheses.

## **4. Hypotheses**

### **4.1. Institutional Common Ownership and Firm Performance**

Institutional common owners' fiduciary responsibility is to maximize the profitability of their entire portfolio of firms (Azar et al., 2018). As such, it has been suggested that institutional common owners are less motivated to provide oversight and incentivize and pressure the executives of each firm they own compared to other investors (Anton et al., 2018). This reduction in managerial oversight could make managers in the firms they own operate in a less optimal or "lazier" fashion, which would detrimentally effect firm performance (Azar et al., 2018). Consequently, widespread general public concerns have been based on institutional common ownership causing a negative effect on the performance of individual firms (Backus et al., 2019).

In contrast, our expectation, based on agency theory, research across economics, law, and business literatures, and insights from our interviews with institutional common owners, is that an increase in institutional common ownership will be associated with an increase in firm performance. Our theoretical rationale is as follows. First, while common owners may not observe *all* firm actions (e.g., Kempf et al., 2017), institutional common owners are still likely to monitor a larger number of individual firm actions across the industry since they possess

ownership stakes in more firms than other types of investors (He et al., 2019). Thus, institutional common owners likely possess greater knowledge of industry best practices compared to owners with narrower or more concentrated portfolios (Kang et al., 2018). This enables institutional common owners to diffuse industry best practice knowledge among co-owned firms through their engagement with management, so these firms can employ such best practices to increase their performance (Connelly et al., 2018).

Second, institutional common owners are highly motivated to reduce rivalries and potential industry-wide inefficiencies, such as R&D, price, or advertising wars (Park et al., 2019), which can generate negative effects on their entire portfolio of firms in an industry (Connelly et al., 2018). Consequently, institutional common owners are motivated to serve as a conduit to lessen barriers of collaboration and reduce information asymmetry between co-owned competitors since they can benefit from the improved performance of each of their co-owned firms (He & Huang, 2017). Third, through prior experiences, common owners are expected to accumulate knowledge on how best to design appropriate incentives to better facilitate and advocate for the adoption of best practices by their firms (Posner et al., 2017).

Therefore, in summary, we expect institutional common owners to learn what processes are effective in an industry, reduce barriers of collaborations with other firms, and more effectively influence firms to utilize such processes and collaborations. Further, through their regular engagements with management, we expect firms with greater institutional common ownership to improve their performance. In addition, we propose that these positive effects should overcome potential negative inefficiencies that could be attributed to common ownership, such as lower incentives to effectively monitor management (Azar et al., 2018) and misaligned incentives that prioritize improved industry rather than firm performance (Anton et al., 2018). Hence, we expect:

H1: An increase in the institutional common ownership of a firm will be associated with an increase in the firm's performance.

## **4.2. The Moderating Role of Marketing**

*4.2.1. Marketing Capabilities.* Institutional common owners possess market knowledge and a capacity to foster tacit coordination with other firms that they own (Connelly et al., 2018). In addition, institutional common owners may have a greater ability to incentivize and facilitate firms to enact superior processes than other owners who may not have the same level of clout or experience in dealing with upper management (Posner et al., 2017). These strategic advantages should particularly benefit firms characterized by lower marketing capabilities. Marketing capabilities are regarded as “complex bundles of firm-level skills and knowledge that carry out marketing tasks and firm adaptation to marketplace changes” (Moorman & Day, 2016, p. 6). Hence, firms with lower marketing capabilities are less likely to be engaged in industry best practices and more likely to be engaged in less optimal competitive activities like advertising or pricing wars (Dutta et al., 1999). As such, when institutional common owners engage with management to encourage the use of best practices and help reduce industry-wide inefficiencies, the benefits will primarily accrue to their firms that are not initially as efficient in converting marketing inputs into sales outputs. Consequently, we expect:

H2: The positive effect of institutional common ownership on a firm's performance will be weaker (stronger) for firms with greater (less) marketing capabilities.

*4.2.2. Relative Marketing Strategic Emphasis.* Strategic emphasis measures the spending by a firm on advertising versus R&D efforts, which, theoretically, captures the relative emphasis of the firm on value appropriation versus value creation activities (Mizik & Jacobson, 2003). R&D activities, captured by value creation, tend to be, on average, riskier than value-appropriating advertising activities (Hauser et al., 2006). Institutional common owners can improve the productivity of such risk-taking activities (Faccio et al., 2011) due to their lower risk

aversion resulting from their more diversified portfolios (Edmans et al., 2019) and ability to act as a conduit to link firms to work together on joint products, alliances, bundles, etc. (Connelly et al., 2018). Hence, institutional common owners' capabilities and interests are likely to help firms with a value creating R&D focused strategic emphasis to gain from knowledge spillovers, a reduction of information asymmetries, and an increase in the likelihood of collaborative partnerships (Park et al., 2019). Further, institutional investors regularly engage, provide oversight, and opine on the firm's R&D spending (He & Huang, 2017). Thus, through their greater tolerance to and productivity of risk-taking activities and via engagement with executives with multiple firms in the same industry, we expect the gains in performance from common ownership to be greater for firms with a value creating R&D-focused strategic emphasis than for firms with a value appropriating advertising-focused strategic emphasis. This is despite firms with a value appropriating advertising focused strategic emphasis also potentially benefiting from institutional common ownership, in particular, due to potential bundling and joint advertising opportunities with other common owned firms. Therefore, we expect:

H3: The positive effect of institutional common ownership on firm performance will be stronger for firms with a greater strategic emphasis on R&D over advertising efforts.

## **5. Empirical Analysis**

### **5.1. Data**

To empirically test our conceptual model, we employ data from various sources covering three decades (1986-2016) and comprising of 43,063,833 institutional common ownership holdings, 7,998 institutional investors, and 22 NAICS industries. First, to obtain annual firm-level information, we merged data from Compustat, which provides annual 10-K-based firm-level information, with data from the Thompson Reuters 13f Summary Database, which reports firm-level institutional ownership summary statistics. Any observations from industries with fewer than three firms per year were eliminated. Second, we paired this data with information on each



institutional investor's holdings from the Thomson Reuters s34 Institutional Investor Holdings Database. As our interest is only on institutions with a potential "voice" or influence in the firm, we restricted our data to institutions who own  $\geq 1\%$  of outstanding shares in a firm.<sup>3</sup> Third, we constructed our institutional common ownership measure, described in the next sub-section. We maximized the number of firm observations per industry per year to construct this measure, which included observations from firms that had missing data on variables unrelated to the construction of the institutional common ownership measure.

*5.1.1. Focal Variable.* Given the empirical context of our conceptual framework, our focal variable, institutional common ownership, needs to be both applicable to a diverse set of industries and allow for comparisons across and between industries. However, institutional common ownership metrics previously employed in the literature either rely on data from a single highly regulated industry, such as banking and airlines (e.g., Azar et al., 2018), or do not account for differences in individual firms' extent of institutional common ownership, apart from the number of common owners or the sum of common ownership holdings in a firm (e.g., He & Huang, 2017). Therefore, we develop a new institutional common ownership metric that measures the average concentration of a firm's institutional common owners' holdings across an industry for a given year.

To operationalize this measure, we broadly follow the operationalization of the Herfindahl–Hirschman Index (HHI) measure. The reason is twofold. First, HHI is a widely employed measure for evaluating industry-level concentration and competition. Hence, the use

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<sup>3</sup> This is a conservative restriction in comparison to other commonly used cut-offs, such as a  $\geq 5\%$  ownership stake for blockholders, so that we can account for the majority of owners with sufficient stakes to influence firm behavior. Edmans and Holderness (2017, p. 542) describe that "there is no theoretical basis for the commonly used 5% threshold or indeed any threshold. Future research should study blocks below 5% when possible."<sup>3</sup> Further, in our interviews, the institutional common owners described that nearly all their engagements with firms is when they own 1-5% of the firm's shares, and that institutional liquidity restraints often prevent them from owning  $>5\%$  of shares in a firm. Consequently, we chose the 1% cut-off instead of the 5% cut-off.

of an HHI-type index for institutional common ownership provides a theoretical basis for the development of an institutional common ownership measure that relies on concentration of holdings by individual institutional investors across multiple firms in an industry. Second, the use of an HHI-type index for institutional common ownership enables us to measure the average concentration of a firm's institutional common ownership holdings within and across an industry for a given year and allows us to examine comparisons of institutional common ownership over a large period of time. This measure ranges from 0 to 1, with greater (lower) numbers closer to one (zero) indicating that a firm's average common owner has more dispersed (concentrated) market-weighted holdings across their industry and greater (less) common ownership.

The operationalization of the institutional common ownership measure involves the following seven steps for firm  $k$  in year  $t$ . In the first step, to assess the extent firm  $k$  is owned by institutional investor  $i$ , we calculate the percentage of shares of firm  $k$  each institutional investor  $i$  owns in year  $t$ .

$$(1) \text{PercOwnOfFirmByInst}_{ikt} = \frac{\text{InstSharesOfFirm}_{ikt}}{\text{TotalSharesOfFirm}_{kt}}$$

In the second step, we multiply  $\text{PercOwnOfFirmByInst}_{ikt}$  by the market value of firm  $k$  in year  $t$  to obtain the market-weighted value of institutional investor  $i$ 's ownership stakes in firm  $k$  in year  $t$ .<sup>4</sup>

$$(2) \text{HoldingMktValue}_{ikt} = (\text{PercOwnOfFirmByInst}_{ikt})(\text{MktValueOfFirm}_{kt})$$

In the third step, to assess the overall holdings for institution  $i$  in industry  $l$  for year  $t$ , we sum the market-weighted value of shares owned by institution  $i$  across all firms in industry  $l$  for year  $t$ .

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<sup>4</sup> As a robustness test, we also calculated market-weighted values for institutional investor  $i$ 's ownership stakes in firm  $k$  in year  $t$  by employing a variety of other financial variables, such as market share, sales, total assets, cash, and property, plant, and equipment. The results with these alternative financial metrics were similar to the market value-based metric. Thus, for the remainder of the paper, we only discuss the results of our market-value weighted institutional common ownership measure.

$$(3) \text{TotalInstMktValueByInstInInd}_{ilt} = \sum_{k=1}^K \text{HoldingMktValue}_{ikt}$$

In the fourth step, to find the market-weighted share of each institutional investor's holdings relative to the institutional investor's overall holdings in an industry, we divide the market-weighted percentage of shares of firm  $k$  held by institutional investor  $i$  by the total market value held by institution  $i$  in industry  $l$  in year  $t$ .

$$(4) \text{HoldingMktValueForInst}_{ikt} = \frac{\text{HoldingMktValue}_{ikt}}{\text{TotalInstMktValueByInstInInd}_{ilt}}$$

In the fifth step, to assess the market-weighted dispersion of each individual institutional investor's holdings across an industry, we compute a sum of squares concentration measure for each holding for each institution  $i$  in industry  $l$  for a given year  $t$ .

$$(5) \text{InstHoldingsConcentration}_{ilt} = \sum_{k=1}^K (\text{HoldingMktValueForInst}_{ikt})^2$$

In the sixth step, to calculate the average institutional common ownership per firm, we average  $\text{InstHoldingsConcentration}_{ilt}$  across all institutions who own firm  $k$  for a given year  $t$ . The resultant value provides an easy-to-compare firm-based measure that assesses the dispersion of holdings for each firm's institutional investor holdings across the industry for a given year.<sup>5</sup>

$$(6) \text{CommonOwnConc}_{kt} = \frac{\sum_{i=1}^I \text{InstHoldingsConcentration}_{ikt}}{\text{NumInst}_{kt}}$$

In the last step, to assist in interpretation, we take one minus  $\text{CommonOwnConc}_{kt}$  so that larger numbers are associated with a greater extent of institutional common ownership.

$$(7) \text{CoOwn}_{kt} = 1 - (\text{CommonOwnConc}_{kt})$$

The intuition behind our measure of institutional common ownership for each individual firm is that the measure should be low and closer to zero if the average institutional investor for a

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<sup>5</sup> We classify industries based on two-digit NAICS codes because it is the standard industry reporting that the U.S. government requires and was designed to replace the SIC industry classification system that had grown inconsistent in its classifications (<https://www.census.gov/eos/www/naics/>). Further, NAICS had better data availability than the large number of firms with missing two-digit SIC codes.

given firm only holds ownership stakes in a small number of firms or are concentrated in a small number of firms. For example, Dynasil Corporation had an institutional common ownership score of zero in 2016 since it had only a single institutional investor that owned  $\geq 1\%$  of its shares for that year, Finemark National Bank & Trust, who did not own  $\geq 1\%$  of the shares of any other firm in Dynasil's industry. In contrast, the measure of institutional common ownership should be greater and closer to one for a firm if the average institution holds shares in many firms in the industry and its market-weighted industry portfolio is highly diversified. Thus, Oshkosh Corporation had a near maximum institutional common score of 0.985 in 2015 since it had 16 institutional investors that owned  $\geq 1\%$  of its shares, including BlackRock, Fidelity, and State Street, with each having highly dispersed market-weighted holdings.

To establish theoretical and empirical validity of our proposed measure, we, first, found that institutional common owners in our interviews believed that a concentration-based measure that captured the market-value based holdings of firms was more representative than a tally of number of firms they held shares in the industry that did not account for the market-value of such holdings. Then, as an empirical test, we find that larger firms, which are typically listed on various indexes or ETFs such as the S&P 500 or Russell 1000 that generate a larger proportion of common owners (e.g., Edmans & Holderness, 2017), indeed have greater institutional common ownership scores. We further elaborate on this in the descriptive statistics section.

*5.1.2. Dependent Variable.* We employ the firm's return on assets (ROA) as our measure of performance, which is operationalized as earnings before interest, taxes, and depreciation divided by total assets (e.g., Feng et al., 2015; Srinivasan et al., 2011). We focus on a firm's accounting performance rather than its financial market performance due to the potential for reverse causality between common ownership and financial performance, since common

ownership may have a direct effect on the stock return or price of a firm. However, as a robustness test, we also tested alternative financial measures of performance in Section 6.3.1.

*5.1.3. Moderating Variables.* Marketing capabilities are operationalized consistent with prior research via an input–output approach using stochastic frontier estimation (SFE) (e.g., Dutta et al., 1999). The SFE model estimates an inefficiency score based on the firm’s ability to transform its marketing inputs into sales outputs. Firms with smaller inefficiency scores have greater marketing capabilities. Following Swaminathan and Moorman (2009), we include (1) the installed base of customers (lagged firm sales), (2) firm resources devoted to the development of customer relationships (firm receivables), (3) overall marketing expenditures (sales, general, and administrative expenses), (4) advertising expenditures, and (5) R&D expenditures as the marketing input variables, and sales as the output variable for the model to estimate the firm’s marketing capabilities. To estimate this model, we estimate a Production Frontier Model with a nonnegative distribution component that is assumed to be from a half-normal distribution. We then compare the firm’s actual sales with the projected sales frontier to obtain an inefficiency score, which is the inverse of a firm’s marketing capabilities.<sup>6</sup>

Relative strategic emphasis is operationalized consistent with prior literature as advertising expenditures minus R&D expenditures, divided by total assets (Han et al., 2017; Mizik & Jacobson, 2003).<sup>7</sup> Hence, firms spending more on advertising activities than R&D

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<sup>6</sup> As two separate robustness tests, we estimated two marketing capabilities measures that (i) did not include R&D expenditures and (ii) was calculated by including industry-level dummy variables as an input in the SFE model. The focal results for models utilizing these alternative specifications of marketing capabilities were consistent with the results from the described specification (see Web Appendix Table 6). Thus, for simplicity, we proceed by only using the marketing capabilities measure described in the main text.

<sup>7</sup> Empirically, we do not find much variation in marketing capabilities and strategic emphasis by industry. Thus, we do not include industry-dummies interacted with these moderators in our analysis. We also note that while advertising and R&D spending are part of the operationalization of both our marketing moderators, theoretically, marketing capabilities and strategic emphasis are two independent constructs since marketing capabilities measures the efficiency of marketing inputs in creating sales outputs, and SE measures how the firm relatively allocates its marketing expenditures. In addition, we also do not find much dependence between marketing capabilities and

activities will have a greater strategic emphasis value, which indicates the firm is relatively emphasizing value-appropriating over value-creating activities. Further, we scale strategic emphasis by the firm's total assets to minimize concerns that strategic emphasis may be confounded with the firm's ROA.

*5.1.4. Control Variables.* We also control for a variety of firm, industry, and institutional investor variables that may affect a firm's performance. First, because institutional investors and institutional common owners could prefer certain firms and industries, we include the following three variables to account for such unobserved preferences and potential sources of endogeneity: (1) percentage of institutional ownership for a firm, (2) average percentage of institutional ownership for an industry, and (3) industry institutional common ownership. Second, we include controls for firm performance commonly employed in previous marketing–finance interface research, such as the firm's size, financial leverage, industry competitive intensity, industry growth rate, and industry dynamism (e.g., Feng et al., 2015; Han et al., 2017; Wang et al., 2015). Third, to account for unobserved effects for a given year, we include dummy variables for each observation year. Finally, as described in the next sub-section, we control for additional firm and industry characteristics such as R&D pipeline, CEO's industry experience, and CMO on the board that are time invariant or do not vary significantly over time by the nature of the model, which accounts for unobserved firm heterogeneity. We refer the reader to Table 2 for further details on each of our variables, their operationalizations, and literature sources.

## **5.2. Statistical Model**

*5.2.1. Model Overview.* Given the strategic nature of the focal variables in our conceptual model, we must account for a number of empirical issues, such as endogeneity, reverse causality,

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strategic emphasis as their correlation is  $r = .08$ . Finally, substantively, we observe a nearly equal split of low and high strategic emphasis firms that have above and below median marketing capabilities, and vice versa.

unobserved heterogeneity, and potential persistence or inertia in decision-making and performance. However, finding appropriate instrumental variables (IVs) correlated with these variables but that do not have an effect on firm performance is difficult due to the endogeneity of our focal variables (e.g., see Rossi, 2014) and the lack of theory or knowledge on drivers of common ownership behavior (e.g., see Edmans & Holderness, 2017). Hence, consistent with prior research analyzing dynamic panel data in the marketing–finance interface literature (e.g., Feng et al., 2015; Mizik & Jacobson, 2009; Nezami et al., 2018), we estimate our model using the Arellano–Bond General Method of Moments (GMM) method.

The Arellano-Bond GMM method utilizes first-differencing transformations, i.e., how changes in the independent variables affect changes in the dependent variables, to analyze dynamic panel data. The first-differencing transformations, like other methods of controlling for unobserved heterogeneity, controls for serial correlation (Ivanov et al., 2013) and accounts for static differences between firms, such as the industry in which the firm is classified (Tuli & Bharadwaj, 2009). The Arellano-Bond GMM also helps control for endogeneity and reverse causality (as detailed in section 5.2.2.) through the use of IVs created by lagging endogenous variables (Kirca et al., 2020; Xiong & Bharadwaj, 2013). Further, the Arellano-Bond GMM method computes valid asymptotic errors unlike other IV-based approaches like a control function (Rossi, 2014). Consequently, prior research in corporate finance identifies the Arellano-Bond GMM method as an appropriate method to deal with a dynamic panel data structure that has an unbalanced set of panels, unobserved heterogeneity, and endogenous variables (Flannery & Hankins, 2013).

Thus, we specify our statistical model as:

$$\begin{aligned}
(8) \Delta ROA_{it} = & \alpha + \beta_1(\Delta CommonOwn_{it-1}) + \beta_2(\Delta MktgCapability_{it-1}) + \beta_3(\Delta StrategicEmphasis_{it-1}) \\
& + \beta_4(\Delta MktgCapability_{it-1})(\Delta CommonOwn_{it-1}) \\
& + \beta_5(\Delta StrategicEmphasis_{it-1})(\Delta CommonOwn_{it-1}) + \beta_6(\Delta ROA_{it-1}) \\
& + \sum_{w=1}^8 \beta_{w+8} \Delta Controls_{it-1} + \sum_{t=1}^T \varphi_t Year_{it} + \Delta \varepsilon_{it}
\end{aligned}$$

5.2.2. *Endogeneity.* Despite accounting for the preferences of institutional investors for certain firms or industries via (i) the inclusion of several control variables and (ii) first-differencing all of our focal and control variables to help account for unobserved heterogeneity and potential inertia and persistence in our focal variables, endogeneity may still be present in our analysis. For example, institutional common owners may have additional, unobserved, and unaccounted for investment knowledge about certain firms compared to all other institutions or investors, which could result in biased empirical estimates due to endogeneity. Thus, to control for such potential endogeneity, the Arellano–Bond GMM model allows for the creation of instrumental variables (IVs) based on the lagged values of first-differenced covariates, which are theoretically correlated with our variable of interest, but not the model’s error terms (Arellano & Bond, 1991; Xiong & Bharadwaj, 2013). In our model, we conservatively assume that all of our focal variables are endogenous. Hence, our approach results in theoretically valid IVs since it is unlikely that the error terms would be correlated with the instruments created using the lagged first-differenced variables, which prior research in the management-finance interface literature has suggested produces valid IVs to account for potential endogeneity in the ownership and firm performance context (Schultz et al., 2010). Thus, the remaining endogeneity in our analysis that may be persistent even after controlling for firm- and industry-specific unobserved heterogeneity and institutional investor preferences should be accounted for by using such lagged IVs.<sup>8</sup>

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<sup>8</sup> To further test the effect of industry-level unobservable effects, we estimated a model that included time-invariant industry-level dummy variables. We find that the results are consistent with the results of our focal model.



### 5.3. Descriptive Statistics

Our final estimation sample contains 5,817 firm–year observations from 1,065 firms.<sup>9</sup> In Table 2, we provide descriptive statistics. In Web Appendix Table 1, we provide a correlation matrix. The median firm in the sample has 3,900 employees and spends \$9.5 million and \$7.4 million on advertising and R&D, respectively.

In Figure 2, we display how institutional investors’ percent of holdings steadily increases over three-decades of data from a low of 33.59% (in 1987) to a high of 72.11% (in 2015), apart from a small decrease during the Great Financial Crisis. On a firm–year observation level, we find the average firm in our sample has 8.5 institutional investors that own  $\geq 1\%$  shares of the firm, who, combined, own an average of 26.0% of the firm’s stock. The average firm-year observation has a common ownership measure of 0.968, with a standard deviation of 0.07, showing that institutional owners often engage in extensive common ownership, but the dispersion of common ownership varies by firm.

In Web Appendix Table 2, we rank-order all 1,065 firms in our estimation sample based on their average extent of institutional common ownership over time. This table should be useful for public policymakers to examine which firms have the greatest and least extent of institutional common ownership, on average over time, based on an extensive collection of institutional holdings across a large number of firms and years. For example, we report the five firms with the greatest extent of common ownership are Empire Resorts Inc., Santa Barbara Restaurant Group,

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<sup>9</sup> The sample size was reduced from the initial sample employed to construct our institutional common ownership measure because we eliminated firms from our dataset that had missing data on one of our focal variables, and firms that did not have fully reported data for at least three consecutive years since our dynamic panel Arellano-Bond GMM estimation method requires lagged data to form instrumental variables to account for endogeneity. This greatly reduced our dataset as not every firm in Compustat reports all data employed for multiple years in a row. For example, not every firm the Compustat data is forced to report their advertising spending (a variable employed to compute our marketing strategic emphasis and marketing capability measures), and, in fact, previous reports have documented that less than half the firms in Compustat actually do report such spending (Han et al., 2017). In addition, missing data also exists from many firms on their R&D spending.

Allin Corp., H&H Oil Tool Co., and Audio King Corp. and the five firms with the lowest common ownership are Telkonet Inc., Dynasil Corp., Taitron Components, Lyrus Inc., and Conversant Inc.

Finally, in Web Appendix Table 3, we provide a comparison between firms with low and high institutional common ownership on key aspects. Interestingly, we do not find many differences between firms with low and high institutional common ownership, apart from firm size. These lack of differences are consistent with previous findings on institutional common ownership and large ownership blocks, which has described a lack of theory and knowledge on drivers of common ownership behavior other than larger firms are likely to have a greater prevalence of institutional owners (e.g., Edmans & Holderness, 2017).

## **6. Results**

### **6.1 Model-Free Evidence**

In Figure 3, we provide model-free evidence to better understand the nature of the relationships between common ownership, marketing, and firm performance. To enable ease of understanding of model-free visual evidence, we average a variable's score across a firm's yearly observations and then take median splits for each of the focal variables to provide low and high measures. In Panel A of Figure 3, we observe that firms with high common ownership have slightly greater average ROA than firms with low common ownership. In Panel B of Figure 3, we observe a positive relationship between institutional common ownership and ROA for firms with low marketing capabilities and firms with high strategic emphasis, but not for firms with high marketing capabilities and low strategic emphasis. Taken together, this model-free evidence indicates that the effects of institutional common ownership are not uniform and instead may be contingent on moderators, such as the firm's marketing capabilities and strategic emphasis. However, the model-free results presented could be driven by empirical issues inherent in this

context, including reverse causality, endogeneity, unobserved heterogeneity, and firm- and industry-level effects. As such, to better analyze the data, we estimate our Arellano-Bond GMM econometric model, the results of which we discuss next.

## **6.2. Parameter Estimates**

In Table 3, we provide the results of the empirical analysis. To begin, we find that an increase in institutional common ownership is associated with an increase in firm performance ( $p < .01$ ).

Consequently, we find that institutional common ownership is related to better individual firm performance, which supports our expectation in H1. As a reminder, we include controls for the firm, industry, and economic setting as well as the percent of institutional ownership in a firm to ensure that our results are not due to an increase in overall institutional ownership. Further, we control for changes in an industry's institutional common ownership, which helps account for institutions' industry-level preferences.

Next, we examine whether the relationship between a firm's extent of institutional common ownership and its performance is moderated by its marketing capabilities and relative strategic emphasis, two measures that describe marketing at the strategic level. As expected, we find a negative interaction between institutional common ownership and marketing capabilities ( $p < .01$ ), indicating that common ownership provides less (more) benefit to more (less) marketing capable firms. Hence, we find support for H2. We also find that an increase in institutional common ownership relates to superior performance in firms whose strategic emphasis is oriented more toward value-creating R&D over value-appropriating advertising activities ( $p < .01$ ), providing support for H3. Combined, these marketing-related findings demonstrate that the relationship between institutional common ownership and firm performance can be impacted by strategic functions of the firm, such as its marketing.

### **6.3. Robustness Tests**

Table 4 provides a summary of motivation, results, and insights gained from variants of our focal analysis conducted as robustness tests. First, given that we develop a new measure of institutional common ownership in this research, we test the robustness of our results to four alternative institutional common ownership measures: (i) common ownership across the entire sample of firms, (ii) the absolute size of the firm to account for differences in investors' attention towards larger firms (e.g., Ferreira & Matos, 2008), and by employing two of He and Huang's (2017) common ownership measures, i.e., (iii) the number of same-industry peers that share any common institutional owner with the firm and (iv) the sum of all common institutional owner percent holdings in the firm itself. We find statistical support for H1 and H2 when using each of these alternative institutional common ownership measures, and statistical support for H3 in the first two models.

Second, we follow a “shoe-leather empirics” strategy, as recommended by Edmans and Holderness (2017) when empirically examining the effects of large stockholders on firm performance. This strategy involves examining whether our results are consistent when only testing subsets of the sample in which a firm's strategic marketing is most likely to moderate the relationship between institutional common owners and firm performance. If we do not find support for our hypotheses in these sub-samples, our estimation and measures could appear biased or have validity issues. Therefore, we split the sample by firms that possess more or less than the median amount of (i) marketing capabilities and (ii) strategic emphasis, and by firms that have their largest block of institutional common investors (iii) classified as professional

investment firms and (iv) considered to employ an active investment strategy.<sup>10</sup> In each of the models employing subsets of our data, we find that the results for each of our hypotheses hold.

Third, we examine whether common ownership has similar effects on different measures of firm performance other than ROA. We employ three alternative performance measures to evaluate the robustness of our results: (i) sales (natural log-scaled), (ii) Tobin's q, and (iii) market value. We find the results of H1 and H2 remain consistent with the focal model when employing each of the three alternative performance measures, but only find partial support for H3.

Finally, to provide evidence that the results are not driven exclusively by the methodology and estimation technique used to test our hypotheses, we test our conceptual framework by employing an alternative control for endogeneity, specifically, a switching regression model (e.g., Cao & Sorescu, 2013). As discussed in detail in Web Appendix A, the switching regression model estimates two regression equations and a criterion function to control for endogeneity of a focal variable by using observed and unobserved factors to assign observations to each regression equation. In this analysis, we estimate two regression equations based on regimes determined by whether the observation is likely to be characterized by a high or low amount of common ownership. We find that the positive effect of institutional common owners on firm performance (H1) and the moderating effect of marketing capabilities on this relationship (H2) are both driven primarily by firms with lower levels of common ownership. In contrast, we find the moderating effect of strategic emphasis (H3) exists for common ownership at both high and low levels. The potential implications of these results to public policy are detailed in the Discussion section.

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<sup>10</sup> The investor classifications are defined by data from Paul Bushee's Wharton School website: <https://accounting-faculty.wharton.upenn.edu/bushee/iivars/#mgrno>

## **7. Additional Analysis on the Role of Firm Size**

An additional insight from our interviews with institutional common owners was that managers of smaller firms were more likely to seek and implement insights and industry best marketing and R&D practices in comparison to their larger competitors. For example, one institutional common owner described how smaller firms often aggressively sought advice on best practices to improve their productivity, including by seeking knowledge about competitor marketing efforts. Further, another institutional common owner described his role as a conduit linking his smaller firms with his other firms to collaboratively work on R&D projects and establish knowledge sharing of best practices.

Prior literature also suggests that institutional investors often hold more clout in smaller firms' decision making due to institutions' punitive financial market repercussions to such firms if they sell their stakes (Brav et al., 2008). In addition, prior literature has found that smaller firms have more limited resources than larger firms (Wang et al., 2015), constraining smaller firms' risk-taking abilities (González-Uribe, 2020) and access to external and internal networks of knowledge (Harmancioglu et al., 2010). Consequently, we provide exploratory analyses for whether firm size acts as an additional moderator of the relationships between institutional common ownership, marketing capabilities, strategic emphasis, and firm performance. Based on the theory and managerial insights noted above, we expect an increase in institutional common ownership to be associated with a greater increase in the performance of smaller over larger firms. In addition, we expect smaller firms to benefit more from common ownership if they have lower marketing capabilities and when they spend relatively more on value-creating R&D expenditures than on value-appropriating advertising expenditures.

We test the potential moderating role of firm size via three methods. First, we add two-way and three-way interactions to Equation (8). Second, we analyze sub-samples of our data,

based on two thresholds of firm size, i.e., the smallest 50% and 75% of firms. Third, we employ switching regressions that examine observations classified into two regimes based on expected small and large firm size, as an alternative method to account for potential endogeneity of firm size. We report the results of these analyses in Web Appendix Table 5. In the models that (i) examine subsets of data based on firm size and (ii) utilize switching regression models to account for endogeneity in firm size, we find that an increase in institutional common ownership is significantly associated with an increase in the performance of smaller but not larger firms. In addition, we find that an increase in institutional common ownership is significantly associated with an increase in the performance for firms with less marketing capabilities and with a strategic emphasis oriented toward value-creating R&D over value-appropriating advertising activities, again, only for smaller and not for larger firms, and these results are consistent across the different estimated models. Hence, we find smaller (larger) firms are more (less) likely to experience the positive benefits provided by institutional common ownership. This suggests that although smaller firms are less likely to have greater institutional common ownership (e.g., Edmans & Holderness, 2017), these firms offer a profitable opportunity for common owners to invest and provide performance-oriented-benefits.

## **8. Discussion**

### **8.1. Managerial and Theoretical Implications**

Institutional common ownership has garnered interest and concern from regulators (e.g., Federal Trade Commission, 2018), the popular press (e.g., Authers, 2016), and academics (e.g., Azar et al., 2018). Despite this interest, to our knowledge, no research has heretofore examined how the nature and effectiveness of certain organizational functions and strategies, such as a firm's marketing strategy, impacts the relationship between common ownership and firm performance. To address this gap, this research builds on the principal-agent relationship between institutional

common owners and firm managers to examine how institutional common owners' incentives and capabilities to influence firm managers are linked to firm performance and how this effect can differ in extent between firms characterized by varying marketing efficiency and allocation between advertising and R&D expenditures.

Empirically, across a number of models and analyses, we find that an increase in institutional common ownership is associated with a positive, rather than a negative, effect on firm performance. Further, we find institutional common owners' effect on performance is stronger for firms with lower marketing capabilities. We also find partial support that the positive relationship between institutional common ownership and firm performance is stronger for firms with a marketing strategic emphasis towards value-creating R&D expenditures rather than value appropriating advertising expenditures. Also, in our additional analysis, we find the empirical relationships between institutional common ownership, marketing capabilities, strategic emphasis, and firm performance are primarily driven by their effects on smaller firms.

Taken together, these results demonstrate institutional common ownership can provide firm performance benefits to firms that are in greater need of common owners' market knowledge, enabling of risk-taking, and ability to reduce barriers to collaboration (i.e., firms with less marketing capabilities, a strategic emphasis on value creation, and that are smaller). Hence, our results demonstrate that institutional common owners can provide positive consequences to their individual firms, which is in contrast to the negative consequences generally noted in the popular press (e.g., Posner et al., 2016). Further, our research provides evidence that regulators should consider how a firm's extant strategic marketing can help determine whether institutional common owners provide positive or negative effects to their individual firms. As such, our results suggest that appropriate regulation of common ownership should not be a one-size-fits all



strategy as not all of common owners' consequences will be negative. Their consequences will, instead, be dependent on the firm's functions and strategies, such as their extant marketing.

## **8.2. Future Research and Limitations**

Future research is needed to expand beyond this first study in marketing to better understand the relationship between institutional common ownership and marketing. For example, the performance effects of common ownership documented in our research could be a function of institutional common owners providing their firms with better knowledge of consumers' wants and needs, potentially increasing consumer welfare, or due to a variety of factors that can potentially harm consumer welfare, such as lower competitive intensity or avoidance of price wars between firms. Thus, the results documented in our research could come at the expense of consumer welfare or, in contrast, be beneficial for consumers by potentially improving the ability of firms to match offerings with consumer wants and needs. Further, less is known about how changes in the concentration of institutional common ownership affects employee compensation, informal and formal communication and projects with competitors, and vertical distribution channels. In addition, future research can examine the effect of institutional common ownership by including more fluid industry classification based on individual annual reports, such as via textual network industry classification (Hoberg et al., 2013).

One follow-up question we explored is whether institutional common owners directly affect firms' marketing efforts. We examined whether an increase in institutional common ownership directly affected advertising intensity, R&D intensity, strategic emphasis, marketing capabilities, and the inclusion of a marketer as a top management team executive (proxied as a top-five most paid employee). However, despite the likelihood of institutional common ownership directly affecting the marketing practices of individual firms, we did not find that institutional common ownership significantly affected changes to these marketing factors. In

contrast, we found that marketing has an indirect effect on the relationship between institutional common ownership and firm performance. Institutional common owners have a lesser ability to help firms that are producing better results with customers (i.e., better marketing capabilities) and spending more on value-appropriating advertising activities than value-creating R&D activities, as such firms are in less need of common owners' knowledge of industry best practice, enabling of risk-taking, and ability to reduce barriers to collaboration.

We also examined the relationship between institutional common owners, a firm's extant marketing, and firm strategic activities like acquisitions, board interlocks, and corporate governance. In exploratory analysis using switching regression models to account for endogenous selection effects, we find the positive effects of institutional common ownership appear to be mostly associated with firms that are not engaging in acquisition behavior, but do not find evidence suggesting that board interlocks or corporate governance changes are related to the performance effects of common ownership or marketing's moderating effect on this relationship. These results, which are summarized in Table 5, suggest that institutional common owners' accumulated market knowledge and ability to reduce barriers of collaboration could serve as an alternative to firms relying on formal acquisitions. In addition, these results demonstrate how institutional common owners can benefit firms with fewer resources, such as those less likely to engage in acquisitions.

Overall, the goal of our research was to introduce the concept of institutional common ownership to the marketing literature and establish that strategic marketing, as measured in this study by the firm's marketing capabilities and strategic emphasis, can affect the relationship between institutional common ownership and firm performance. Further, our research identifies the importance of marketing as a moderator when analyzing the consequences of institutional common ownership on firm performance, which should be useful for policymakers when

assessing the possibility of regulations to address concerns about institutional common ownership. Specifically, firms characterized by less efficient marketing and value creation marketing strategies gain performance benefits from institutional common ownership, potentially creating more intense competition. As such, it is important for marketing researchers to continue to develop our understanding of this relationship with future research on this topic.

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**Table 1. Selected Published Papers on Common Ownership**

Author(s)	Focal Topic:				Summary of Findings
	Competitive/ Anti- Competitive Effects	Corporate Governance	Mergers & Acquisitions	Marketing Capability and Strategic Emphasis	
Azar et al. (2018)	✓				Common ownership is related to higher ticket prices in the airline industry, suggesting anti-competitive effects related to common ownership
Cheung et al. (2020)	✓				Common ownership is positively related to suppliers' operating and market performance, especially for suppliers with greater dependence on buyers.
Connelly et al. (2018)	✓				Firms with common owners are more likely to compete with dissimilar competitive repertoires, and these dissimilarities have positive performance implications
Elhauge (2020)	✓		✓		Common ownership in concentrated markets has anticompetitive effects and hence should be accounted for in M&A regulation decisions
Faccio et al. (2011)	✓				Firms with greater common ownership undertake riskier investments than firms with less common ownership
Gilo et al. (2006)	✓				Common ownership can impact the incentives of firms to engage in tacit collusion
He & Huang (2017)	✓				Common ownership may facilitate explicit forms of product market collaboration
López & Vives (2018)	✓				Common ownership leads to internalization of rivals' profits by firms and increases output for high spillovers on R&D projects between firms
O'Brien & Waehrer (2017)	✓				Common ownership is not found to have a significant effect on airline ticket prices
Posner et al. (2017)	✓				Proposes that anti-trust regulation is needed based on the size of common owners
Edmans et al. (2019)		✓			Common ownership influences corporate governance through voice and investor exit tactics
He et al. (2019)		✓			Common ownership is positively related to institutional owners' voting against management on shareholder-sponsored governance proposals
Lin et al. (2018)		✓			Common ownership is positively related to industry peers' likelihood and frequency of issuing management forecasts
Kang et al. (2018)		✓			Common ownership is positively related to better corporate governance practices
Park et al. (2019)		✓			Common ownership is positively related to voluntary firm disclosures
Fich et al. (2015)			✓		Common ownership is positively related to acquisition deal completion
Harford et al. (2011)			✓		Common ownership has no significant effect on firm acquisition decisions
Matvos & Ostrovsky (2008)			✓		Common ownership has no significant effect on acquisition outcomes and profits
<i>THIS PAPER</i>				✓	<i>Common ownership benefits the performance of firms with lower marketing capabilities and a relative strategic marketing emphasis towards R&amp;D over advertising spending</i>

**Table 2. Operationalizations, Data and Literature Sources, and Descriptive Statistics of Variables**

Variable	Operationalization	Data Source	Literature Source(s)	Mean	St. Dev.
<b>Focal Variables</b>					
Firm Performance (Return on Assets)	(EBITDA) / Total Assets	Compustat	Feng et al., (2015); Srinivasan et al., (2011)	0.01	0.30
Institutional Common Ownership	For a given firm, the average dispersion (concentration) of their institutional investors' holdings across an industry; <i>see Section 5.1.1</i>	Computed based on data from: <ul style="list-style-type: none"> <li>• Compustat</li> <li>• Thompson Reuters 13f Summary Database</li> <li>• Thomson Reuters s34 Institutional Investor Holdings Database</li> </ul>	---	0.97	0.07
Marketing Capabilities	Determined through SFE model which produces inefficiency score; <i>see Section 5.1.3</i>	Compustat	Swaminathan & Moorman, (2009); Newmeyer et al., (2016); Nguyen et al., (2020)	0.98	0.08
Strategic Emphasis	(Advertising – R&D Expenses) / Total Assets	Computed based on data from Compustat	Mizik & Jacobson, (2003); Han et al., (2017)	-0.01	0.10
<b>Control Variables</b>					
Firm Institutional Owner Percentage	Percent of a firm's stock held by institutional investors	Thompson Reuters 13f Summary Database	Bushee, (1998)	0.55	0.27
Industry Institutional Owner Percentage	Average firm institutional owner percentage per industry	Computed based on merged datasets	---	0.58	0.12
Average Industry Common Ownership	Average common ownership across an industry in a year	Computed based on merged datasets	---	0.87	0.07
Competitive Intensity	Herfindahl-Hirschman Index (HHI)	Computed based on data from Compustat	Feng et al., (2015)	0.04	0.06
Financial Leverage	(Debt in Current Liabilities + Total Long-Term Debt) / Total Assets	Compustat	Han et al., (2017)	0.24	0.22
Firm Size	Number of employees, in thousands (natural log scaled)	Compustat	Han et al., (2017)	1.34	2.16
Industry Growth	Average rate of sales growth (annualized) between t – 2 and t	Computed based on data from Compustat	Wang et al., (2015)	0.06	0.08
Industry Dynamism	Absolute difference in the industry growth rate from t – 2 to t – 1 versus from t – 1 to t	Computed based on data from Compustat	Wang et al., (2015)	0.19	0.12
Year	Observation Year	Compustat			

**Table 3. Results of Arellano-Bond GMM Estimation**

<b>Variable</b>	<b>Coefficient</b>	<b>Z-Score</b>	<b>Sig.</b>
Intercept	-2.49***	-2.94	.003
<i>Focal Variables</i>			
Institutional Common Ownership	2.50***	2.93	.003
Marketing Capability	2.82***	2.82	.873
Strategic Emphasis	1.01*	1.85	.065
Institutional Common Ownership x Marketing Capabilities	-2.60***	-2.95	.003
Institutional Common Ownership x Strategic Emphasis	-3.16***	-5.80	.000
<i>Control Variables</i>			
Lagged Performance	0.05***	2.60	.009
Institutional Ownership of Firm	0.31***	10.14	.000
Industry Institutional Ownership	-0.04	-0.43	.668
Industry Institutional Common Ownership	-0.38***	-3.51	.000
Competitive Intensity	0.28***	2.82	.005
Financial Leverage	-0.02	-0.59	.557
Industry Growth	-0.04	-0.81	.418
Industry Dynamism	-0.03	-0.95	.342
Ln(Firm Size)	0.01	1.35	.178
<i>Model Diagnostics</i>			
$\chi^2$	1,137		

NOTES, \*\*\*p<.01; \*\*p<.05; \*p<.1.

**Table 4. Summary of Expected Effects and Results for Robustness Tests**

Robustness Test	Motivation for Robustness Test	Common Owner	Common Owner x Mkt. Cap.	Common Owner x Str. Emp.	Insights from Robustness Test
	<i>Hypothesis (Expected Effect)</i>	<i>H1 (+)</i>	<i>H2 (-)</i>	<i>H3 (-)</i>	
Focal Results	---	✓	✓	✓	Common ownership is positively associated with firm perf.; stronger effect for firms with lower marketing capab. and relative str. emp. oriented to R&D over advertising
<i>Alternative Specifications to Common Ownership Measure</i>					
Entire Sample Common Ownership	Common owners may benefit co-owned firms outside of industry; also, to test sensitivity of this measure to the usage of NAICS-based industry specification	✓	✓	✓	Common ownership provides benefits firms across and within industries
Absolute Size of Firm	Investors' attention and preferences may be focused towards larger firms (e.g., Ferreira & Matos, 2008)	✓	✓	✓	Common ownership provides benefits to firms, even accounting for owners paying more attention to larger firms
Number of Common Owners	Alternative measure of common ownership employed by He & Huang (2017)	✓	✓	X	Effect of common ownership and the moderating effect of marketing capab. are robust to these specifications of common ownership; Str. Emp. potentially insignificant due to the measure no longer being market-weighted, which can dilute common owners' influence in firms
Sum of Common Owners Holding in Firm	Alternative measure of common ownership employed by He & Huang (2017)	✓	✓	X	
<i>Subsets of Data</i>					
Low Marketing Capabilities (below median)	Common ownership is expected to benefit firm perf. for firms with lower marketing capabilities	✓	✓	✓	Common ownership provides greater benefits to firms with low marketing cap.; results also hold when only examining firms with high marketing capab.
Low Strategic Emphasis (below median)	Common ownership is expected to benefit firm perf. for firms with lower strategic emphasis	✓	✓	✓	Common ownership provides greater benefits to firms that spend more on R&D than advertising (low str. emp. emphasis); Results also hold when only examining firms with high marketing capab.
Investment Firm	Professional institutional common investment advisors provide unique benefits for firm perf.	✓	✓	✓	Results hold when investigating solely the firms that have largest block of institutional common investors classified as (i) investment advisors and (ii) active investors
Active Investment Strategies	Active investor institutional common owners provide unique benefits for firm perf. (He & Huang, 2017)	✓	✓	✓	
<i>Alternative Measures of Performance</i>					
Sales	Examine whether common ownership affects other forms of firm perf.	✓	✓	X	Str. Emp. does not impact common own.'s effect on firm sales
Tobin's q		✓	✓	✓	Results hold when examining market value perf.
Market value		✓	✓	X	Investors may negatively value a strategy that emphasizes less R&D spending to develop breakthrough R&D-based innovations (e.g., Wies & Moorman, 2015)
<i>Alternative Model Specification to Account for Endogeneity</i>					
Low Common Ownership (below median)	Switching regression that controls for observed and unobserved factors driving common ownership	✓	✓	✓	Greater common ownership provides benefits for firms with less common ownership, especially for firms with lower marketing capab. and strategically oriented towards value creation (R&D)
High Common Ownership (above median)		X	X	✓	

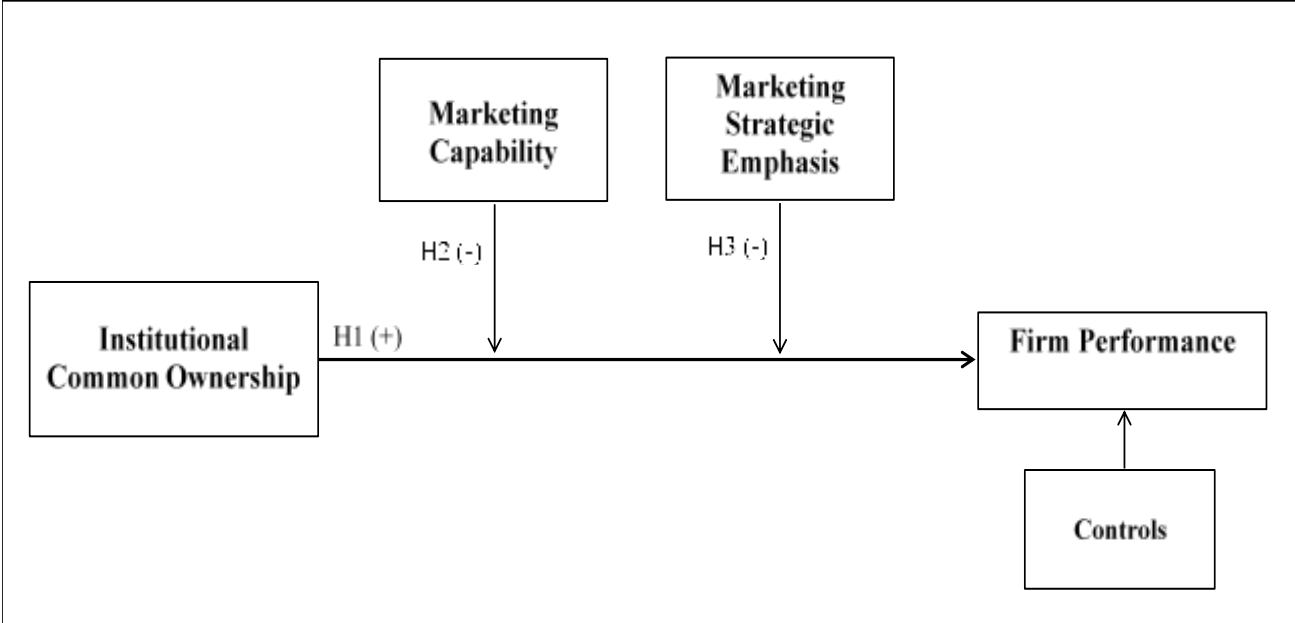
+ = a positive hypothesized relationship; - = a negative hypothesized relationship; ✓ =  $p \leq 0.1$ ; X =  $p > 0.1$ . Web Appendix Table 4 provides each model's coefficients.

**Table 5. Summary of Additional Analyses**

<i>Focus of Analysis</i>	<b>Motivation</b>	<b>Empirical Test Method</b>	<b>Result</b>	<b>Insight(s)</b>
<i>Firm Size</i>				
Common Owner x Firm Size	Common owners' have more clout to influence small firms, which should increase likelihood of use of common owner's recommendations	Two-way interactions, switching regressions, and subsets of data based on firm size (smallest 50% and 75% of firms)	P	1) Smaller (larger) firms are more (less) likely to experience the positive benefits provided by institutional common ownership  2) Smaller firms offer a profitable opportunity for common owners to invest and provide performance-oriented-benefits
Common Owner x Mkt. Cap. x Firm Size	The relative advantage of common ownership to firms with lower marketing capabilities will primarily occur in smaller firms	Three-way interactions, switching regressions, and subsets of data based on firm size (smallest 50% and 75% of firms)	✓	
Common Owner x Str. Emp. x Firm Size	The relative advantage of common ownership to firms with a relative strategic emphasis on value creation (R&D) will primarily occur in smaller firms		✓	
<i>Direct Effect of Common Ownership</i>				
Ad. Intensity	Common owners may directly affect a firm's marketing efforts and strategies		X	No direct effect on firm practice documented
R&D Intensity			X	
Mkt. Cap.			X	
Str. Emp.			X	
Marketer as a top 5 paid employee			X	
<i>Mediating Effect of Common Ownership</i>				
Acquisitions	Common ownership can help identify acquisition targets or negatively affect the need to engage in acquisitions (e.g., Matvos & Ostrovsky 2008)	Switching regression models for each variable (yes/no)	✓	Institutional common owners' accumulated market knowledge and ability to reduce barriers of collaboration could serve as an alternative to formal acquisitions
Board Interlocks	Common owned firms can help increase likelihood of board members on co-owned firms, which facilitates knowledge transfer and ability to collaborate (He & Huang, 2017)		X	No mediated effect on board interlocks or corporate governance documented
Corporate Governance	Common ownership improves corporate governance structure, which should increase firm performance (He et al., 2019; Kang et al., 2018)		X	

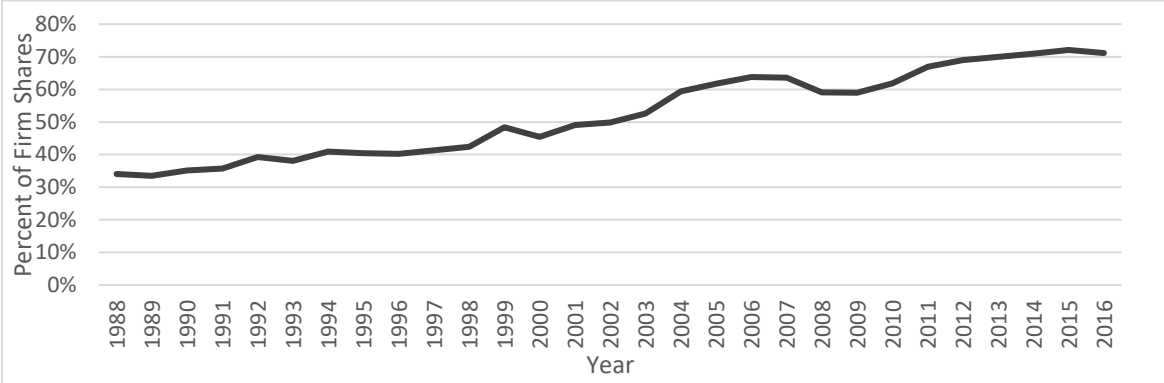
✓ =  $p \leq 0.1$ ; X =  $p > 0.1$ ; P = partial support (i.e., significant in some models).

**Figure 1. Conceptual Framework**



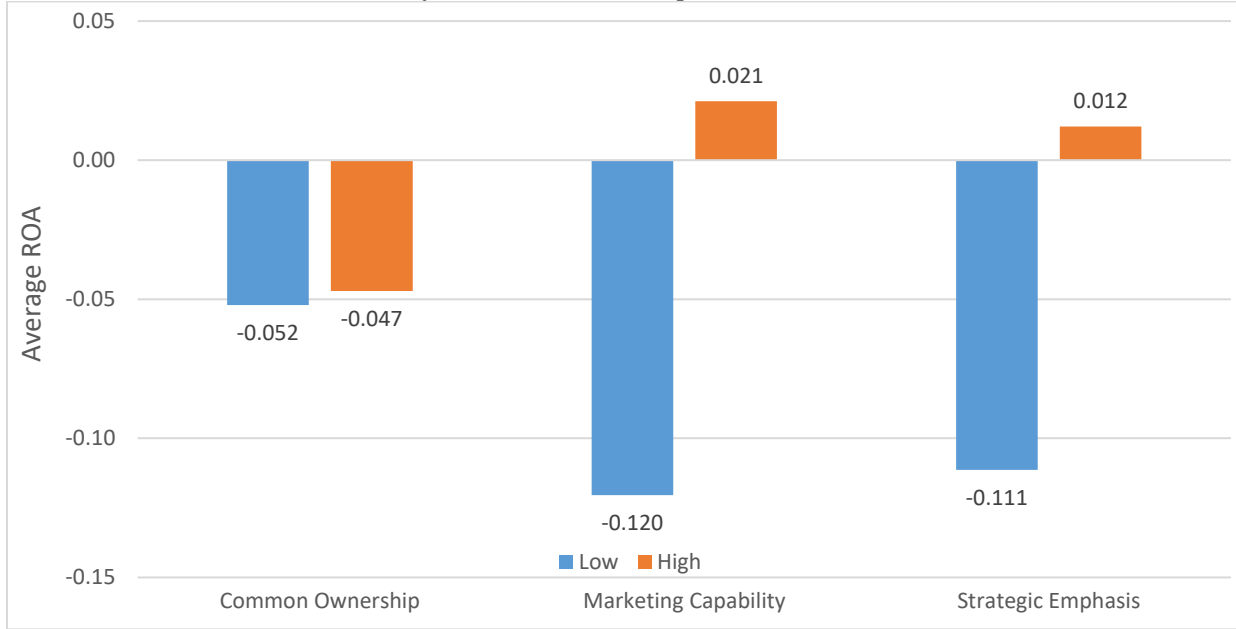


**Figure 2. Total Ownership of Firm Stocks by Institutional Investors**

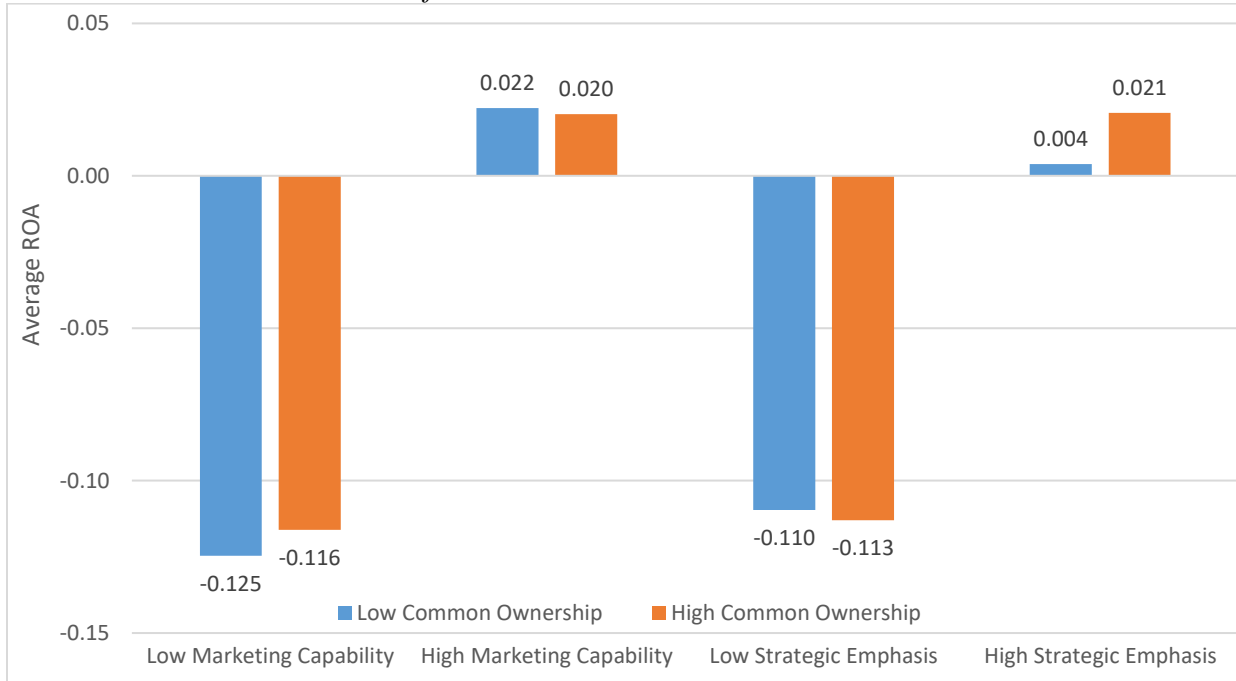


**Figure 3. Model-Free Evidence**

*Panel A. Model-Free Evidence of Direct Relationships*



*Panel B. Model-Free Evidence of Interactions*



Note: The average ROA provided is the average of a variable’s score across all a firm’s yearly observations for each median split of high and low measures of the focal variables.

**Web Appendix for “What if Your Owners Also Own Other Firms in Your Industry? The Relationship between Institutional Common Ownership, Marketing, and Firm Performance”**

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## Web Appendix A. Switching Regression

In line with previous research (e.g., Cao and Sorescu 2013), we employ a switching regression model as an alternative method to account for potential observable and unobservable endogeneity (see Table 3). A switching regression model estimates two regression equations and a criterion function ( $I_{it}$ ) that determines the regime of an observation. In our context, the criterion function describes whether the firm has relatively high or low institutional common ownership.

$$I_{it} = 0 \quad \text{if } \gamma Z_{it} + u_i \leq 0$$

$$I_{it} = 1 \quad \text{if } \gamma Z_{it} + u_i > 0$$

$$\text{Regime 1: } ROA_{1it} = \beta_1 X_{1it} + \epsilon_{1it} \quad \text{if } I_{it} = 0$$

$$\text{Regime 2: } ROA_{2it} = \beta_2 X_{2it} + \epsilon_{2it} \quad \text{if } I_{it} = 1$$

$I_{it}$  is formed utilizing both observable and unobservable factors.  $\gamma$  is a vector of parameters capturing the relationship between observed variables and regime. The observable variables used to estimate the criterion function ( $X$ ) are the number of firms in the industry, institutional ownership in the industry, the market value of the firm, the number of common shares outstanding, financial leverage, and firm size.  $u_i$  is an error term that captures unobservable factors beyond these that might influence an observation's regime.

Two regression models are determined based upon the criterion function, which measures whether an observation has higher or lower than median institutional common ownership measure.  $\beta_1$  and  $\beta_2$  are vectors of parameters capturing the relationship between observable factors for each observation in each regime with the firm's return-on-assets. The included variables ( $Z$ ) match our focal and control variables with the exception of the observation year variables.

We find that the positive effect of institutional common owners on firm performance (H1) and the moderating effect of marketing capability on this relationship (H2) are both driven primarily by firms with lower levels of common ownership (Regime 1). In contrast, we find the moderating effect of strategic emphasis (H3) exists for both low and high common owners.

## Web Appendix Table 1. Correlation Matrix

Correlation;  
(p-value)

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
ROA (1)	1											
Common Own (2)	.03 (.03)	1										
Strategic Emphasis (3)	.13 (.00)	.00 (.74)	1									
Marketing Capability (4)	.21 (.00)	.05 (.00)	.08 (.00)	1								
Competitive Intensity (5)	-.04 (.01)	-.01 (.46)	-.02 (.23)	.02 (.19)	1							
Industry Common Own (6)	-.04 (.01)	-.01 (.46)	-.02 (.23)	-.00 (.98)	.42 (.00)	1						
Fin. Leverage (7)	-.17 (.00)	-.00 (.81)	.17 (.00)	-.06 (.00)	.01 (.29)	-.02 (.10)	1					
Industry Inst. Own (8)	.01 (.72)	.03 (.05)	-.02 (.06)	.03 (.01)	-.02 (.14)	-.10 (.00)	.07 (.10)	1				
Firm Size (9)	.22 (.00)	.15 (.00)	.27 (.00)	.21 (.00)	.02 (.07)	-.03 (.06)	.15 (.00)	.15 (.00)	1			
Firm Inst. Own (10)	.17 (.00)	.16 (.00)	.09 (.00)	.17 (.00)	.01 (.57)	-.08 (.00)	.03 (.01)	.46 (.00)	.51 (.00)	1		
Industry Growth (11)	.00 (.78)	.02 (.06)	.04 (.00)	.02 (.16)	.02 (.12)	.15 (.00)	-.06 (.00)	-.27 (.00)	-.02 (.19)	-.14 (.00)	1	
Industry Dynamism (12)	-.01 (.67)	.02 (.12)	.02 (.11)	.01 (.53)	-.02 (.11)	.14 (.00)	-.04 (.00)	-.09 (.00)	.02 (.15)	-.06 (.00)	.48 (.00)	1

**Web Appendix Table 2. Firms with Greatest Institutional Common Ownership Rank-Ordered**

*Note: Institutional Common Ownership scores are averaged across all observations of the firm in the dataset*

Rank	Company Name	Ticker Symbol	Rank	Company Name	Ticker Symbol
1	EMPIRE RESORTS INC	NYNY	32	INSIGNIA SYSTEMS INC	ISIG
2	SANTA BARBARA RESTAURANT GRP	SBRG	33	DESIGN WITHIN REACH INC	DWRI
3	ALLIN CORP	ALLN	34	U S VISION INC	USVI
4	H & H OIL TOOL CO	HHOT	35	QMED INC	QMED
5	AUDIO KING CORP	AUDK	36	TEXAS ROADHOUSE INC	TXRH
6	STEN CORP	STEN	37	LADY LUCK GAMING CORP	LUCK
7	POLLO TROPICAL INC	POYO	38	SCIENTIFIC TECHNOLOGIES INC	STIZ
8	DAKOTAH INC	DKTH	39	INSIGHT ENTERPRISES INC	NSIT
9	INITIO INC	INTO	40	MONSANTO CO	MON
10	FLANIGANS ENTERPRISES INC	BDL	41	ADSTAR INC	ADST
11	GOOD TIMES RESTAURANTS INC	GTIM	42	CALAVO GROWERS INC	CVGW
12	OCEAN OPTIQUE DISTRIBUTORS	OPTQ	43	UNICOMP INC	UCMP
13	INTERCIM CORP	ITCM	44	UNITED NATURAL FOODS INC	UNFI
14	NYER MEDICAL GROUP INC	NYER	45	AMERICAN MEDICAL TECHNOL INC	ADLI
15	COFFEE PEOPLE INC	MOKA	46	INVENTURE FOODS INC	SNAK
16	CLEAN ENERGY FUELS CORP	CLNE	47	GALLERY OF HISTORY INC	HIST
17	EINSTEIN NOAH RESTAURANT GRP	BAGL	48	MEDIA SCIENCES INTL INC	MSII
18	CALLOWAY'S NURSERY INC	CLWY	49	CENTRAL TRACTOR FARM & CTRY	CTFC
19	BACK YARD BURGERS INC	BYBI	50	HOLIDAY RV SUPERSTORES INC	RVEE
20	ASA INTERNATIONAL LTD	ASAL	51	NYFIX INC	NYFX
21	SHOLOGDE INC	LODG	52	MAKEMUSIC INC	MMUS
22	QUALITY DINING INC	QDIN	53	NATROL INC	NTOL
23	PAREXEL INTERNATIONAL CORP	PRXL	54	GUITAR CENTER INC	GTRC
24	BOOMTOWN INC	BMTN	55	CASINO MAGIC CORP	CMAG
25	INTRAWARE INC	ITRA	56	POOL CORP	POOL
26	CAMPO ELECTRS APPLIAN & COMP	CMPO	57	WESTERBEKE CORP	WTBK
27	FEIHE INTERNATIONAL INC	ADY	58	ZUMIEZ INC	ZUMZ
28	BUCA INC	BUCA	59	CHECKFREE CORP	CKFR
29	NETSUITE INC	N	60	WALMART INC	WMT
30	BULL RUN CORP	BULL	61	FIRST YEARS INC	KIDD
31	AMN HEALTHCARE SERVICES INC	AMN	62	LANDRYS RESTAURANTS INC	LNRY

Rank	Company Name	Ticker Symbol	Rank	Company Name	Ticker Symbol
63	MESA LABORATORIES INC	MLAB	96	UNIFI INC	UFI
64	ROADHOUSE GRILL INC	GRLL	97	GTECH HOLDINGS CORP	GTK
65	NASH FINCH CO	NAFC	98	ESCALON MEDICAL CORP	ESMC
66	RITE AID CORP	RAD	99	EATERIES INC	EATS
67	INTRICON CORP	IIN	100	SYNERGX SYSTEMS INC	SYNX
68	MSC INDUSTRIAL DIRECT -CL A	MSM	101	M/I HOMES INC	MHO
69	NORDSTROM INC	JWN	102	KOS PHARMACEUTICALS INC	KOSP
70	AVADO BRANDS INC	AVDO	103	PILGRIM'S PRIDE CORP	PPC
71	J & J SNACK FOODS CORP	JJSF	104	VIASAT INC	VSAT
72	MACY'S INC	M	105	STARBUCKS CORP	SBUX
73	DECKERS OUTDOOR CORP	DECK	106	POSSIS MEDICAL INC	POSS
74	MANOR CARE INC	HCR	107	ASPECT MEDICAL SYSTEMS INC	ASPM
75	GSI COMMERCE INC	GSIC	108	LANNETT CO INC	LCI
76	AKSYS LTD	AKSY	109	MANAGEMENT SCIENCE AMERICA	MSAI
77	LANDEC CORP	LNDC	110	STAR BUFFET INC	STRZ
78	CATASYS INC	CATS	111	COMPUTRAC INC	LLB
79	DIANON SYSTEMS INC	DIAN	112	TALEO CORP	TLEO
80	APPLIANCE RECYCLING CTR AMER	ARCI	113	SPEECHWORKS INTL INC	SPWX
81	BIOMEDICAL DYNAMICS CORP	BMDC	114	NATURE VISION INC	NRVN
82	CLICK COMMERCE INC	CKCM	115	OMNI FILMS INTL INC	OFII
83	CONSILIUM INC	CSIM	116	DEALERTRACK TECHNOLOGIES INC	TRAK
84	CHOICE HOTELS INTL INC	CHH	117	MEDICAL ACTION INDUSTRIES	MDCI
85	SIRIUS XM HOLDINGS INC	SIRI	118	AMERISTAR CASINOS INC	ASCA
86	AT&T INC	T	119	RADIANT SYSTEMS INC	RADS
87	TENFOLD CORP	TENF	120	FAIR ISAAC CORP	FICO
88	VALID LOGIC SYSTEMS INC	VLID	121	DEAN FOODS CO	DF
89	BRAVO BRIO RESTAURANT GP INC	BBRG	122	VERTICAL COMMUNICATIONS INC	VRCC
90	STEELCLOUD INC	SCLD	123	MEDASSETS INC	MDAS
91	WRIGLEY (WM) JR CO	WWY	124	COMPUCHEM CORP	CCEM
92	MICHAELS COS INC	MIK	125	BIG 5 SPORTING GOODS CORP	BGFV
93	REYNOLDS AMERICAN INC	RAI	126	NU HORIZONS ELECTRONICS CORP	NUHC
94	IMMUNOMEDICS INC	IMMU	127	CCUR HOLDINGS INC	CCUR
95	CONOCOPHILLIPS	COP	128	SKIPPER'S INC	SKIP

Rank	Company Name	Ticker Symbol	Rank	Company Name	Ticker Symbol
129	VENTREX LABORATORIES INC	VTRX	161	ENTRUST INC	ENTU
130	DENDRITE INTERNATIONAL INC	DRTE	162	NABISCO HOLDINGS CORP -CL A	ANA
131	CLINICAL DATA INC	CLDA	163	HUFFMAN KOOS INC	HUFK
132	PACKETEER INC	PKTR	164	SUNRISE SENIOR LIVING INC	SRZ
133	PEDIATRIC SVCS AMERICA INC	PSAI	165	ADV NEUROMODULATION SYS INC	ANSI
134	ONYX SOFTWARE CORP	ONXS	166	HARRIS INTERACTIVE INC	HPOL
135	APPLIX INC	APLX	167	BRINKER INTL INC	EAT
136	RIGHTNOW TECHNOLOGIES INC	RNOW	168	COVER-ALL TECHNOLOGIES INC	COVR
137	BALTEK CORP	BTEK	169	KAISER ALUMINUM CORP	KALU
138	ENCORE MEDICAL CORP	ENMC	170	ENZO BIOCHEM INC	ENZ
139	HP INC	HPQ	171	BRITE VOICE SYSTEMS INC	BVSI
140	ICAD INC	ICAD	172	WEST MARINE INC	WMAR
141	ROBINSON NUGENT INC	RNIC	173	EDUCATIONAL DEVELOPMENT CORP	EDUC
142	CORIO INC	CRIO	174	OPTICAL CABLE CORP	OCC
143	UNO RESTAURANT CORP	UNO	175	DILLARDS INC -CL A	DDS
144	NANOPHASE TECHNOLOGIES CORP	NANX	176	MEASUREMENT SPECIALTIES INC	MEAS
145	ASBURY AUTOMOTIVE GROUP INC	ABG	177	PORTEC RAIL PRODUCTS INC	PRPX
146	AROTECH CORP	ARTX	178	GRIFFON CORP	GFF
147	LASERCARD CORP	LCRD	179	ATS MEDICAL INC	ATSI
148	ACCO BRANDS CORP	ACCO	180	LINCOLN ELECTRIC HLDGS INC	LECO
149	SHUTTERFLY INC	SFLY	181	HAWK CORP	HWK
150	YONGYE INTERNATIONAL INC	YONG	182	SOCKET MOBILE INC	SCKT
151	GRAINGER (W W) INC	GWW	183	NEUSTAR INC	NSR
152	MANNATECH INC	MTEX	184	ROSS SYSTEMS INC	ROSS
153	INTL BUSINESS MACHINES CORP	IBM	185	SRTI BLOCKCHAIN GEN INC	SRTI
154	CA INC	CA	186	PAPA JOHNS INTERNATIONAL INC	PZZA
155	GANTOS INC	GTOS	187	SPIRE CORP	SPIR
156	IMAGE SENSING SYSTEMS INC	ISNS	188	GENESCO INC	GCO
157	WYETH	WYE	189	DESTINATION MATERNITY CORP	DEST
158	DOLBY LABORATORIES INC	DLB	190	BIOGEN INC	BIIB
159	SPSS INC	SPSS	191	ACTIVISION BLIZZARD INC	ATVI
160	ELECTRO-SENSORS INC	ELSE	192	E-Z-EM INC	EZEM



Rank	Company Name	Ticker Symbol	Rank	Company Name	Ticker Symbol
193	GENENTECH INC	DNA	227	ACUITY BRANDS INC	AYI
194	CYBEX INTERNATIONAL INC	CYBI	228	CONFERTECH INTERNATIONAL INC	CFER
195	RELIV INTERNATIONAL INC	RELV	229	NESS TECHNOLOGIES INC	NSTC
196	TYSON FOODS INC -CL A	TSN	230	CVS HEALTH CORP	CVS
197	ZALE CORP	ZLC	231	THERMO FISHER SCIENTIFIC INC	TMO
198	FORT JAMES CORP	FJ	232	CARDIODYNAMICS INTL CORP	CDIC
199	BRUKER CORP	BRKR	233	MENTOR GRAPHICS CORP	MENT
200	HEALTH GRADES INC	HGRD	234	SILICONIX INC	SILI
201	ADOBE INC	ADBE	235	SUBARU OF AMERICA	SBRU
202	NEUROMETRIX INC	NURO	236	CAMBEX CORP	CBEX
203	ALEXANDER'S INC	ALX	237	TEXAS INSTRUMENTS INC	TXN
204	LIQUI-BOX CORP	LIQB	238	NATIONAL INSTRUMENTS CORP	NATI
205	NAVISTAR INTERNATIONAL CORP	NAV	239	TESLA INC	TSLA
206	INTUIT INC	INTU	240	NYNEX CORP	NYN
207	SILICON LABORATORIES INC	SLAB	241	DAMON BIOTECH INC	DBIO
208	ADVANCED LOGIC RESEARCH INC	AALR	242	II-VI INC	IIVI
209	ZIX CORP	ZIXI	243	JUNIPER NETWORKS INC	JNPR
210	HANESBRANDS INC	HBI	244	NATIONAL RECORD MART INC	NRMI
211	CONNECTINC.COM CO	CNKT	245	KENEXA CORP	KNXA
212	STARWOOD HOTELS&RESORTS WRLD	HOT	246	MWI VETERINARY SUPPLY	MWIV
213	QUANTUM CORP	QTM	247	MAXTOR CORP	MXO
214	PENNEY (J C) CO	JCP	248	BIOWHITTAKER INC	BWI
215	SONIC AUTOMOTIVE INC -CL A	SAH	249	WIRELESS TELECOM GROUP INC	WTT
216	CHIPOTLE MEXICAN GRILL INC	CMG	250	PHOTON DYNAMICS INC	PHTN
217	GENERAL MILLS INC	GIS	251	O'REILLY AUTOMOTIVE INC	ORLY
218	SL INDUSTRIES INC	SLI	252	TRACTOR SUPPLY CO	TSCO
219	DARDEN RESTAURANTS INC	DRI	253	HORMEL FOODS CORP	HRL
220	CHICOS FAS INC	CHS	254	SCS/COMPUTE INC	SCOM
221	TIME WARNER INC	TWX	255	CISCO SYSTEMS INC	CSCO
222	CONAGRA BRANDS INC	CAG	256	MARINEMAX INC	HZO
223	CROWN ANDERSEN INC	CRAN	257	US AUTO PARTS NETWORK INC	PRTS
224	CABOT MEDICAL CORP	CBOT	258	SUPERVALU INC	SVU
225	BIO-TECHNE CORP	TECH	259	BOOLE & BABBAGE INC	BOOL
226	INTERSPEC INC	ISPC	260	URBAN OUTFITTERS INC	URBN

Rank	Company Name	Ticker Symbol	Rank	Company Name	Ticker Symbol
261	ANDERSONS INC	ANDE	296	QUEST SOFTWARE INC	QSFT
262	RITA MEDICAL SYSTEMS INC	RITA	297	POKERTEK INC	PTEK
263	PANTRY INC	PTRY	298	MICROS SYSTEMS INC	MCRS
264	RESOUND CORP	RSND	299	O'CHARLEY'S INC	CHUX
265	SEMTECH CORP	SMTC	300	DIEBOLD NIXDORF INC	DBD
266	AUTOZONE INC	AZO	301	OFFICEMAX INC	OMX
267	EBIX INC	EBIX	302	METROPOLITAN HLTH NTWRKS INC	MDF
268	TUPPERWARE BRANDS CORP	TUP	303	INTEL CORP	INTC
269	POLARIS INDUSTRIES INC	PII	304	INVACARE CORP	IVC
270	NATIONAL EDUCATION CORP	NEC	305	SIMPSON MANUFACTURING INC	SSD
271	ABERCROMBIE & FITCH -CL A	ANF	306	VITRIA TECHNOLOGY INC	VITR
272	BARNES & NOBLE INC	BKS	307	EZCORP INC -CL A	EZPW
273	FEATHERLITE INC	FTHR	308	ZHONGPIN INC	HOGS
274	LIFECORE BIOMEDICAL INC	LCBM	309	HEALTHSTREAM INC	HSTM
275	MERCK & CO	MRK	310	DOVER CORP	DOV
276	VARIAN INC	VARI	311	ARROW INTERNATIONAL INC	ARRO
277	NVIDIA CORP	NVDA	312	OPSWARE INC	OPSW
278	CHART INDUSTRIES INC	GTLS	313	JONES SODA CO	JSDA
279	NEWELL BRANDS INC	NWL	314	CUNO INC	CUNO
280	NU SKIN ENTERPRISES -CL A	NUS	315	RAMTRON INTERNATIONAL CORP	RMTR
281	KOHL'S CORP	KSS	316	K-TRON INTERNATIONAL INC	KTII
282	APOGENT TECHNOLOGIES INC	AOT	317	MCCORMICK & CO INC	MKC
283	CALIPER LIFE SCIENCES INC	CALP	318	LAUDER (ESTEE) COS INC -CL A	EL
284	CSK AUTO CORP	CAO	319	EXACT SCIENCES CORP	EXAS
285	TALBOTS INC	TLB	320	EDELBROCK CORP	EDEL
286	G-III APPAREL GROUP LTD	GIII	321	PHARMACEUTICAL PROD DEV INC	PPDI
287	TIMBERLINE SOFTWARE CORP	TMBS	322	UNITED ONLINE INC	UNTD
288	NACCO INDUSTRIES -CL A	NC	323	AUTOMATIC DATA PROCESSING	ADP
289	CALGENE INC	CGNE	324	PEPSICO INC	PEP
290	99 CENTS ONLY STORES	NDN	325	LUMINEX CORP	LMNX
291	FTI CONSULTING INC	FCN	326	TITAN MACHINERY INC	TITN
292	PCTEL INC	PCTI	327	24/7 REAL MEDIA INC	TFSM
293	DICKS SPORTING GOODS INC	DKS	328	ABBOTT LABORATORIES	ABT
294	HEADWATERS INC	HW	329	RATIONAL SOFTWARE CORP	RATL
295	SHOE CARNIVAL INC	SCVL	330	EXCITE INC	XCIT

Rank	Company Name	Ticker Symbol	Rank	Company Name	Ticker Symbol
331	HARMONIC INC	HLIT	364	NCR CORP	NCR
332	HAIN CELESTIAL GROUP INC	HAIN	365	BALLY ENTERTAINMENT CORP	BLY
333	PFIZER INC	PFE	366	TELECOMMUNICATION SYS INC	TSYS
334	SONIC CORP	SONC	367	MEDIMMUNE INC	MEDI
335	WOLOHAN LUMBER CO	WLHN	368	ALTRA INDUSTRIAL MOTION CORP	AIMC
336	NIKE INC	NKE	369	APPLE INC	AAPL
337	TELEBIT CORP	TBIT	370	KIRSCHNER MEDICAL CORP	KMDC
338	MGP INGREDIENTS INC	MGPI	371	CHATTEM INC	CHTT
339	CHRISTOPHER & BANKS CORP	CBK	372	OFFICE DEPOT INC	ODP
340	OVERLAND STORAGE INC	OVRL	373	GOLDN VALLEY MICROWAV	GVF
341	SIEBEL SYSTEMS INC	SEBL	374	DIAMOND MULTIMEDIA SYS INC	DIMD
342	MICROSOFT CORP	MSFT	375	TEMPUR SEALY INTL INC	TPX
343	INFORMATION RESOURCES INC	IRIC	376	BORLAND SOFTWARE CORP	BORL
344	VERIFONE SYSTEMS INC	PAY	377	PENNZOIL-QUAKER STATE CO	PZL
345	JLG INDUSTRIES INC	JLG	378	ILLINOIS TOOL WORKS	ITW
346	EVANS INC	EVAN	379	ONESOURCE INFORMATION SVCS	ONES
347	ASSISTED LIVING CONCEPTS INC	ALC	380	ELANTEC SEMICONDUCTOR INC	ELNT
348	M & F WORLDWIDE CORP	MFW	381	EMC CORP/MA	EMC
349	IMMERSION CORP	IMMR	382	MICRODYNE CORP	MCDY
350	SIRONA DENTAL SYSTEMS INC	SIRO	383	ADVANCED DIGITAL INFO CORP	ADIC
351	HARLEY-DAVIDSON INC	HOG	384	GAP INC	GPS
352	ORTHOFIX MEDICAL INC	OFIX	385	INTERNET SECURITY SYSTEMS	ISSX
353	GENERAL MOTORS CO	GM	386	VISTEON CORP	VC
354	ITERIS INC	ITI	387	RAINBOW TECHNOLOGIES INC	RNBO
355	ALIGN TECHNOLOGY INC	ALGN	388	NANOMETRICS INC	NANO
356	NORDSON CORP	NDSN	389	COOPER TIRE & RUBBER CO	CTB
357	MEDIWARE INFORMATION SYSTEMS	MEDW	390	INTERTAN INC	ITN
358	MILLENNIUM PHARMACEUTICALS	MLNM	391	REEBOK INTERNATIONAL LTD	RBK
359	RESPIRONICS INC	RESP	392	AMERICAN MEDICAL SYSTM HLDS	AMMD
360	C-COR INC	CCBL	393	COLE NATIONAL CORP	CNJ
361	DEI HOLDINGS INC	DEIX	394	BEST BUY CO INC	BBY
362	ANALOGIC CORP	ALOG	395	AMERICAN VANGUARD CORP	AVD
363	AKAMAI TECHNOLOGIES INC	AKAM	396	NATIONAL CINEMEDIA INC	NCMI

Rank	Company Name	Ticker Symbol	Rank	Company Name	Ticker Symbol
397	COMPX INTERNATIONAL INC	CIX	429	CAVIUM INC	CAVM
398	IDEXX LABS INC	IDXX	430	HACH CO	HACH
399	PRESSTEK INC	PRST	431	BOSTON ACOUSTICS INC	BOSA
400	CHURCH & DWIGHT INC	CHD	432	FOOT LOCKER INC	FL
401	SIZZLER RESTAURANTS INTL INC	SIZZ	433	FIRSTCASH INC	FCFS
402	EPICOR SOFTWARE CORP -OLD	EPIC	434	TUESDAY MORNING CORP	TUES
403	SONO-TEK CORP	SOTK	435	CRYOLIFE INC	CRY
404	TENNANT CO	TNC	436	GEHL CO	GEHL
405	SMUCKER (JM) CO	SJM	437	CASH AMERICA INTL INC	CSH
406	SPECTRALINK CORP	SLNK	438	VOCUS INC	VOCS
407	SUPPORT.COM INC	SPRT	439	MEDICIS PHARMACEUT CP -CL A	MRX
408	AMISTAR CORP	AMTA	440	JACUZZI BRANDS INC	JJZ
409	BRIGGS & STRATTON	BGG	441	CINCINNATI MICROWAVE INC	CNMW
410	TRIMBLE INC	TRMB	442	FISCHER IMAGING CORP	FIMG
411	LONGS DRUG STORES CORP	LDG	443	COLFAX CORP	CFX
412	SHERWIN-WILLIAMS CO	SHW	444	RELM COMMUNICATIONS	RGCY
413	IGO CORP	IGOC	445	FINISAR CORP	FNSR
414	BED BATH & BEYOND INC	BBBY	446	VONAGE HOLDINGS CORP	VG
415	KROGER CO	KR	447	TECNOL MEDICAL PRODUCTS INC	TCNL
416	CECO ENVIRONMENTAL CORP	CECE	448	SMITH INTERNATIONAL INC	SII
417	AGILYSYS INC	AGYS	449	TRANS WORLD CORP/NV	TWOC
418	TIBCO SOFTWARE INC	TIBX	450	GRAPHIC SCANNING CORP	GSCC
419	CASCADE MICROTECH INC	CSCD	451	ALMOST FAMILY INC	AFAM
420	QUIDEL CORP	QDEL	452	COSINE COMMUNICATIONS INC	COSN
421	NOVELL INC	NOVL	453	PREFORMED LINE PRODUCTS CO	PLPC
422	SCICLONE PHARMACEUTICALS INC	SCLN	454	WARNER-LAMBERT CO	WLA
423	ASTEC INDUSTRIES INC	ASTE	455	SUN COMMUNITIES INC	SUI
424	CLOROX CO/DE	CLX	456	SNAP-ON INC	SNA
425	NET2PHONE INC	NTOP	457	CADENCE PHARMACEUTICALS INC	CADX
426	AVON PRODUCTS	AVP	458	SONIC FOUNDRY INC	SOFO
427	BEAM INC	BEAM	459	MANPOWERGROUP	MAN
428	SENSIENT TECHNOLOGIES CORP	SXT	460	TJX COMPANIES INC	TJX

Rank	Company Name	Ticker Symbol	Rank	Company Name	Ticker Symbol
461	RAE SYSTEMS INC	RAE	493	FRISCH'S RESTAURANTS INC	FRS
462	AUTONATION INC	AN	494	NETSCOUT SYSTEMS INC	NTCT
463	ASK JEEVES INC	ASKJ	495	BOYD GAMING CORP	BYD
464	HAVERTY FURNITURE	HVT	496	X-RITE INC	XRIT
465	LOWE'S COMPANIES INC	LOW	497	HEMAGEN DIAGNOSTICS INC	HMGN
466	PMFG INC	PMFG	498	SANGSTAT MEDICAL CORP	SANG
467	AMEDISYS INC	AMED	499	SPARTANNASH CO	SPTN
468	ADE CORP/MA	ADEX	500	SCHERING-PLOUGH	SGP
469	BROOKTREE CORP	BTRE	501	COLLECTIVE BRANDS INC	PSS
470	PPG INDUSTRIES INC	PPG	502	WENDY'S CO	WEN
471	MALLINCKRODT INC	MKG	503	EMCEE BROADCAST PRODUCTS INC	ECIN
472	STANLEY BLACK & DECKER INC	SWK	504	OAKLEY INC	OO
473	PROGRESS SOFTWARE CORP	PRGS	505	QUIXOTE CORP	QUIX
474	DENNYS CORP	DENN	506	APOGEE ENTERPRISES INC	APOG
475	MUELLER WATER PRODUCTS INC	MWA	507	AVANEX CORP	AVNX
476	DOT HILL SYSTEMS CORP	HILL	508	LIONBRIDGE TECHNOLOGIES INC	LIOX
477	VERTEX PHARMACEUTICALS INC	VRTX	509	MICRONETICS INC	NOIZ
478	LENNOX INTERNATIONAL INC	LII	510	TARGET CORP	TGT
479	TAYLOR DEVICES INC	TAYD	511	PLATO LEARNING INC	TUTR
480	FUTURE NOW INC	FNOW	512	SYMANTEC CORP	SYMC
481	GT BICYCLES INC	GTBX	513	DOCUCORP INTERNATIONAL INC	DOCC
482	WINMARK CORP	WINA	514	CIPRICO INC	CPCI
483	DIGILOG INC	DILO	515	ADC TELECOMMUNICATIONS INC	ADCT
484	LAMSON & SESSIONS CO	LMS	516	AMAZON.COM INC	AMZN
485	GILEAD SCIENCES INC	GILD	517	KOSS CORP	KOSS
486	PHYSICIANS FORMULA HOLDINGS	FACE	518	PGT INNOVATIONS INC	PGTI
487	GAIA INC	GAIA	519	SEEBEYOND TECHNOLOGY CORP	SBYN
488	LEXMARK INTL INC -CL A	LXK	520	E COM VENTURES INC	ECMV
489	SEAWAY FOOD TOWN INC	SEWY	521	TSI INC/MN	TSII
490	CREDENCE SYSTEMS CORP	CMOS	522	SCOTTS MIRACLE-GRO CO	SMG
491	MARGAUX INC	MRGX	523	MOTORCAR PARTS OF AMER INC	MPAA
492	AFFYMETRIX INC	AFFX	524	HILL-ROM HOLDINGS INC	HRC

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525	RHONE-POULENC RORER	RPR	559	MICROSTRATEGY INC	MSTR
526	MADDEN STEVEN LTD	SHOO	560	MILLER (HERMAN) INC	MLHR
527	LITHIA MOTORS INC -CL A	LAD	561	ADVANCED MICRO DEVICES	AMD
528	INKTOMI CORP	INKT	562	HOME DEPOT INC	HD
529	TRIMAS CORP	TRS	563	ZEBRA TECHNOLOGIES CP -CL A	ZBRA
530	MONARCH CASINO & RESORT INC	MCRI	564	CIRRUS LOGIC INC	CRUS
531	MERCURY SYSTEMS INC	MRCY	565	GRAND UNION CO	GUCO
532	CHAMPION PARTS INC	CREB	566	ARIBA INC	ARBA
533	TRC COS INC	TRR	567	SAKS INC	SKS
534	OIL DRI CORP AMERICA	ODC	568	LOTSOFF CORP	LOTS
535	ALTRIA GROUP INC	MO	569	PIER 1 IMPORTS INC/DE	PIR
536	ADVANCE AUTO PARTS INC	AAP	570	BLACKBOARD INC	BBBB
537	FEI CO	FEIC	571	SIMON PROPERTY GROUP INC	SPG
538	MICREL INC	MCRL	572	DEERE & CO	DE
539	K2 INC	KTO	573	TERAYON COMMUN SYSTEMS INC	TERN
540	CHINA SECURITY & SURV TECH	CSR	574	SUN TV & APPLIANCES INC	SNTV
541	SERACARE LIFE SCIENCES INC	SRLS	575	SKECHERS U S A INC	SKX
542	EMS TECHNOLOGIES INC	ELMG	576	ILC TECHNOLOGY INC	ILCT
543	FONAR CORP	FONR	577	STEIN MART INC	SMRT
544	WHIRLPOOL CORP	WHR	578	WAVO CORP	WAVO
545	CENTURY CASINOS INC	CNTY	579	ENERGY RECOVERY INC	ERII
546	EVOLVING SYSTEMS INC	EVOL	580	NOVAVAX INC	NVAX
547	UNISYS CORP	UIS	581	WILMAR INDUSTRIES INC	WLMR
548	ISLE OF CAPRI CASINOS INC	ISLE	582	TANGER FACTORY OUTLET CTRS	SKT
549	CONN'S INC	CONN	583	RALLYS HAMBURGERS INC	RLLY
550	WONDER AUTO TECHNOLOGY INC	WATG	584	YUM BRANDS INC	YUM
551	SANDISK CORP	SNDK	585	ASHLAND GLOBAL HOLDINGS INC	ASH
552	BRISTOL-MYERS SQUIBB CO	BMJ	586	NITROMED INC	NTMD
553	REALPAGE INC	RP	587	PACTIV CORP	PTV
554	ECOLLEGE.COM	ECLG	588	INNOVEX INC	INVX
555	UNITED-GUARDIAN INC	UG	589	GENERAC HOLDINGS INC	GNRC
556	BOTTOMLINE TECHNOLOGIES INC	EPAY	590	FLEXIBLE SOLUTIONS INTL INC	FSI
557	BEBE STORES INC	BEBE	591	MAXIM INTEGRATED PRODUCTS	MXIM
558	LAWSON SOFTWARE INC	LWSN	592	SALESFORCE.COM INC	CRM

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593	ORBIT INTERNATIONAL CORP	ORBT	626	SOUTHWALL TECHNOLOGIES	SWTX
594	OSI RESTAURANT PARTNERS INC	OSI	627	HASBRO INC	HAS
595	ASHTON-TATE CO	TATE	628	BROCADE COMMUNICATIONS SYS	BRCB
596	RPM INTERNATIONAL INC	RPM	629	ANGIODYNAMICS INC	ANGO
597	SMITH (A O) CORP	AOS	630	WILLIAMS-SONOMA INC	WSM
598	AMGEN INC	AMGN	631	FEDERAL-MOGUL HOLDINGS CORP	FDML
599	ESCALADE INC	ESCA	632	RALCORP HOLDINGS INC	RAH
600	BOOKS-A-MILLION INC	BAMM	633	NEENAH PAPER INC	NP
601	AGCO CORP	AGCO	634	TEKELEC	TKLC
602	STAAR SURGICAL CO	STAA	635	CHECKMATE ELECTRS INC	CMEL
603	NETOPIA INC	NTPA	636	3M CO	MMM
604	CHIPCOM CORP	CHPM	637	SCHEIN (HENRY) INC	HSIC
605	MINNETONKA CORP	MINL	638	GIGA-TRONICS INC	GIGA
606	MONOTYPE IMAGING HOLDINGS	TYPE	639	HOT TOPIC INC	HOTT
607	MICROWAVE FILTER CO INC	MFCO	640	GREAT WOLF RESORTS INC	WOLF
608	TRANS WORLD ENTMT CORP	TWMC	641	IOMEGA CORP	IOM
609	MTR GAMING GROUP INC	MNTG	642	LAKELAND INDUSTRIES INC	LAKE
610	TRAVELCENTERS OF AMERICA LLC	TA	643	DJO INC	DJO
611	JACK IN THE BOX INC	JACK	644	CANDELA CORP	CLZR
612	PEP BOYS-MANNY MOE & JACK	PBY	645	WAVETEK CORP-OLD	WVTK
613	NORTH HILLS ELECTRONICS INC	NOHL	646	COMVERGE INC	COMV
614	FORD MOTOR CO	F	647	CUTERA INC	CUTR
615	WINNEBAGO INDUSTRIES	WGO	648	BARD (C.R.) INC	BCR
616	TORO CO	ITC	649	CRAFTMADE INTERNATIONAL INC	CRFT
617	MICRON TECHNOLOGY INC	MU	650	THOMAS & BETTS CORP	TNB
618	ORACLE CORP	ORCL	651	SUPERIOR ESSEX INC	SPSX
619	CHORDANT SOFTWARE INC	CHRD	652	KING PHARMACEUTICALS INC	KG
620	FIRST SOLAR INC	FSLR	653	EBAY INC	EBAY
621	MASIMO CORP	MASI	654	INTL RECTIFIER CORP	IRF
622	CIRCOR INTL INC	CIR	655	CROSS COUNTRY HEALTHCARE INC	CCRN
623	NUANCE COMMUNICATIONS INC	NUAN	656	DOUBLECLICK INC	DCLK
624	WATERS CORP	WAT	657	POWERSECURE INTL INC	POWR
625	HUGHES SUPPLY INC	HUG	658	HUMPHREY INC	HUPH

Rank	Company Name	Ticker Symbol	Rank	Company Name	Ticker Symbol
659	CALLAWAY GOLF CO	ELY	693	ROCKFORD CORP	ROFO
660	SYNAPTICS INC	SYNA	694	ITRON INC	ITRI
661	TUT SYSTEMS INC	TUTS	695	OSHKOSH CORP	OSK
662	OMNOVA SOLUTIONS INC	OMN	696	MOCON INC	MOCO
663	HARBIN ELECTRIC INC	HRBN	697	KVH INDUSTRIES INC	KVHI
664	LAS VEGAS SANDS CORP	LVS	698	NEW BRUNSWICK SCIENTIFIC INC	NBSC
665	GOODYEAR TIRE & RUBBER CO	GT	699	ANALOG DEVICES	ADI
666	ASHFORD HOSPITALITY TRUST	AHT	700	WILD OATS MARKETS INC	OATS
667	LINEAR TECHNOLOGY CORP	LLTC	701	CONCEPTUS INC	CPTS
668	OPTICAL RADIATION CORP	ORCO	702	ARGOSY GAMING CO	AGY
669	AVERY DENNISON CORP	AVY	703	ROSS STORES INC	ROST
670	NETSCAPE COMMUNICATIONS CORP	NSCP	704	ROSETTA STONE INC	RST
671	VEECO INSTRUMENTS INC	VECO	705	LITTELFUSE INC	LFUS
672	STAMPS.COM INC	STMP	706	ABAXIS INC	ABAX
673	ASTRONOVA INC	ALOT	707	SEACHANGE INTERNATIONAL INC	SEAC
674	XIRCOM INC	XIRC	708	RALPH LAUREN CORP	RL
675	CALLIDUS SOFTWARE INC	CALD	709	CEM CORP	CEMX
676	GENLYTE GROUP INC	GLYT	710	ZOLL MEDICAL CORP	ZOLL
677	DIONEX CORP	DNEX	711	REMEDY CORP	RMDY
678	CADENCE DESIGN SYSTEMS INC	CDNS	712	ELECTRONIC DATA TECHNOLOGIES	EDAT
679	DEL LABORATORIES INC	DLI	713	STAPLES INC	SPLS
680	MOLECULAR DEVICES CORP	MDCC	714	COMPUTER IDENTICS CORP	CIDN
681	DAKTRONICS INC	DAKT	715	HDR POWER SYSTEMS INC	HDRP
682	WYNN RESORTS LTD	WYNN	716	CHAMPPS ENTMT INC	CMPP
683	BALLANTYNE STRONG INC	BTN	717	AUTODESK INC	ADSK
684	WELLCARE HEALTH PLANS INC	WCG	718	TRAK AUTO CORP	TRKA
685	BLOUNT INTL INC	BLT	719	COMTECH TELECOMMUN	CMTL
686	8X8 INC	EGHT	720	STARRETT (L.S.) CO -CL A	SCX
687	TENNECO INC	TEN	721	ORION ENERGY SYSTEMS INC	OESX
688	IXYS CORP	IXYS	722	HI TECH PHARMACAL CO INC	HITK
689	MARCHEX INC	MCHX	723	RIVERBED TECHNOLOGY INC	RVBD
690	BEA SYSTEMS INC	BEAS	724	NAPCO SECURITY TECH INC	NSSC
691	MATTEL INC	MAT	725	AMERICAN LOCKER GROUP INC	ALGI
692	ZAREBA SYSTEMS INC	ZRBA	726	FREDS INC	FRED



Rank	Company Name	Ticker Symbol	Rank	Company Name	Ticker Symbol
727	DATAMARINE INTL INC	DMAR	759	PETSMART INC	PETM
728	PRINTRONIX INC	PTNX	760	COMPASS DIVERSIFIED HOLDINGS	CODI
729	PROCTER & GAMBLE CO	PG	761	FARR CO	FARC
730	SPACELABS MEDICAL INC	SLMD	762	CLARK EQUIPMENT CO	CKL
731	LECROY CORP	LCRY	763	DOLLAR TREE INC	DLTR
732	EXTRA SPACE STORAGE INC	EXR	764	ARITECH CORP-DEL	ARIT
733	WOODHEAD INDUSTRIES INC	WDHD	765	LANTRONIX INC	LTRX
734	SUNSTONE HOTEL INVESTORS INC	SHO	766	FREEMARKETS INC	FMKT
735	CYPRESS SEMICONDUCTOR CORP	CY	767	LSI INDUSTRIES INC	LYTS
736	TRIZETTO GROUP INC	TZIX	768	HOLOGIC INC	HOLX
737	TERADYNE INC	TER	769	XYLOGICS INC	XLGX
738	AEQUITRON MEDICAL INC	AQTN	770	SANFILIPPO JOHN B&SON	JBSS
739	QUALITY PRODUCTS INC	QPDC	771	CARDIAC SCIENCE INC	DFIB
740	COPART INC	CPRT	772	AMERICAN MANAGEMENT SYSTEMS	AMSY
741	CLEARWIRE CORP	CLWR	773	CABELAS INC	CAB
742	ORASURE TECHNOLOGIES INC	OSUR	774	IMMUNEX CORP	IMNX
743	COST PLUS INC	CPWM	775	ELECTRO SCIENTIFIC INDS INC	ESIO
744	MAXWELL TECHNOLOGIES INC	MXWL	776	ILLUMINA INC	ILMN
745	PHOENIX TECHNOLOGIES LTD	PTEC	777	PATHMARK STORES INC	PTMK
746	NEWPORT CORP	NEWP	778	ROCHESTER MEDICAL CORP	ROCM
747	RIVAL CO	RIVL	779	DRUGSTORE.COM INC	DSCM
748	GROUP 1 SOFTWARE INC	GSOFT	780	DIONICS INC	DION
749	VERTICALNET INC	VERT	781	CARROLS RESTAURANT GROUP INC	TAST
750	INTERNAP CORP	INAP	782	APPLIED DIGITAL ACCESS INC	ADAX
751	U S ROBOTICS CORP	USRX	783	MGM RESORTS INTERNATIONAL	MGM
752	HERSHEY CO	HSY	784	TELLABS INC	TLAB
753	CYTOGEN CORP	CYTO	785	LGL GROUP INC	LGL
754	KNAPE & VOGT MFG CO	KNAP	786	KIMBERLY-CLARK CORP	KMB
755	OPTELECOM-NKF INC	OPTC	787	GENTEX CORP	GNTX
756	HESKA CORP	HSKA	788	LOJACK CORP	LOJN
757	ALAMO GROUP INC	ALG	789	MET-COIL SYSTEMS CORP	METS
758	MTS SYSTEMS CORP	MTSC	790	SQUIBB CORP	SQB

Rank	Company Name	Ticker Symbol	Rank	Company Name	Ticker Symbol
791	ADVENT SOFTWARE INC	ADVS	825	XILINX INC	XLNX
792	COLUMBUS MCKINNON CORP	CMCO	826	AST RESEARCH INC	ASTA
793	BRUNSWICK CORP	BC	827	HERLEY INDUSTRIES INC/DE	HRLY
794	KEYNOTE SYSTEMS INC	KEYN	828	HARRIS CORP	HRS
795	CANTEL MEDICAL CORP	CMD	829	CONCUR TECHNOLOGIES INC	CNQR
796	CPT HOLDING CORP	CPTD	830	AGILENT TECHNOLOGIES INC	A
797	WEYERHAEUSER CO	WY	831	FLIR SYSTEMS INC	FLIR
798	PALL CORP	PLL	832	STAR GROUP LP	SGU
799	JOS A BANK CLOTHIERS INC	JOSB	833	WESLEY JESSEN VISIONCARE INC	WJCO
800	XYPLEX INC	XPLX	834	LIMELIGHT NETWORKS INC	LLNW
801	UDR INC	UDR	835	WORTHINGTON FOODS INC	WFDS
802	PERCEPTION TECHNOLOGY CORP	PCEP	836	CARMAX INC	KMX
803	SPECIALTY EQUIPMENT COS INC	SEC	837	ASTEIA INTERNATIONAL INC	ATEA
804	MEADE INSTRUMENTS CORP	MEAD	838	ESKIMO PIE CORP	EPIE
805	WD-40 CO	WDFC	839	SEEQ TECHNOLOGY INC	SEEQ
806	PHILIP MORRIS INTERNATIONAL	PM	840	BLACK & DECKER CORP	BDK
807	EMERSON ELECTRIC CO	EMR	841	AUXILIUM PHARMA INC	AUXL
808	KIMBALL INTERNATIONAL -CL B	KBAL	842	DOLLAR GENERAL CORP	DG
809	ADVANCED ANALOGIC TECH	AATI	843	HARMAN INTERNATIONAL INDS	HAR
810	3COM CORP	COMS	844	GENERAL ELECTRIC CO	GE
811	EDIETS.COM INC	DIET	845	SOLTA MEDICAL INC	SLTM
812	LA QUINTA CORP	LQI	846	MEDQUIST INC	MEDQ
813	HERSHEY OIL CORP	HSO	847	EASTERN CO	EML
814	ADVANCED PHOTONIX INC -CL A	API	848	WESTERN DIGITAL CORP	WDC
815	VERISK ANALYTICS INC	VRSK	849	ROGERS CORP	ROG
816	DIGENE CORP	DIGE	850	IDT CORP	IDT
817	QRS CORP	QRSI	851	GENERAL BINDING CORP	GBND
818	CYNOSURE INC	CYNO	852	MAGMA DESIGN AUTOMATION INC	LAVA
819	BARE ESSENTIALS INC	BARE	853	TELXON CORP	TLXN
820	CENTRAL SPRINKLER CORP	CNSP	854	NATHAN'S FAMOUS INC	NATH
821	BRADY CORP	BRC	855	RECOVERY ENGINEERING INC	REIN
822	EXIDE ELECTRONICS GROUP INC	XUPS	856	AEROVIRONMENT INC	AVAV
823	COHERENT INC	COHR	857	INDUS INTERNATIONAL INC	IINT
824	FINGERHUT COMPANIES INC	FHT	858	ARGONAUT TECHNOLOGIES INC	AGNT

Rank	Company Name	Ticker Symbol	Rank	Company Name	Ticker Symbol
859	VECTOR GROUP LTD	VGR	891	TCC INDUSTRIES INC	TELC
860	DATAWATCH CORP	DWCH	892	BECKMAN COULTER INC	BEC
861	MOLSON COORS BREWING CO	TAP	893	VARIAN MEDICAL SYSTEMS INC	VAR
862	DHI GROUP INC	DHX	894	CORNERSTONE THERAPEUTICS INC	CRTX
863	ELXSI CORP	ELXS	895	AMDURA CORP	ADU
864	USG CORP	USG	896	NL INDUSTRIES	NL
865	DENTAL MED DIAGNOSTIC SYS	DMDS	897	VERSUS TECHNOLOGY INC	VSTI
866	SEQUENT COMPUTER SYSTEMS INC	SQNT	898	SUMTOTAL SYSTEMS INC	SUMT
867	MERCADOLIBRE INC	MELI	899	COSMO COMMUNICATIONS CORP	CSMO
868	FSI INTL INC	FSII	900	FAMOUS DAVES OF AMERICA INC	DAVE
869	CORNING INC	GLW	901	ENTERTAINMENT GAMING ASIA	EGT
870	FLEXSTEEL INDUSTRIES INC	FLXS	902	SIX FLAGS ENTERTAINMENT CORP	SIX
871	ESTERLINE TECHNOLOGIES CORP	ESL	903	ASSOCIATED ESTATES RLTY CORP	AEC
872	BECTON DICKINSON & CO	BDX	904	SPORTS AUTHORITY INC	TSA
873	EXTREME NETWORKS INC	EXTR	905	GRACO INC	GGG
874	WHOLESALE CLUB INC	WHLS	906	L-1 IDENTITY SOLUTIONS INC	ID
875	ECOLAB INC	ECL	907	HERITAGE-CRYSTAL CLEAN INC	HCCI
876	COLGATE-PALMOLIVE CO	CL	908	EHOSTAR CORP	SATS
877	ARMSTRONG WORLD INDUSTRIES	AWI	909	ROCK OF AGES CORP -CL A	ROAC
878	PURADYN FILTER TECHNOLOGIES	PFTI	910	RADISYS CORP	RSYS
879	PLANAR SYSTEMS INC	PLNR	911	VCAMPUS CORP	VCMP
880	VALSPAR CORP	VAL	912	STANDARD MICROSYSTEMS CORP	SMSC
881	OBAGI MEDICAL PRODUCTS INC	OMPI	913	WEISFIELDS INC	WEIS
882	GENUINE PARTS CO	GPC	914	KONA GRILL INC	KONA
883	RACKSPACE HOSTING INC	RAX	915	LIFE STORAGE INC	LSI
884	KENNAMETAL INC	KMT	916	DOCENT INC	DCNT
885	LOWRANCE ELECTRONICS INC	LEIX	917	CACHE INC	CACH
886	OPTICAL COATING LAB INC	OCLI	918	DATA I/O CORP	DAIO
887	NETFLIX INC	NFLX	919	ULTRALIFE CORP	ULBI
888	HAMMONS JOHN Q HOTELS -CL A	JQH	920	MARTEK BIOSCIENCES CORP	MATK
889	BARRY (R G) CORP	DFZ	921	TEREX CORP	TEX
890	THREE D DEPARTMENT -CL B	TDDB	922	DIGIRAD CORP	DRAD

Rank	Company Name	Ticker Symbol	Rank	Company Name	Ticker Symbol
923	NAUTILUS INC	NLS	957	FRANKLIN COVEY CO	FC
924	WEIGH-TRONIX INC	WGHT	958	BRADLEY PHARMACEUTICALS -CL A	BDY
925	CENTIGRAM COMMUNICATIONS CP	CGRM	959	QUALMARK CORP	QMRK
926	VMX INC	VMXI	960	SUPERIOR ELECTRIC CO	SUPE
927	INTUITIVE SURGICAL INC	ISRG	961	VULCAN MATERIALS CO	VMC
928	RUBBERMAID INC	RBD	962	NU-KOTE HOLDING INC -CL A	NKOT
929	MARQUETTE MEDICAL SYS	MARQ	963	MET-PRO CORP	MPR
930	TOMOTHERAPY INC	TOMO	964	AXT INC	AXTI
931	DR PEPPER SNAPPLE GROUP INC	DPS	965	ALLIED HEALTHCARE INTL INC	AHCI
932	CAMPBELL SOUP CO	CPB	966	KEEBLER FOODS CO	KBL
933	USA TECHNOLOGIES INC	USAT	967	SOHU COM LTD	SOHU
934	NIKU CORP	NIKU	968	VLSI TECHNOLOGY INC	VLSI
935	STRATAGENE CORP	STGN	969	CCA INDUSTRIES INC	CAW
936	TUMBLEWEED COMMUNICATIONS CO	TMWD	970	MARVEL ENTERTAINMENT INC	MVL
937	CETUS CORP	CTUS	971	MISONIX INC	MSON
938	SCHIFF NUTRITION INTL INC	SHF	972	ELECTRO-NUCLEONICS	ENUC
939	VIVUS INC	VVUS	973	EPRESENCE INC	EPRE
940	BIG B INC	BIGB	974	CUMMINS INC	CMI
941	O'SULLIVAN INDS HLDGS INC	OSU	975	XERIUM TECHNOLOGIES INC	XRM
942	EVANS & SUTHERLAND CMP CORP	ESCC	976	SMITHKLINE BECKMAN CORP	SKB
943	SUSSER HOLDINGS CORP	SUSS	977	AVANIR PHARMACEUTICALS INC	AVNR
944	MONOGRAM BIOSCIENCES INC	MGRM	978	CHEMED CORP	CHE
945	NATURES SUNSHINE PRODS INC	NATR	979	SWITCHBOARD INC	SWBD
946	DATASOUTH COMPUTER CORP	DSCC	980	SMITH & WOLLENSKY RSTRNT GRP	SWRG
947	O I CORP	OICO	981	THERAGENICS CORP	TGX
948	IMEX MEDICAL SYSTEMS INC	IMEX	982	SYNOPTICS COMMUNICATIONS INC	SNPX
949	ACME UNITED CORP	ACU	983	PARKER-HANNIFIN CORP	PH
950	SABA SOFTWARE INC	SABA	984	CHECKPOINT SYSTEMS INC	CKP
951	OMNITURE INC	OMTR	985	IMANAGE INC	IMAN
952	MANITEX INTERNATIONAL INC	MNTX	986	COMSCORE INC	SCOR
953	ZENITH ELECTRONICS CORP	ZE	987	BEI MEDICAL SYSTEMS CO INC	BMED
954	NAPSTER INC	NAPS	988	JOHNSON & JOHNSON	JNJ
955	SUPER MICRO COMPUTER INC	SMCI	989	KEWAUNEE SCIENTIFIC CORP	KEQU
956	LANDACORP INC	LCOR	990	HAHN AUTOMOTIVE WHSE INC	HAHN

Rank	Company Name	Ticker Symbol	Rank	Company Name	Ticker Symbol
991	KAY JEWELERS INC	KJI	1029	A S V INC	ASVI
992	EDGAR ONLINE INC	EDGR	1030	MERRIMAC INDUSTRIES INC	MRM
993	SPORTSMANS GUIDE INC	SGDE	1031	ZILA INC	ZILA
994	DELCHAMPS INC	DLCH	1032	NATIONAL FSI INC	NFSI
995	STEELCASE INC	SCS	1033	WILAND SERVICES INC	WSVS
996	LA-Z-BOY INC	LZB	1034	IMMUCELL CORP	ICCC
997	KELLOGG CO	K	1035	ARTEL COMMUNICATIONS CORP	AXXX
998	KEY TRONIC CORP	KTCC	1036	ASPEN IMAGING INTL INC	ARIB
999	LOCTITE CORP	LOC	1037	TITAN INTERNATIONAL INC	TWI
1000	ON2 TECHNOLOGIES INC	ONT	1038	EMBREX INC	EMBX
1001	SBE INC	SBEI	1039	JEFFERIES FINANCIAL GRP INC	JEF
1002	VICOR CORP	VICR	1040	RED LION HOTELS CORP	RLH
1003	ANDREA ELECTRONICS CORP	ANDR	1041	EXE TECHNOLOGIES INC	EXEE
1004	BIOLASE INC	BIOL	1042	DAHLBERG INC	DAHL
1005	SIGMA DESIGNS INC	SIGM	1043	CTI INDUSTRIES CORP	CTIB
1006	KULICKE & SOFFA INDUSTRIES	KLIC	1044	ARIZONA INSTRUMENT CORP	AZIC
1007	MERU NETWORKS INC	MERU	1045	INTEGRAL VISION INC	INVI
1008	3D SYSTEMS CORP	DDD	1046	VALHI INC	VHI
1009	SPARTON CORP	SPA	1047	ASURE SOFTWARE INC	ASUR
1010	CAMBRIDGE MEDICAL TECH CORP	CMTC	1048	RCI HOSPITALITY HLDGS INC	RICK
1011	MORGANS HOTEL GROUP CO	MHGC	1049	QUIPP INC	QUIP
1012	TRANSCAT INC	TRNS	1050	LILLY (ELI) & CO	LLY
1013	PTC INC	PTC	1051	COBRA ELECTRONICS CORP	COBR
1014	REVLON INC -CL A	REV	1052	NUMEREX CORP -CL A	NMRX
1015	J. ALEXANDER'S HOLDINGS INC	JAX	1053	MAUI LAND & PINEAPPLE CO	MLP
1016	GLOBALSTAR INC	GSAT	1054	HASTINGS ENTERTAINMENT INC	HAST
1017	BIODELIVERY SCIENCES INTL	BDSI	1055	GLOBALSCAPE INC	GSB
1018	HARCOR ENERGY CO	HARC	1056	NEWPORT ELECTRONICS INC	NEWE
1019	ALDEN ELECTRONICS INC	ADNE	1057	SUN HYDRAULICS CORP	SNHY
1020	JOHNSON OUTDOORS INC -CL A	JOUT	1058	EGAIN CORP	EGAN
1021	COOPER COMPANIES INC	COO	1059	SCIENTIFIC GAMES CORP	SGMS
1022	ACORN ENERGY INC	ACFN	1060	CYANOTECH CORP	CYAN
1023	NTN BUZZTIME INC	NTN	1061	CONVERSANT INC	CNVR
1024	ASPEN TECHNOLOGY INC	AZPN	1062	LYRIS INC	LYRI
1025	CAMBIUM LEARNING GROUP INC	ABCD	1063	TAITRON COMPONENTS -CL A	TAIT
1026	OVERSTOCK.COM INC	OSTK	1064	DYNASIL CORP OF AMERICA	DYSL
1027	QUINSTREET INC	QNST	1065	TELKONET INC	TKOI
1028	BLUELINX HOLDINGS INC	BXC			

**Web Appendix Table 3. Averages and Standard Deviations for Firms with Low and High Institutional Common Ownership**

<b>Variable</b>	<i>Low Common Ownership</i>		<i>High Common Ownership</i>	
	<i>Average</i>	<i>St. Dev</i>	<i>Average</i>	<i>St. Dev</i>
Strategic Emphasis	-0.04	0.11	-0.02	0.11
Marketing Capabilities	0.98	0.14	0.98	0.58
Industry Common Ownership	0.87	0.07	0.87	0.07
Financial Leverage	0.23	0.23	0.24	0.21
Percentage Institutional Ownership in Industry	0.57	0.12	0.59	0.11
Ln(Firm Size)	0.60	2.02	0.79	2.24
Percentage Institutional Ownership for Firm	0.55	0.26	0.51	0.29

**Web Appendix Table 4. Results from Robustness Tests**

Model/Variable	Entire Sample Common Ownership (1)	Absolute Size of Firm (2)	Number of Common Owners (4)	Sum of Common Owners Holding in Firm (5)	High Marketing Capabilities (6)	Low Marketing Capabilities (7)	High Strategic Emphasis (8)	Low Strategic Emphasis (9)
Institutional Common Ownership	3.63*** (3.92) (.000)	1.18** (2.30) (.021)	0.16** (2.17) (.030)	1.01*** (3.80) (.000)	3.76*** (5.82) (.000)	2.36* (1.79) (.074)	3.37*** (4.06) (.000)	2.45** (2.44) (.015)
Marketing Capabilities	3.97*** (4.19) (.000)	1.38*** (2.85) (.004)	0.44*** (3.91) (.000)	0.47*** (7.09) (.000)	3.82*** (5.93) (.000)	2.96** (2.19) (.029)	3.15*** (3.79) (.000)	2.65*** (2.61) (.009)
Strategic Emphasis	0.80 (1.46) (.144)	-0.63 (1.47) (.143)	-3.79*** (-47.16) (.000)	-3.43*** (-43.64) (.000)	1.88*** (4.60) (.000)	0.01 (0.01) (.988)	-1.67*** (-3.04) (.000)	4.05*** (4.18) (.000)
Ins. Common Own x Marketing Capabilities	-3.76*** (-3.93) (.000)	-1.24** (-2.34) (.019)	-0.12* (-1.71) (.088)	-0.70*** (-2.61) (.009)	-3.74*** (-5.79) (.000)	-2.58* (-1.86) (.063)	-3.25*** (-3.80) (.000)	-2.64*** (-2.57) (.010)
Ins. Common Own x Strategic Emphasis	-2.94*** (-5.34) (.000)	-1.58*** (-3.51) (.000)	1.94*** (37.62) (.000)	6.32*** (33.97) (.000)	-1.20*** (-2.91) (.004)	-2.81*** (-3.59) (.000)	-2.64*** (-4.78) (.000)	-1.81* (-1.83) (.068)
Lagged Performance	0.06*** (2.98) (.003)	0.04** (2.28) (.022)	0.05** (2.55) (.011)	0.04* (1.89) (.058)	-0.07*** (-5.24) (.000)	-0.12*** (-3.86) (.000)	0.41*** (13.63) (.000)	-0.13*** (-7.19) (.000)
Financial Leverage	-0.02 (-0.67) (.501)	-0.04 (-1.40) (.161)	-0.05* (-1.83) (.067)	-0.05* (-1.92) (.055)	-0.19*** (-13.14) (.000)	-0.01 (-0.24) (.812)	-0.07*** (-3.42) (.000)	0.03 (0.57) (.569)
Firm Size	0.01 (1.16) (.247)	0.01* (1.63) (.103)	-0.00 (-0.01) (.990)	0.01 (1.16) (.247)	-0.01 (-1.17) (.241)	0.06*** (2.61) (.009)	0.01 (1.17) (.243)	-0.03** (-2.12) (.034)
Industry Competitive Intensity	0.27*** (2.78) (.006)	0.25** (2.50) (.012)	0.31*** (3.44) (.001)	0.35*** (3.68) (.000)	0.06 (1.34) (.182)	0.30 (1.11) (.269)	0.04 (0.62) (.534)	0.53** (2.44) (.015)
Ins. Ownership of Firm	0.30*** (10.01) (.00)	0.32*** (10.57) (.000)	0.18*** (5.14) (.000)	N/A	0.03** (2.42) (.016)	0.56*** (8.52) (.000)	0.18*** (7.18) (.000)	0.12*** (2.85) (.004)
Industry Ins. Ownership	-0.03 (-0.39) (.700)	-0.09 (-1.06) (.290)	-0.04 (-0.54) (.590)	-0.06 (-0.81) (0.42)	0.03 (0.65) (.517)	-0.35* (-1.87) (.061)	-0.01 (-0.11) (.915)	0.11 (0.91) (.365)
Industry Ins. Common Own	-0.37*** (-3.40) (.001)	-0.35*** (-3.27) (.001)	-0.30*** (-2.98) (.003)	-0.31*** (-2.98) (.003)	0.01 (0.11) (.911)	-0.60*** (-2.49) (.013)	-0.28*** (-3.22) (.001)	-0.65*** (-3.48) (.001)
Industry Growth	-0.04 (-0.77) (.439)	-0.05 (-0.91) (.362)	-0.02 (-0.41) (.682)	-0.04 (-0.80) (.422)	-0.02 (-0.81) (.419)	-0.02 (-0.23) (.819)	-0.06 (-1.53) (.126)	-0.14* (-1.86) (.064)
Industry Dynamism	-0.03 (-0.98) (.325)	-0.03 (-1.03) (.302)	-0.03 (-1.08) (.278)	-0.03 (-1.11) (.266)	0.03* (1.75) (.080)	-0.06 (-0.87) (.382)	-0.09*** (-3.38) (.001)	0.11** (2.27) (.023)

Each cell reports the coefficient, Z-score, and p-value. \*\*\*p<.01; \*\*p<.05; \*p<.1; N/A = not applicable;

**Web Appendix Table 4. Results from Robustness Tests (cont'd)**

Model/Variable	Investment Advisors Only (10)	Activist Investors Only (11)	Sales (natural log-scaled) (12)	Tobin's q (13)	Market Value (14)	Common Ownership Low (15)	Common Ownership High (16)
Institutional Common Ownership	1.72*** (2.57) (.010)	4.71*** (2.73) (.006)	7.27*** (14.67) (.000)	4.84*** (6.45) (.000)	4.52** (2.50) (.013)	0.91*** (4.72) (.000)	22.75 (0.95) (.342)
Marketing Capabilities	1.94*** (2.84) (.005)	5.00*** (2.85) (.004)	8.84*** (17.38) (.000)	4.94*** (6.43) (.000)	5.31*** (2.86) (.004)	1.21*** (6.56) (.000)	25.46 (1.05) (.295)
Strategic Emphasis	2.29*** (5.64) (.000)	0.47 (0.56) (.575)	0.53* (1.69) (.091)	0.37 (0.77) (.440)	1.26 (1.08) (.278)	1.01*** (3.86) (.000)	401.16*** (14.67) (.000)
Ins. Common Own x Marketing Capabilities	-1.85*** (-2.68) (.007)	-4.67*** (-2.61) (.009)	-7.47*** (-14.57) (.000)	-4.92*** (-6.34) (.000)	-4.59*** (-2.45) (.014)	-0.91*** (-4.70) (.000)	-25.47 (-1.05) (.295)
Ins. Common Own x Strategic Emphasis	-1.18*** (-2.90) (.004)	-4.89*** (-5.84) (.000)	-0.34 (-1.06) (.289)	-2.85*** (-5.92) (.000)	-1.18 (-1.02) (.310)	-0.62** (-2.23) (.026)	-402.27*** (-14.68) (.000)
Lagged Performance	-0.14*** (-9.91) (.000)	0.05** (2.00) (.045)	0.68*** (89.13) (.000)	0.16*** (10.47) (.000)	0.37*** (28.89) (.000)	N/A	N/A
Financial Leverage	-0.02 (-0.89) (.371)	0.30*** (5.84) (.000)	-0.04*** (-2.82) (.005)	0.96*** (37.87) (.000)	-0.75*** (-12.75) (.000)	-0.32*** (-18.81) (.000)	-0.07** (-2.55) (.011)
Firm Size	-0.02*** (-2.76) (.006)	-0.01 (-0.48) (.628)	0.20*** (31.70) (.000)	0.05*** (6.29) (.000)	0.16*** (8.37) (.000)	0.02*** (12.51) (.000)	0.03*** (8.11) (.000)
Industry Competitive Intensity	0.22*** (2.86) (.004)	0.18 (1.06) (.290)	-0.01 (-0.20) (.839)	0.19** (2.22) (.027)	0.47** (2.23) (.026)	-0.07* (-1.88) (.061)	-0.42*** (-4.04) (.000)
Ins. Ownership of Firm	0.13*** (4.91) (.000)	0.44*** (7.13) (.000)	0.15*** (8.24) (.000)	0.20*** (7.56) (.000)	1.01*** (15.25) (.000)	-0.03** (-2.48) (.013)	0.13*** (5.02) (.000)
Industry Ins. Ownership	-0.00 (-0.02) (.984)	-0.21 (-1.41) (.160)	0.00 (0.08) (.938)	-0.04 (-0.49) (.625)	0.17 (0.95) (.344)	0.21*** (6.28) (.000)	-0.12* (-1.95) (.051)
Industry Ins. Common Own	-0.18* (-1.79) (.073)	-0.46** (-2.04) (.042)	0.09 (1.47) (.142)	-0.27*** (-2.73) (.006)	-0.67*** (-2.92) (.003)	-0.09** (-2.26) (.024)	0.04 (0.54) (.591)
Industry Growth	-0.10** (-2.24) (.025)	-0.06 (-0.59) (.558)	-0.04 (1.31) (.190)	-0.02 (-0.42) (.673)	-0.21** (-1.99) (.047)	-0.03 (-0.90) (.367)	0.09 (1.06) (.291)
Industry Dynamism	0.07** (2.47) (.013)	0.03 (0.44) (.663)	0.03 (1.52) (.129)	-0.03 (-1.14) (.254)	0.04 (0.57) (.568)	-0.02 (-0.72) (.472)	-0.11** (-2.00) (.045)

Each cell reports the coefficient, Z-score, and p-value. \*\*\*p<.01; \*\*p<.05; \*p<.1; N/A = not applicable;

Model (10) only examines firms that have their largest institutional investor block classified as an investment company or an independent investment advisor; Model (11) only examines firms that have their largest institutional investor investment strategy classified as quasi-indexers or transient investors. To compute this variables, we first download data from Paul Bushee's Wharton School website<sup>11</sup>, which provides classifications of institutional investors based on their type of investment firm and type of investment strategy. Second, we paired this information with the data on the institutional investors from the Thomson Reuters s34 Institutional Investor Holdings dataset. Third, we linked the data on institutional investors with individual holdings of firms. Fourth, we aggregated the total institutional ownership by their investment strategies.

<sup>11</sup> <https://accounting-faculty.wharton.upenn.edu/bushee/iivars/#ptqd>



**Web Appendix Table 5. Results from Firm Size based Additional Analysis**

*Panel A. Two-Way and Three-Way Interaction Results Using Arellano-Bond GMM estimation*

<b>Variable</b>	<i>Two-Way Interaction Model</i>			<i>Three-Way Interaction Model</i>		
	<i>Coefficient</i>	<i>Z-Score</i>	<i>P-value</i>	<i>Coefficient</i>	<i>Z-Score</i>	<i>P-value</i>
<i>Main Effects</i>						
Institutional Common Ownership	5.88	7.31	.000	3.44	2.87	.004
Marketing Capabilities	5.79	5.79	.000	3.49	2.91	.004
Strategic Emphasis	11.31	17.21	.000	10.33	15.55	.000
<i>Two-Way Interactions</i>						
Institutional Common Ownership x Marketing Capabilities	-6.15	-7.39	.000	-3.81	-3.11	.002
Institutional Common Ownership x Strategic Emphasis	-4.13	-7.86	.000	-3.28	-6.14	.000
Institutional Common Ownership x Firm Size	0.11	4.20	.000	-0.86	-1.53	.126
<i>Three-Way Interactions</i>						
Institutional Common Ownership x Marketing Capabilities x Firm Size				0.95	1.66	.097
Institutional Common Ownership x Strategic Emphasis x Firm Size				2.43	8.11	.000
<i>Controls</i>						
Marketing Capabilities x Firm Size	0.23	7.01	.000	-0.71	-1.26	.207
Strategic Emphasis x Firm Size	0.91	31.52	.000	-1.49	-5.01	.000
Marketing Capabilities x Strategic Emphasis	-8.41	-20.03	.000	-8.25	-19.79	.000
Lagged Performance	0.04	2.10	.035	0.04	2.06	.040
Institutional Ownership of Firm	0.26	9.33	.000	0.25	9.04	.000
Industry Institutional Ownership	-0.04	-0.52	.605	-0.07	-0.88	.377
Industry Institutional Common Ownership	-0.13	-1.30	.192	-0.16	-1.61	.108
Competitive Intensity	0.08	0.91	.362	0.09	0.97	.332
Financial Leverage	-0.08	-3.25	.001	-0.09	-3.70	.000
Ln(Firm Size)	-0.33	-7.95	.000	0.62	1.13	.260
<i>Model Diagnostics</i>						
$\chi^2$	2,505.07		.000	2,606.44		.000

*Panel B. Subsets of Data by Firm Size*

Model/Variable	Smallest 50% of Firms in Our Sample	Smallest 75% of Firms in Our Sample	Switching Regression (Low Firm Size)	Switching Regression (High Firm Size)
Institutional Common Ownership	2.38* (1.65) (.099)	2.67** (2.51) (.012)	0.90*** (2.84) (.004)	-0.82 (-0.93) (.350)
Marketing Capability	2.88* (1.93) (.053)	3.05*** (2.79) (.005)	0.99*** (3.44) (.001)	-0.45 (-0.52) (.604)
Strategic Emphasis	3.13*** (2.82) (.005)	1.21* (1.72) (.085)	2.15*** (3.42) (.001)	-0.31 (-1.18) (.237)
Institutional Common Ownership x Marketing Capabilities	-2.69* (-1.79) (.073)	-2.81** (-2.55) (.011)	-0.85*** (-2.89) (.004)	0.82 (0.92) (.360)
Institutional Common Ownership x Strategic Emphasis	-5.70*** (-5.09) (.000)	-3.61*** (-5.15) (.000)	-1.85*** (-2.86) (.004)	0.49* (1.84) (.065)
Lagged Performance	-0.01 (-0.23) (.818)	0.02 (0.62) (.535)	N/A	N/A
Financial Leverage	-0.09 (-1.20) (.232)	-0.01 (-0.28) (.778)	0.01 (0.42) (.671)	-0.10*** (-16.66) (.000)
Firm Size	0.05* (1.65) (.010)	0.02 (1.28) (.202)	0.08*** (12.97) (.000)	-0.00*** (-2.84) (.005)
Industry Competitive Intensity	1.55*** (2.46) (.014)	0.32* (1.91) (.056)	0.07 (0.66) (.512)	-0.01 (-0.72) (.474)
Institutional Ownership of Firm	0.73*** (8.98) (.000)	0.44*** (9.47) (.000)	0.39*** (14.36) (.000)	-0.01 (-1.00) (.318)
Industry Institutional Ownership	-0.18 (-0.65) (.517)	-0.08 (-0.57) (.569)	-0.12* (-1.75) (.080)	0.01 (0.94) (.345)
Industry Institutional Common Ownership	-1.28*** (-3.25) (.001)	-0.50*** (-2.57) (.010)	0.03 (0.29) (.771)	-0.04** (-2.43) (.015)
Industry Growth	-0.06 (-0.36) (.722)	-0.02 (-0.20) (.839)	-0.02 (-0.18) (.853)	0.01 (0.42) (.674)
Industry Dynamism	-0.05 (-0.46) (.644)	-0.06 (-1.02) (.310)	-0.07 (-1.19) (.234)	-0.01 (-1.04) (.299)

Each cell reports the coefficient, Z-score, and p-value. \*\*\*p<.01; \*\*p<.05; \*p<0.1; N/A = not applicable

**Web Appendix Table 6. Results from Additional Models**

Model/Variable	Alternative Marketing Capabilities Measure (1)	Types of Investors (2)	Acquisitions (3)	Acquisitions and Types of Investors (4)
Institutional Common Ownership	3.15*** (3.79) (.000)	2.26*** (2.71) (.007)	2.52*** (2.89) (.004)	2.46*** (2.87) (.004)
Marketing Capabilities	3.28*** (3.90) (.000)	2.58*** (3.02) (.003)	2.84*** (3.17) (.002)	2.80*** (3.18) (.001)
Strategic Emphasis	0.97* (1.78) (.075)	1.17** (2.19) (.029)	0.96* (1.72) (.086)	1.07* (1.94) (.053)
Ins. Common Own x Marketing Capabilities	-3.21*** (-3.80) (.000)	-2.36*** (-2.73) (.006)	-2.62*** (-2.90) (.004)	-2.57*** (-2.90) (.004)
Ins. Common Own x Strategic Emphasis	-3.12*** (-5.71) (.000)	-3.26*** (-6.08) (.000)	-3.17*** (-5.68) (.000)	-3.26*** (-5.87) (.000)
Lagged Performance	0.05*** (2.85) (.004)	0.04* (1.93) (.054)	0.03 (1.60) (.109)	0.03 (1.45) (.148)
Financial Leverage	-0.01 (-0.45) (.654)	-0.03 (-1.06) (.287)	-0.03 (-1.17) (.242)	-0.04 (-1.45) (.147)
Firm Size	0.01 (1.55) (.122)	0.01 (1.33) (.183)	0.02 (1.59) (.111)	0.02* (1.72) (.085)
Industry Competitive Intensity	0.28*** (2.84) (.004)	0.23** (2.36) (.018)	0.24** (2.38) (.017)	0.26** (2.56) (.011)
Ins. Ownership of Firm	0.31*** (10.27) (.000)	0.30*** (10.13) (.000)	0.32*** (9.98) (.000)	0.32*** (10.05) (.000)
Industry Ins. Ownership	-0.05 (-0.56) (.578)	-0.04 (-0.50) (.615)	-0.02 (-0.20) (.845)	-0.06 (-0.66) (.510)
Industry Ins. Common Own	-0.38*** (-3.53) (.000)	-0.34*** (-3.17) (.002)	-0.33*** (-2.93) (.003)	-0.33*** (-2.95) (.003)
Industry Growth	-0.04 (-0.85) (.394)	-0.04 (-0.83) (.405)	-0.06 (-1.02) (.307)	-0.05 (-0.98) (.326)
Industry Dynamism	-0.03 (-0.96) (.336)	-0.03 (-1.04) (.297)	-0.03 (-1.01) (.312)	-0.04 (-1.06) (.288)
Professional Investment Firms	N/A	-0.02** (-2.56) (.011)	N/A	-0.01* (-1.72) (.085)
Active Investment Strategies	N/A	0.00 (0.01) (.995)	N/A	0.00 (0.03) (.977)
Acquisitions	N/A	N/A	-0.00 (-0.24) (.811)	-0.00 (-0.39) (.698)

Each cell reports the coefficient, Z-score, and p-value. \*\*\*p<.01; \*\*p<.05; \*p<.1; N/A = not applicable