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Once Dedicated, Always Dedicated?
Long-Term Effects of Dedicated Ownership by Institutional Investors

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Abstract

It is widely accepted that dedicated institutional investors with a long-term investment horizon encourage more long-term strategic investments than other types of institutional investors. Long-term does not necessarily mean permanent ownership. To deliver return to their clients at the end of the fund life cycle, eventually the dedicated institutional investors also prepare their exit plan from existing investments. We find that dedicated institutional investors' ownership becomes negatively associated with the firm-level capital expenditure ratio when we expand our firm reaction window from a short-term to a relatively long-term horizon. We also find that, on average, tight control imposed by dedicated investors appears to degrade firm performance. This has important public policy implications regarding the allocation of investment resources in the economy.

INTRODUCTION

Since Porter (1992) criticized the short-term orientation of institutional investors[1] in the U.S. compared to patient capital provided by relational owners in Japan and Germany (Ahmadjian & Robbins, 2005), management scholars have paid substantial attention to the role played by institutional investors as a form of external governance (Aguilera, Desender, Bednar, & Lee, 2015; Connelly, Hoskisson, Tihanyi, & Certo, 2010a; Westphal & Zajac, 2013). The consequences of monitoring provided by institutional investors on the competitive advantage of firms are still under debate in the strategy (Connelly, Tihanyi, Certo, & Hitt, 2010b; Dalton, Hitt, Certo, & Dalton, 2007; Shi, Connelly, & Hoskisson, 2017; Westphal & Bednar, 2008), accounting (Bushee, 2004) and finance (Edmans & Manso, 2011) literatures.

An important finding in this line of research is that institutional investors pursue heterogeneous goals (Daily, Dalton, & Rajagopalan, 2003; Hoskisson, Hitt, Johnson, & Grossman, 2002). Institutional investors also differ from each other in terms of ways to accomplish the goals, such as proxy contests, raising their voice at board of directors' council (Goranova & Ryan, 2014; Westphal & Bednar, 2008) or selling the stock (Edmans & Manso, 2011). Among different types of institutional investors, it is dedicated institutional investors characterized by concentrated portfolios and a long investment time horizon (Bushee, 2004), which are more likely to encourage long-term investments with strategic ramifications than transient institutional investors with widely diversified portfolios with a short investment time horizon (Connelly et al., 2010b). The match between long-term orientation of dedicated institutional investors and long-term payoff structure of strategic investments underlies a positive

[1] Institutional investors (in contrast to individual investors) mean institutions, which pool money to purchase securities and other investments assets. It includes pension funds, insurance companies, mutual funds, and banks. Technically, the Securities and Exchange Commission (SEC) requires that any financial institution exercising discretionary management of investment portfolios over $100 million in qualified securities report those holdings quarterly to the SEC through Form 13F filings.

association between dedicated ownership by institutional investors and likelihood of taking strategic actions by firms within their portfolio (Baker & Wurgler, 2004; Polk & Sapienza, 2009). In line with this argument, dedicated institutional investors in the U.S. are recognized as a U.S. version of relational owners in Japan or Germany regarding the provision of patient capital (Ahmadjian & Robbins, 2005; Bushee, 2004).

The claim, however, that dedicated institutional investors are more strategic and patient owners is theoretically puzzling. The first puzzle is that the immediately preceding argument omits the dimension of the risk tolerance of dedicated institutional investors. Unlike portfolios of other types of institutional investors, the portfolio of the dedicated institutional investor is quite concentrated, and they usually form an ownership block when they invest in a particular firm (Bushee, 2004). Consequently, a portfolio of dedicated institutional investors is not sufficiently well diversified to absorb idiosyncratic risks incurred by strategic investments of individual firms within the portfolio. Furthermore, due to the block discount, their portfolio is less liquid (Kochhar & David, 1996). Given the relative risk avoidance implied by the concentrated portfolios of dedicated institutional investors and lower liquidity resultant from block ownership (Morck, Shleifer, & Vishny, 1988), they would likely be very cautious regarding such risky strategic investments.

The second puzzle is that the positive governance role played by dedicated institutional investors assumes a uniform level of commitment to each firm within their portfolio from purchase to sale of the ownership block. However, it is important to note that institutional investors serve a primary role as fiduciary agents for their clients, and not for the shareholders of individual firms within their portfolio (Arthurs, Hoskisson, Busenitz, & Johnson, 2008). Given their primary obligation to their clients, the assumption of consistent commitment to each

individual firm in the portfolio is not realistic. A more natural extension is that, as their holding period increases, the degree of dedication to a specific firm becomes weaker. In other words, as time passes since investment in a firm, the investment horizon for the dedicated investor regarding the firm becomes shorter. Given the low risk tolerance implied by their concentrated portfolio, when the remaining investment horizon of dedicated institutional investors becomes short, firm managers might be more likely to act in a more myopic manner due to the pressure for increased performance from dedicated institutional investors searching for an exit window. If we combine the above-mentioned puzzles together, the expected positive governance role served by allegedly patient dedicated institutional investors might be overestimated and need to be revisited with a longitudinal approach.

To address the above-mentioned puzzle, we investigate if dedicated institutional investors provide patient capital supporting more strategic actions and, if so, over what time frame? In examining both the role played by allegedly patient capital and the time frame issues, we employ the following theoretical and empirical approaches.

Theoretically, we mainly draw from agency theory focusing on principal-principal conflicts (Villalonga & Amit, 2006). Management scholars have dealt with agency problem type II,[2] i.e., principal-principal conflict, often in the context of family-owned firms (Neckebrouck, Schulze, & Zellweger, 2018; Villalonga & Amit, 2006, 2009) or business groups in emerging economies (Young, Peng, Ahlstrom, Bruton, & Jiang, 2008). Dispersed ownership among sophisticated institutional investors, as opposed to individual or family, in the U.S. (Gillan & Starks, 2007; Holderness, 2009) are hypothesized to dilute potential private benefits expropriated

[2] There are two types of agency problems. The traditional one, agency problem type I, is a divergence of interests between principals (shareholders) and agents (managers). Agency problem type II is a divergence of interests among shareholders. Usually, this divergence emerges in the form of expropriation of private benefit by dominant shareholders at the cost of minor shareholders.

by a particular (institutional) investor (Villalonga & Amit, 2006). Here, we examine the latent divergence of interests among (institutional) owners in the U.S. due to risk avoidance and gradual short-term orientation of dedicated institutional investors for the firms that they hold as those holdings age.

Empirically, this study investigates the impact of dedicated institutional investors aggregated at the firm-level on firms' capital expenditures to fixed assets over an extended time frame. While prior literature studied the immediate impact of institutional investors on firm-level strategic decisions, such as R&D (David, Hitt, & Gimeno, 2001), innovation (Aghion, Van Reenen, & Zingales, 2013; Hoskisson et al., 2002), CEO compensation (Dharwadkar, Goranova, Brandes, & Khan, 2008), and acquisitions (Bodnaruk, Massa, & Simonov, 2009; Gaspar, Massa, & Matos, 2005), study of both short-term and long-term impacts of institutional investors on corporate capital investment decisions is rare. Furthermore, unlike other strategic events, such as acquisitions, firms' capital expenditure is a continuous and yearly observable variable. Therefore, capital expenditure for fixed assets provides an ideal and realistic setting to test the dynamic, gradual impact of interventions by dedicated institutional investors (Souder & Bromiley, 2017).

Specifically, we extended our analysis window up to four years. If dedicated institutional investors are long-term investors, we should examine this in long-term consequences of dedicated institutional investors' monitoring and intervention. Investigating firm performance implications of institutional monitoring and pressure in a short horizon likely identifies only a partial impact of dedicated institutional investors' holdings on firms' strategic investment behaviors (Connelly et al., 2010b; Dharwadkar et al., 2008; Goranova, Dharwadkar, & Brandes, 2010; Wahal & McConnell, 2000). Consequently, we are better able to observe the full

implications of dedicated institutional investors on firms' capital investments over an extended time frame.

Using a dataset created by merging Compustat and Thomson Reuters' Institutional Holdings (13F) database, we test our hypothesis regarding the role served by dedicated institutional investors in capital expenditure to fixed assets. As we expand our firm response window from one year to four year-ahead horizons, the coefficient of dedicated institutional investors changes its sign from positive to negative in a significant manner from year two (i.e., *t+2*). As we theorized, dedicated institutional investors become more risk-averse as their holding period increases, leading to tightening control on long-term strategic investments, such as capital expenditure. The economic impact is very significant. As dedicated institutional ownership increases from 0% to 40%, capital expenditure ratio against total fixed asset decreases from approximately 17% to 10%. Furthermore, ownership of dedicated institutional investors becomes negatively associated with firm-level performance, as measured by return-on-asset (ROA) and sales growth, when we similarly extend the analysis window, consistent with the detrimental impact of dedicated ownership on long-run performance of firms that they held in their portfolios.

Current understanding of dedicated institutional investors is that dedicated institutional investors endorse more strategic investments because they provide patient capital throughout their holding period. We theorize, however, the impatience and short-term orientation of dedicated institutional investors when they have a short remaining investment horizon. The empirical finding of this paper offers supporting evidence for our counter argument, i.e., a negative association between the presence of dedicated institutional investors with a short remaining investment horizon and the amount of strategic investments at the level of firm within

the portfolio. This is our theoretical contribution to the literature on external governance mechanism.

Empirically, our study incorporates a long-horizon (i.e., delayed) reaction of firms in response to a particular type of ownership, rather than a short-horizon (i.e., immediate) reaction. This empirical design better matches the characteristics of dedicated institutional investors, i.e., a long investment horizon, with a firm-level corporate investment decision horizon. Our dynamic horizon analysis provides a more complete understanding of the full implications of dedicated investors for firm level strategic investments and operating performance.

The rest of the paper is organized in the following manner. First, we review the expected governance role played by institutional investors. Then, we develop a set of hypotheses on the role of dedicated institutional investors in the context of capital expenditure. Next, we describe the data, how they were gathered, and the statistical models used to test the hypotheses. Finally, we provide results on the role of dedicated institutional investors and corresponding implications.

BACKGROUND AND LITERATURE

Institutional investors as active owners

Over the past decades, two perspectives about the impact of institutional investors on strategic choices by enterprises within their portfolio have emerged. The first, inspired by agency theory, recognizes institutional investors as active owners minimizing agency costs. Given the potential divergence of interests between shareholders and managers (Beatty & Zajac, 1994; Jensen & Meckling, 1976; Wright, Ferris, Sarin, & Awasthi, 1996), tight monitoring and direct intervention by dominant owners are suggested as an efficient resolution to diverging interests between principals and managers, i.e., the agency problem type I (Heflin & Shaw, 2000; Schnatterly, Shaw, & Jennings, 2008). The resolution, however, comes with its own costs. For

example, who monitors the dominant owners? Opportunism by dominant owners at the costs of other shareholders is formalized as agency problem type II, i.e., principal-principal conflicts (Villalonga & Amit, 2006). Transfer of goods and services to the dominant owners, such as founding families at favorable conditions (Rosenstein & Rush, 1990; Schulze, Lubatkin, Dino, & Buchholtz, 2001) and the adoption of governance practices to ensure the dominant owners' continued control of the firms (Morck, Wolfenzon, & Yeung, 2005) constitute examples of agency problem type II. In this chain problem of monitoring, however, who monitors the monitors?

Indeed, monitoring by multiple institutional investors can be a meaningful resolution to both agency problem type I and II (Grinstein & Michaely, 2005; Pound, 1988). Most of all, the ownership stake held by institutional investors is usually large compared to individual investors (Connelly et al., 2010b; Hoskisson et al., 2002). As a result, the sale of a large block of shares at a time often leads to a drop in stock prices, i.e., a block discount (Kochhar & David, 1996). Illiquidity caused by the presence of a block discount creates an incentive for institutional investors to gather private information and to intervene in a proactive manner. Otherwise, they should pay an additional exit cost when they are dissatisfied with current management due to the ownership block. However, the stake may be too small, compared to dominant owners, to privatize control rights (Villalonga & Amit, 2006). Multiple independent institutional investors would monitor each other regarding potential expropriation by an institutional investor against the others. Perhaps most importantly, institutional investors often have superior accessibility to private information on the firms and are supposed to have higher financial literacy to interpret the information (Borochin & Yang, 2017; Schnatterly et al., 2008). Moreover, they can leverage

several coordinating mechanisms, such as Institutional Shareholder Services or the Investor Research Center for effectiveness of their monitoring (Dalton et al., 2007).

Institutional investors as passive traders

Scholars in the second perspective, however, have been skeptical regarding the argument that institutional investors are sophisticated, and play a sound and active governance role (Davis, 2008, 2009; Porter, 1992). Multiple comprehensive reviews and meta-analyses concluded that the level of institutional ownership has mixed or insignificant effects on either firm performance (accounting- or market-based performance) or managerial choices, such as board structure, executive compensation, or corporate diversification strategy (Dalton, Daily, Certo, & Roengpitya, 2003; Kang & Sorensen, 1999; Sundaramurthy, Rhoades, & Rechner, 2005; Westphal & Bednar, 2008). One of explanations for insignificance or weak impact of institutional investors on strategic choice of individual enterprise within their portfolio is a crucial cognitive limitation of money managers running the portfolio formed by institutional investors (Da, Engelberg, & Gao, 2011). Institutional investors hold widely diversified portfolios, often including stocks of hundreds of companies (Bushee, 2004). Then, it is almost impossible for a money manager running a widely diversified portfolio to pay sufficient attention to the strategic details of individual firms within their portfolio (Dharwadkar et al., 2008; Hirshleifer, Lim, & Teoh, 2011). As a consequence, they are very attentive to simple metrics, such as price-to-earnings ratios based on recent quarterly financial performance (Bushee, 2004; Graham, Harvey, & Rajgopal, 2005), and likely make important inferences from such simplified quantitative information. They also tend to linearly extrapolate recent short-term performance in setting their expectations for long-term performance without taking into account non-linearity and uncertainty of firm performance (Mishina, Dykes, Block, & Pollock, 2010). Diversified

portfolios of institutional investors, an effective resolution to absorb idiosyncratic risk caused by individual strategic investments, creates other problems, such as inattention to the strategic details of firms in their portfolio and a subsequent passive attitude to critical issues in corporate governance.

Heterogeneity among institutional investors

One way to reconcile conflicting theories on the governance role served by institutional investors is to address the heterogeneity within institutional investors by categorizing institutional investors. For example, we might conclude that, while some institutional investors are active owners (Gillan & Starks, 2007; Goranova & Ryan, 2014), other institutional investors are passive traders (Drucker, 1976; Porter, 1992). Researchers have classified institutional investors in different ways. For instance, in accounting, institutional investors are classified into dedicated/transient/quasi-indexer using cluster analysis based on two important dimensions of institutional investors' revealed trading behavior, i.e., their portfolio diversification and the frequency of portfolio turnover (Bushee, 1998, 2001). The underlying insight is that it is actual trading behavior, and not a legal classification of institutional investors, which influences management perceptions of the preference of institutional investors. Even in the same legal type of institutional investors, Bushee (2004) identified meaningful heterogeneity in terms of the degree of portfolio diversification and trading frequency. In international corporate governance, scholar classified owners into fluid/dedicated (Porter, 1992) or transactional/relational (Ahmadjian & Robbins, 2005; David, O'Brien, Yoshikawa, & Delios, 2010).

A common theme among these disparate classifications is the degree of dedication by owners, including institutional investors, to a particular firm within their portfolio. A key

underlying logic is a positive association between the level of dedication of and the quality of monitoring by institutional investors.

HYPOTHESES

Based on this insight, prior literature has theorized a positive association between the level of dedicated ownership by institutional investors, as opposed to transient or transactional ownership by institutional investors, and the likelihood of taking strategic investments contributing to long-term competitive advantages of the firm in which they invested (Connelly et al., 2010b; David et al., 2001; Tihanyi, Johnson, Hoskisson, & Hitt, 2003). An alignment in the temporal dimension, i.e., long-term payoff structure of strategic investments and long-term orientation of dedicated institutional investors, constitutes a requisite condition for the positive association. A legal power given to dedicated institutional investors as a block holder constitutes a sufficient condition by which firm managers cater to the long-term investment horizon of dedicated institutional investors. As an extension of the positive expectation on the governance role served by dedicated institutional investors, agency theorists predict a negative association between the level of dedicated institutional ownership and a likelihood of moral hazard by firms within their portfolio (Borochin & Yang, 2017; Bushee & Noe, 2000; Sharma, 2004). Briefly, scholars in corporate governance recognize dedicated ownership by institutional investors as a U.S. version of relational owners providing patient capital (Bushee, 2004).

As we mentioned earlier, however, the argument that dedicated institutional investors are the U.S. version of relational owners providing patient capital is theoretically puzzling. First, the degree of dedication comes in proportion to the degree of concentration in the portfolio. With a concentrated portfolio composed of substantial ownership stakes of each firm, dedicated institutional investors can pay sufficient attention to individual firms within their portfolio and

raise their voice on strategic issues. Otherwise, dedication does not lead to quality monitoring based on close attention. While dedication induced by concentration resolves the issue of inattention and short-term orientation of usual institutional investors, however, it might create another issue regarding risk profile of institutional investors. Most of all, the concentrated portfolios of dedicated institutional investors are not sufficiently diversified to absorb idiosyncratic risk incurred by strategic investments of individual firms within their portfolio[3] (Bushee, 2004). Furthermore, a substantial ownership stake for each firm within their portfolio means illiquidity of equity investments by dedicated institutional investors. Without paying a block discount in the open market or finding another block investor, dedicated institutional investors are not able efficiently and easily to liquidate their equity investments for a firm. The portfolio strategy taken by dedicated institutional investors characterized by concentration and illiquidity already carries high risk. Consequently, they would likely be cautious in taking additional business risk incurred by a business strategy selected by firm managers within their portfolio (Barber & Goold, 2007). For example, in November 2000, the board of Coca-Cola rejected a 15.75 billion stock acquisition of Quaker Oats, the maker of Gatorade and other food products. Due to the rejection, Coke's stock has suffered. Coke's market capitalization has been slashed by 15.35 billion, which is approximately the amount that Coke would have paid in stock for the deal. At that time, Mr. Buffet's Berkshire Hathaway, Inc., was Coke's biggest shareholder, and Buffet was one of the directors. Many industry analysts stated that Buffet was sceptical about issuing new Coke shares to pay for the deal, while some directors supported the deal. Later,

[3] A type of institutional investor that holds a widely diversified portfolio for a long time. This type of investor is called a quasi-indexer in Bushee's (2004) classification. Physically, it is impossible for a money manager of quasi-indexers to pay attention to individual firms within their portfolio due to a higher number of firms within their portfolio. Furthermore, their ownership stake is smaller than 1%. As a result, they are not able to raise their voice through proxy contests or naming board members. Firm managers do not feel much pressure from this type of institutional investor because they do not trade frequently and, if they do, they just follow an indexing strategy.

Quaker was acquired by Pepsi. Due to the growth of the non-CSD (carbonated soft drinks) market and Pepsi's diversification into non-CSD before Coke, the market cap of Pepsi surpassed that of Coke. Warren Buffet is a typical and successful example of a dedicated institutional investor. However, he is against the strategic and crucial investment by Coca-Cola. Specifically, he thought that the premium was too big and carried a high risk. He was also hesitant to issue new stock. It would cause dilution of his control power unless he made an additional investment into Coca-Cola in a proportional manner. His risk-avoiding attitude brought a detrimental impact on the performance of Coca-Cola (Mckay & Deogun, 2000; McKay, Deogun, Spurgeon, & Eig, 2000).

By definition, most strategic competitive actions, as opposed to tactical competitive actions, incur higher risk due to their irreversibility and substantial commitment of resources (Chen, Smith, & Grimm, 1992; Ghemawat & Sol, 1998). For example, while higher capital expenditure for fixed assets can provide a platform for growth, which is an example of strategic investment, it becomes problematic if negative economic shocks occur (Ghemawat & Sol, 1998; Irvine, Park, & Yıldızhan, 2016; Patatoukas, 2011). When things go poorly, the capital invested is not easily fungible without expending substantial time and capital. It is a resource already committed for a specific purpose (Bourgeois, 1981; Kim & Bettis, 2014). Due to this lack of fungibility, strategic actions, such as capital expenditure, usually carry higher risks (Zhang & Gimeno, 2010). In summary, two conflicting sentiments are present in dedicated institutional investors – *lower risk tolerance driven by a concentrated portfolio, and higher temporal tolerance driven by a long-term investment horizon*.

The second puzzle is that it is unreasonable to assume a uniform commitment of dedicated institutional investors to individual firms within their portfolio from entrance to exit.

Unlike relational capital in Japanese or German holdings for control (Ahmadjian & Robbins, 2005), however, dedicated institutional investors in the U.S. do not hold shares of individual firms for control. They hold a meaningful stake that allows them to raise their voice on corporate financial policies (Westphal & Zajac, 2001), corporate governance issues, such as independent board structure (Westphal & Zajac, 1997), the level of CEOs' compensation (Weber & Dudney, 2003), or restructuring (McDonald & Westphal, 2003). By making firm managers attend to their voice, dedicated institutional investors strive to obtain their target return, and thus beat the market. Furthermore, they will sell their stake in a firm if the firm stock reaches their target return in a given time window. It makes sense to realize the return because it may be harder to continue beating the market in the long-term (Barber & Goold, 2007). Indeed, it is Warren Buffet, in the Berkshire Hathaway owner's manual, who admits that buying to keep forever hurts financial performance of dedicated institutional investors (Barber & Goold, 2007). Basically, institutional investors play a role as a fiduciary agent for their clients (Arthurs et al., 2008).

Moreover, institutional investors buy blocks of shares with the intention of eventually selling to make a return for their clients (Westphal & Bednar, 2008). Once-dedicated does not necessarily mean that they are always dedicated up to their exit (Zhang & Rajagopalan, 2010). As their holding period increases, they are more likely to be less dedicated to a focal firm. Furthermore, if dedicated institutional investors decide to exit at a certain point, they have a strong incentive to make the equity that they hold attractive to potential buyers, even by short-term actions at the cost of long-term competitive advantage of the focal firms. Interestingly, a recent empirical study offers a positive association between the level of dedicated institutional ownership and the likelihood of accounting fraud (Shi et al., 2017). Given the existing expectation on the positive governance role played by dedicated institutional investors, the

finding is a very perplexing one. Shi et al. (2017) interpreted their findings as an unintended consequence of quality monitoring provided by dedicated institutional investors, rather than a manifestation of agency problem type II caused by dedicated institutional investors. We think that their interpretation on the result should be revisited. Given the risk-avoidance indicated by a concentrated portfolio of dedicated institutional investors, when their remaining investment time horizon becomes shorter, dedicated institutional investors would behave in a more myopic manner from the perspective of other shareholders. Accordingly, as the dedicated institutional investors' holding period increases, firm managers also behave in a more myopic manner to cater to the specific needs of dedicated institutional investors.

Capital expenditures to fixed assets

Accounting procedures for capital expenditures influence short-term financial performance in a negative manner. First, investment in fixed assets is depreciated beginning with the year of purchase. Earnings generated by those assets, however, may not show up for a couple of years. Furthermore, some capital expenditure is for fixed assets repair or current equipment replacement. Such modifications often require partial or complete cessation of production (Souder & Bromiley, 2017). Due to these characteristics, capital expenditures are likely to depress short-term earnings (Wahal & McConnell, 2000). Capital expenditures are also a risky investment because the capital used is generally fixed for specific uses and has low fungibility. Consequently, most managers believe that the stock market would respond in a negative way to increased capital expenditure to fixed assets (Graham et al., 2005). Indeed, there is empirical evidence in line with this belief (Chauvin & Hirschey, 1993; Eberhart, Maxwell, & Siddique, 2004).

At the same time, however, investments in fixed assets is an important action with crucial strategic ramifications, such as improving efficiency, providing platforms for growth, and increasing barriers to entry. A firm without this kind of commitment would not sustain its competitive advantages in the long-run (Ghemawat, 1991). Furthermore, capital expenditure for fixed assets features more managerial discretion than other spending categories. If a firm faces a shortfall against yearly targets elsewhere, for example, capital expenditure is a category that is easy to cut or to delay compared to other categories, such as cost of goods sold (Bromiley, 1986). Due to the managerial discretion involved in capital expenditure for fixed assets, capital expenditure above a certain threshold often requires owners' endorsement through board meetings in which dedicated institutional investors may be able to intervene in a direct manner. As a result, capital expenditure is a setting in which we can test theorized reluctance of dedicated institutional investors to make long-term investments with strategic ramifications due to negative short-term impacts on financial performance and long-term impacts on strategic importance. It is important to note that we do not argue that dedicated institutional investors are risk-averse and myopic from the beginning. When a dedicated institutional investor just purchases a block of a firm stock, the long-time horizon effect might offset the concentrated portfolio effects. When the concentration is combined with a short remaining investment time horizon, however, dedicated institutional investors are less likely to endorse long-term strategic investments.

Hypothesis 1. As the holding period of dedicated institutional investor increases, the capital expenditure ratio of the firms within their portfolio will decrease.

Performance implications

Here, we do not aim to develop a theoretically independent hypothesis. Instead, we intend to develop another hypothesis to rule out alternative explanations on potential supporting evidence for the first hypothesis. In deriving hypothesis 1, we posit risk avoidance of a focal firm with the portfolio run by dedicated institutional investors due to gradual short-term orientation of dedicated institutional investors as the cause of tight control on capital expenditure (Barber & Goold, 2007; Bushee, 2004). However, even without short-term orientation of dedicated institutional investors, we might identify a similar phenomenon in our empirical setting.[4] If the corporations have over-invested in negative NPV projects, active investors, such as dedicated institutional investors, would exert their power to correct deviations in managers' behavior from shareholders' interest (Heflin & Shaw, 2000; Schnatterly et al., 2008). As a consequence, we might observe decreased capital expenditure to fixed assets. In this case, there is no agency problem type II, i.e., principal-principal conflict (Villalonga & Amit, 2006). Dedicated institutional investors serve in their positive governance role on behalf of other passive shareholders, such as individual investors. If this is the case, the tight control on capital expenditure imposed by dedicated institutional investors is a correctional and rational one, rather than a myopic one. To elucidate whether or not the intervention is aligned with other shareholders' interests, we might measure the degree of over- or under-investment of the focal firms.

A possible way to measure the degree of over (under) investment is to compare the amount of investment by a particular firm with the average amount of the industry (Bebchuk, Brav, & Jiang, 2015; Wahal & McConnell, 2000). It is a questionable approach, however, to compare the input size of focal firms with the industry average without investigating its impact on output. First, the definition and boundary of industry and identification of peers within the

[4] We appreciate an anonymous reviewer who raised this point.

industry is not consistent across times and space. Moreover, significant firm heterogeneity within the same industry implies that using industry average is not always the optimal choice by firms (Barney, 1991; Dierickx & Cool, 1989). Therefore, we directly measure firm performance implications, rather than check conformity to the industry average in terms of input size or frequency. In other words, if the intervention by dedicated institutional investors conforms to the interest of other shareholders, it should bring a positive impact on the performance of focal firms. Otherwise, if the intervention is a myopic one, the intervention by dedicated institutional investors would bring a negative impact on the firm performance. Given our theoretical arguments based on the impatience and gradual short-term orientation of dedicated institutional investors, we expect the tight control on capital expenditure imposed by dedicated institutional investors to have a detrimental impact on performance. Here, we also check the firm performance implications in profitability and growth. By doing so, we can observe a possibility that the intervention might have a positive impact on long-term growth, even if it might have a detrimental impact on short-term profitability.

Hypothesis 2. As the holding period of dedicated institutional investor increases, the return-on-assets (ROA) of the firms within their portfolio decreases.

Hypothesis 3. As the holding period of dedicated institutional investor increases, the sales growth of the firms within their portfolio decreases.

SAMPLE AND RESEARCH DESIGN

Data

Two datasets, i.e., Compustat and Thomson Reuters' Institutional Holdings (13F) filing database, were used to construct the sample to test the hypotheses. First, we extracted all firm-

year observations from Compustat for the period 1990-2010.[5] Then, we excluded the firm-year observations for which we could not find the one year-lagged financial information in Compustat. Second, we accessed the institutional holdings data on firms from the Thomson Reuters 13F database. We excluded the firm-year observations that we could not find in the 13F filing database.[6]

We also excluded financial service industries (SIC codes 6000–6999), since they have different asset structures than other industries, and stock market reactions can differ for these industries. These screening processes led to 42,869 firm-year observations with 7,703 unique firms.[7]

Dependent variables

We have three dependent variables: (1) capital expenditure ratio for fixed assets (*Capital Expenditure*); (2) return-on-assets (*ROA*); and (3) sales growth (*Sales Growth*). To build the first dependent variable, *Capital Expenditure*, we use a firm's capital expenditure [Compustat: CAPX] at a given horizon normalized by lagged property, plant, and equipment [Compustat: PPENT] (Wahal & McConnell, 2000). To build *ROA* as a firm's performance variable, we used operating

[5] As we mentioned earlier, before a shareholder or a shareholder group with an ownership position of 5% or more can nominate a director, a year must have passed since they purchased the ownership block. However, in 2010, the SEC increased this threshold to more than three years (see Facilitating Shareholder Direction Nominations, Exchange Act Releases Nos. 33-9136; 34-62764; IC-29384, 75 Fed Reg.56,668 (Aug,25,2010). This is why we limit our data range from 1990 to 2010. However, we also re-run all of our analysis in the most recent time period, 2011-2015, to obtain a sense of the effect of regulatory change on the influence of dedicated institutional investors on firm capital investments and performance implications. We discuss these results as additional analyses. We appreciate an anonymous reviewer who raised this issue.

[6] Before excluding the data points, we randomly selected approximately 20 firm-years for which institutional holdings do not appear in the Thomson Reuters 13F database. We checked their ownership structure in another dataset, Capital IQ, which provides corporate ownership only in recent years, but more detailed information. We found that institutional investors have some stakes in those missing firm-year observations. The omission is partially because the institutional managers do not meet the entire 13F filing requirements, and partially because of the small proportion of the investment in those firms to the total portfolio of the institutional investor. The investment in each firm in the 20 sample accounts for less than 1% of the total portfolio owned by the institutional investors. However, sometimes the level of institutional holdings to the total market cap of the focal firm was close to 20%. On this basis, we decided to exclude those firm-year observations which do not appear in the 13F datasets, unlike Grinstein and Michaely (2005), in which institutional holdings was set to be equal to 0% for firms not appearing in the 13F database.

[7] The same data screening process yields 8,236 firm-year observations over the period from 2011 to 2015.

income before depreciation [Compustat: OIBDP] at a given horizon divided by lagged total assets [Compustat: AT] (Flammer & Bansal, 2017). To build *Sales Growth* as another measure for performance, we follow Brush, Bromily, and Hendrickx (2000) and calculate the growth rate as the natural log of the ratio of firm sales [Compustat: SALE] at a given time divided by the lagged value of firm sales.

Explanatory variables

Institutional ownership

The *level of institutional ownership* is measured by the number of common stock shares held by institutional investors, calculated as a percentage of the total number of shares outstanding for a focal firm at the end of the fiscal year in each firm-year observation in our sample. The *level of dedicated institutional investors' ownership* and the *level of transient institutional investors' ownership* are calculated as the percentages of common stock owned by dedicated institutional investors and transient institutional investors, respectively, divided by the total outstanding common stock. We classified institutional investors by the data provided by Bushee's webpage into transient, dedicated, and quasi-indexer [see Appendix for details on his institutional investor classification scheme].[8] By eliminating the middle group, i.e., quasi-indexers, we explored the two pure types of institutional investors, i.e., dedicated and transient.[9]

Control variables

Firm characteristics

We control for a variety of firm-specific variables that are standard controls when a firm's strategic investment decisions and operating performance are the dependent variable to

[8] Bushee's webpage can be found at: http://acct.wharton.upenn.edu/faculty/bushee/IIclass.html
[9] The inclusion of these investors as a control into our regression analysis does not alter our inferences.

isolate ownership effects. All of the control variables for firm characteristics were measured one year prior to the capital expenditure and firm performance.

Market valuation (*Tobin's Q*): The firm's relative market valuation is likely to influence investment activities and operating outcomes. Higher market valuation may be positively related to internal capital expenditure given the lower needs of importing growth opportunities from outside. We used *Tobin's Q*. Following Brush, Bromily, and Hendrickx (2000), market value is the sum of calendar-year end[10] values of the firm's common stock [Compustat: PRCC_C × CSHO], market value of the firm's preferred stock [Compustat: PSTK], book value of the firm's long-term debt [Compustat: DLTT], and book value of the firm's short-term debt with a maturity of less than one [Compustat: DD1]. The market value is scaled by total assets [Compustat: AT].

Undistributed cash flow to shareholders (*Free Cash Flow*): According to the Free Cash Flow (FCF) hypothesis, firms with FCF tend to invest in low-return or even negative-return projects (Jensen, 1986). As a control for the FCF effect, we constructed *Free Cash Flow* as undistributed yearly cash flow scaled by total assets. We follow Lehn and Poulsen (1989), and define *Free Cash Flow* as operating income before depreciation [Compustat: OIBDP], minus total income taxes [Compustat: TXT], minus changes in deferred taxes from the previous year to the current year [Compustat: changes in TXDITC], minus gross interest expenses on total debt [Compustat: XINT], minus the total amount of preferred dividend requirement on cumulative preferred stock and dividends paid on non-cumulative preferred stock [Compustat: DVP], minus the total dollar amount of dividends declared on common stock [Compustat: DVC]. We then scale the variable by total assets [Compustat: AT].

[10] In our econometric model, we use year-fixed effect. Therefore, we use calendar-year end values of the firm's common stock (Brush et al., 2000). We also run a regression model based on fiscal-year end values of the firm's common stock. This treatment does not affect the interpretation of the main results of this paper.

Debt intensity (*Leverage*): We include debt intensity to control for the effect of a firm's leverage on strategic capital investments and operating performance. We define *Leverage* as the firm's total debt [Compustat: DLTT+DLC] divided by total assets [Compustat: AT].

Cash reserves (*Cash*): Additions to cash reserves occur when managers accumulate free cash flow, rather than spending it immediately. Therefore, excess cash holdings mean more than a proxy for firm performance. Excess cash reserves are stockpiled free cash flow. Concordantly, the predicted relationship between cash holdings and capital expenditure based on the FCF hypothesis is positive (Harford, 1999). Indeed, Jensen (1986, 1989) focused on the cumulative cash balance, instead of the yearly cash flow, when he criticized managerial misbehavior. *Cash* is measured by cash and short-term investments [Compustat: CHE] divided by total assets [Compustat: AT].

Prior performance: Firm performance in prior periods is closely related to a firm's strategic decision-making, such as capital expenditure for fixed assets. However, the direction is ambiguous. Managerial hubris (Roll, 1986) established by good prior performance would encourage investment activities, while managers in poorly performing firms have incentives to try something new, such as improving efficiency by higher investment into fixed assets (Shleifer & Vishny, 1988). To control for these diverging impacts of prior performance on capital expenditure, we used return-on-equity calculated as net income [Compustat: NI] scaled by shareholder's equity [Compustat: SEQ]. Adding another variable concerning prior performance might increase the multicollinearity of the models. We checked VIF (Variance Inflation Factors) score across empirical models, and found that the VIF score for the return-on-equity in all models is higher than 10. Therefore, we excluded the net income deflated by common equity

from all regression equations. Instead, we used a lagged value of *Sales Growth* as a control for prior firm performance in capital expenditure tests.

Size: Firm size has been associated with capital expenditure and firm performance. We used firm size, measured as the natural logarithm of firm assets [Compustat: AT]. However, many variables are already scaled by measures for firm size. Adding another variable for size might increase the multicollinearity of the models. In fact, since the VIF (Variance Inflation Factors) score for the size in all regression models is higher than 10, we excluded the size factor from the models.

Statistical models

To test the hypotheses on longitudinal effects of dedicated institutional investors on capital expenditures and their performance implications, we extended our firm response window up to four year-ahead horizons. As a result, we are better able to observe the long-term influence of dedicated institutional investors over an extended time period. This extension of the analysis window is critical. Before a shareholder or a shareholder group with an ownership position of 5% or more can nominate a director, a year must have passed since they purchased the ownership block.[11] This puts limits on their ability to influence firm management for the first one year.[12] The crucial momentum driven by dedicated institutional investors is more likely to emerge at least one year after they entered the ownership block. Therefore, we used OLS regression with fixed effects based on SIC three-digit classification ($\Sigma_h Industry_h$), firm identifier ($\Sigma_j Firm_j$), and calendar year ($\Sigma_l Year_l$) and standard errors corrected for a within-firm serial correlation

[11] In our sample, dedicated institutional investors' average percentage ownership with one-year lag is approximately 5.41% (untabulated), implying that these investors tend to hold a block of firms' shares.
[12] As the SEC increased this threshold to more than three years in 2010, we anticipate that it will take a longer time for block owners to play a governance role in firms' strategic decisions in our post-regulation period.

(Peterson, 2009). Specifically, we estimate the following regression model for each horizon $t+k$ (k = 1, 2, 3, or 4) to test our first hypothesis:

$$\begin{aligned} K_{i,t+k} = {} & \beta_0 + \beta_1 Tobin's\ Q_{i,t+k-1} + \beta_2 Sales\ Growth_{i,t+k-1} + \beta_3 Cash_{i,t+k-1} + \beta_4 Leverage_{i,t+k-1} \\ & + \beta_5 Free\ Cash\ Flow_{i,t+k-1} + \beta_6 Transient\ Institutional\ Investors_{i,t+k-1} \\ & + \beta_7 Dedicated\ Institutional\ Investors_{i,t} \\ & + \beta_8 Transient\ Institutional\ Investors_{i,t+k-1} \times Dedicated\ Institutional\ Investors_{i,t} \\ & + \beta_9 Dedicated\ Institutional\ Investors_{i,t+k-1} + \Sigma_h Industry_h + \Sigma_j Firm_j \\ & + \Sigma_l Year_l + \varepsilon_{i,t+k}, \end{aligned} \quad (1)$$

where $K_{i,t+k}$ is capital investments to fixed assets for firm i in year $t+k$; $Tobin's\ Q_{i,t+k-1}$ is firm i's market valuation in year $t+k-1$; $Sales\ Growth_{i,t+k-1}$ is firm i's sales growth rate in year $t+k-1$; $Cash_{i,t+k-1}$ is firm i's cash reserve in year $t+k-1$; $Leverage_{i,t+k-1}$ is firm i's leverage ratio in year $t+k-1$; $Free\ Cash\ Flow_{i,t+k-1}$ is firm i's free cash flow in year $t+k-1$; $Transient\ Institutional\ Investors_{i,t+k-1}$ is transient ownership by institutional investors for firm i in year $t+k-1$; $Dedicated\ Institutional\ Investors_{i,t}$ is dedicated ownership by institutional investors for firm i in year t; and $Dedicated\ Institutional\ Investors_{i,t+k-1}$ is dedicated ownership by institutional investors for firm i in year $t+k-1$ (k = 2, 3, or 4 only for this last control variable). The variable of interest is $Dedicated\ Institutional\ Investors_{i,t}$, and hypothesis 1 predicts that β_7 becomes negative as time passes.

To test the performance implications of the interventions by dedicated institutional investors, we estimate the following regression model for each $t+k$ horizon (k = 1, 2, or 3):

$$\begin{aligned} E_{i,t+k} = {} & \gamma_0 + \gamma_1 Tobin's\ Q_{i,t+k-1} + \gamma_2 Cash_{i,t+k-1} + \gamma_3 Leverage_{i,t+k-1} \\ & + \gamma_4 Transient\ Institutional\ Investors_{i,t+k-1} + \gamma_5 Dedicated\ Institutional\ Investors_{i,t} \\ & + \gamma_6 Transient\ Institutional\ Investors_{i,t+k-1} \times Dedicated\ Institutional\ Investors_{i,t} \\ & + \gamma_7 Dedicated\ Institutional\ Investors_{i,t+k-1} + \Sigma_h Industry_h + \Sigma_j Firm_j \\ & + \Sigma_l Year_l + \varpi_{i,t+k}, \end{aligned} \quad (2)$$

where $E_{i,t+k}$ is firm i's performance in year $t+k$ as reflected in either ROA or sales growth. All other variables are defined as previously.[13] According to hypotheses 2 and 3, we predict that γ_5 becomes negative as time passes.

In all regression models, year and industry-fixed effects allow us to control for market-wide time and industry-wide trends, respectively, in the values of capital expenditure, ROA, and sales growth. We also control for unobserved time-invariant factors unique to each firm. Given the firm heterogeneity within an industry (Barney, 1991; Dierickx & Cool, 1989), statistical models with firm-fixed effects generate a more defensible result.[14] This research design choice allows us to interpret the regression coefficients as a change in the dependent variable associated with a within-firm change in the variable of interest, while controlling for cross-sectional differences embedded in cross-firm heterogeneity (Peterson, 2009). Finally, using conventional standard errors, which ignores the firm-specific correlation, might lead to imprecise inference. To address this, we used firm-clustered standard errors. These clustered standard errors are larger than those obtained from conventional estimation, thereby making the statistical inference more conservative.

RESULTS

The descriptive statistics for all of the variables are provided in Table 1.

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

The mean value of dedicated institutional investor's ownership is 6.9%. Through additional analysis, we checked the number of dedicated institutional investors per firm-year.

[13] For the last control variable (i.e., *Dedicated Institutional Investors*$_{i,t+k-1}$), k takes the value of either 2 or 3.
[14] When we simultaneously include both firm and industry-fixed effects in regression estimation, STATA automatically drops out many fixed effects due to the degree of freedom issue. Nevertheless, our additional analysis suggests that our findings are robust to the use of either firm or industry-fixed effects in conjunction with year-fixed effects as controls for innate firm attributes or industry-wide trends, respectively (untabulated).

When there is dedicated institutional ownership in a firm-year, the median value of the number of dedicated institutional investors is one. Put together, on average, a dedicated institutional investor has an ownership stake larger than 5%. As we theorized, dedicated institutional investors own a substantial ownership, i.e., higher than 5%, in a firm. We also examined the quarterly change in the number of dedicated institutional investors in a panel. By doing so, we can catch exit events by dedicated institutional investors, except for cases in which the same number of dedicated institutional investors exited and entered in the same quarter. On average, 9.65% of firm quarters in a firm panel shows a decrease in the number of dedicated institutional investors. Given the number, on average, a dedicated institutional investor holds a firm stock for approximately 10 quarters. These numbers indicate the importance of extending a firm reaction window from one year to four-year horizons.

To further demonstrate the validity of the use of dedicated ownership in our contexts, we checked the transition pattern of institutional investor type. In our dataset, dedicated institutional investors in year *t* are re-classified as "dedicated" for approximately 76.3% and 64.6% of the cases in year *t+1* and *t+2*, respectively (untabulated). These results suggest that, although Bushee allows a time-varying classification scheme for institutional investors, the cluster analysis yields a persistent membership.

Furthermore, even if an institutional investor changes their investment style, the change is almost unidirectional, from dedicated to quasi-indexer or transient, and not vice versa. As we posited, dedicated investors lose their dedication to a particular firm or change their investment strategy from concentrated dedication to diversified liquidity, and not the other way around.[15] Therefore, it is almost negligible for a transient or a quasi-indexer to become a dedicated one.

[15] For example, transient and quasi-index investors in year *t* are transitioned into "dedicated" for only approximately 0.8% and 1.0% of all cases, respectively, in year *t+1* (untabulated).

The nested results of the six models of the impact of dedicated institutional ownership on capital expenditure are shown in Table 2, Panel A.

----Insert Table 2 about here----

The first model contains only controls. The second model adds the level of dedicated and transient institutional ownership at year *t* to the first model. The dependent variable in the third model is the capital expenditure ratio of focal firms two years later (i.e., year *t+2*). The fourth model adds the level of dedicated institutional ownership at year *t+1* to the third model to rule out an alternative effect. The dependent variable in the fifth (sixth) model is the capital expenditure ratio of focal firms at year *t+3* (*t+4*). In model two, the coefficient of dedicated institutional investors at year *t* (β_7) is positive, but not significant. As we theorized, when a dedicated institutional investor entered, the effect of long-term investment horizon offsets the effect of concentrated portfolio. This is why we identify positive, but insignificant, effect. Two opposing effects offset each other. In model three, however, the coefficient of dedicated institutional investors at year *t* (β_7) becomes negative and significant. As we extend our analysis window from one to two years, both the sign and significance of the parameter changed. As we theorized, as time passes since the formation of dedicated ownership, its impact on strategic investments of focal firms invested by dedicated institutional investors changed. There is a possibility that the observed negative impact is driven by the addition of another dedicated institutional investor, which joined recently. If this is the case, then the observed long-term effect of the dedicated institutional investor, which joined two or more than two years ago, might be co-variated by the impact of the newly-joined dedicated institutional investor. In model four, hence, we added the variable of dedicated institutional investor's ownership, which has only a one year-lag relative to the dependent variable. The coefficient of dedicated institutional investor

at year t (β_7), which has owned the firm stocks for two years, is still negative and significant. The coefficient of dedicated institutional investors at year $t+1$ (β_9), that have owned the firm's stock for one year, is positive but not significant, similar to the coefficient of dedicated institutional investor at year t in model two. In model five, we extend the firm response window up to three years (i.e., year $t+3$). The coefficient (β_7) is still negative, but marginally significant. In model six, we extend the observation window up to four years (i.e., year $t+4$). The coefficient of dedicated institutional investors at year t (β_7) becomes positive and not significant. Given the average holding period of dedicated institutional investors, i.e., approximately 10 quarters, the effect driven by influence of dedicated institutional investors is not observed in this model with a four year-ahead horizon.

As we posited, dedicated institutional investors put tight control on capital expenditure to fixed assets, as their holding period increases. The significant change of coefficient of dedicated institutional investor's ownership in between model two and model three shows that the observed effect is driven by the treatment of dedicated institutional investors, and not by the selection. If the observed effects were driven by selection, there would be no such qualitative change as we increase the firm decision window. In addition to statistical significance, we checked economic significance in Table 2, Panel B. As we increased dedicated institutional investor's ownership from 5% (around the mean) to 25% (two standard deviations above), the capital expenditure ratio of the enterprises is predicted, on average, to decrease from 16.78% to 13.78%. Given the mean value of fixed asset (PPENT in Compustat), i.e., $1,772 million, a 3% drop means $53.16 million. Please note that the mean amount of capital expenditure to the fixed asset is $164 million. Therefore, we identify strong empirical and economic support for hypothesis 1.

The nested results of the six models of the impact of dedicated institutional ownership on firm performance are shown in Table 3.

----Insert Table 3 about here----

In Panel A, the dependent variable in the first model is ROA ratio at the year of *t+1*. The dependent variable in the second model is ROA ratio at the year of *t+2*, while other control variables are measured at the time of year *t+1*. The dependent variable in the third model is ROA ratio at the year of *t+3*, while other control variables are measured at the time of year *t+2*. The sign of the coefficient of dedicated institutional investors at year *t* (γ_5) changed from positive to negative from model one to model two. Again, we find a qualitative change as we extend our observation window from one year to two-year horizons, as we do in models for capital expenditure. In model two, the coefficient of dedicated institutional investors at year *t+1* (γ_7), which have owned the firm stock for only one year, is positive but not significant, similar to the coefficient of dedicated institutional investor in model one. In model three, the parameter (γ_5) is still negative, but becomes insignificant. The coefficient for dedicated institutional investors (γ_7), which have owned the firm stocks for one year, is negative but not significant. In terms of economic significance, the second model (Panel B) predicts that, as the dedicated institutional investor's ownership increases from 5% to 25%, ROA decreases from 6.2% to 5.6%. Even with tighter control on capital expenditure, the firm fails to improve performance. Here, we find empirical evidence supporting hypothesis 2.

The dependent variable in the fourth model is the sales growth rate at the year of t+1. The dependent variable in the second model is the sales growth rate at the year of *t+2*, while other control variables are measured at the time of year *t+1*. The dependent variable in the third model is sales growth at year *t+3*, while other control variables are measured at year *t+2*. In all three

models, the coefficient of dedicated institutional investor's ownership at year *t* (γ_5) is negative and significant. Unlike the results in capital expenditure and ROA, even after dedicated institutional investors leave the firms, we are not able to find the sign of recovery in sales growth of the firms.

As additional tests, using the sample data from 2011 to 2015, we report the regression results on the impact of regulatory change on the influence of dedicated institutional investors on firm capital investments and performance implications in Table 4.

----Insert Table 4 about here----

Panel A of Table 4, in which we repeat our tests regarding capital expenditure, we find that it takes much longer for the influence of dedicated ownership on capital expenditure to switch its sign from positive to negative. Specifically, unlike our main findings over the period 1990-2010, the magnitude of the negative coefficient on dedicated ownership at year *t* (β_9) reaches its maximum in the four year-ahead horizon (i.e., year *t+4*), which is suggestive of two additional years of delays in terms of the detrimental effect of dedicated investors on capital expenditure. However, the statistical significance is ~~only~~ marginal during this additional sample period.

Panel B of Table 4, in which we repeat our tests on performance implications of dedicated ownership, we observe that, for both ROA and sales growth, it takes more time for the influence of dedicated ownership to manifest as poor firm performance. Specifically, the ROA regression results using the sample period 2011-2015 suggest that the coefficient of dedicated institutional investors at year *t* (γ_7) is negative and significant for the three year-ahead horizon (i.e., model 3). Similarly, the sales growth regression results during this time period indicate that the coefficient of dedicated institutional ownership at year *t* (γ_7) is significantly negative only for

the three year-ahead horizons (i.e., model 6). Collectively, these results suggest that, during the post-regulation period, it takes a significantly longer time for dedicated investors to influence firms' investment policies and performance, which is consistent with the premise of the SEC's rule change.

Contributions and limitations

This study makes the following contributions. First, we theorize impatience of dedicated institutional investors when they have a short remaining investment horizon. It is a novel argument that a negative association exists between the presence of dedicated institutional investors and the amount of strategic investments by the firms within their portfolio. This is also contrary to the prediction of prior literature on the positive relationship between institutional investors' ownership and strategic competitive action literature (Connelly et al., 2010b; Zhang & Gimeno, 2010). This counter insight contributes to a more holistic understanding of the governance roles served by dedicated institutional investors across years. Second, our study examines a long-horizon (i.e., delayed) reaction of firms in response to an owner's influence, rather than a short-horizon (i.e., immediate) reaction, which better matches the long-term orientation of dedicated institutional investors to an empirical test setting. Our empirical strategy is analogous to the spirit of a robust econometric approach measuring both short-term and long-term effects of policy interventions (Green, 2007, Chapter 6). We believe that our long-term analysis provides a more complete elucidation of the full implications of dedicated investors for firm investment policies. As we mentioned earlier, Shi et al. (2017) observed a counter finding regarding the governance role played by dedicated institutional investors in the context of accounting fraud, i.e., a positive association between the presence of dedicated institutional

investors and the likelihood of accounting fraud by individual firm within their portfolio. Combined with their findings, our theoretical predictions and strong empirical support call for revisiting the expected governance role played by dedicated institutional investors.

The result that we identified in this paper implies a negative impact of dedicated institutional investors on a firm's decision to make strategic investments, such as capital expenditure, as time passes. Future research might uncover potential heterogeneity among strategic competitive actions, including capital expenditure, R&D, and acquisitions. By doing so, the model developed here could potentially be tested and refined in other contexts, as well. We leave these questions for future investigations.

Implications

Policy-makers have invested substantial effort to formulate terms and conditions regarding the qualifications of investors. With the qualifications, an investor can name a board member or initiate a proxy contest. The size of ownership stake in individual firms (larger than 5%) and holding period (longer than one year until 2010, longer than three years currently) are the usual conditions that must be met. However, the finding of this paper identifies the importance of regulations concerning the exit of those qualified investors. When a qualified investor has a plan to exit, the likelihood of emergence of agency problem type II is substantial. Policy-makers need to add sophisticated regulations in order to address this.

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Appendix. Bushee's (2004) Institutional Ownership Classification

To classify all institutional investors into their investment type (i.e., transient, dedicated, and quasi-indexers), Bushee (2004) conducted a cluster analysis by incorporating two dimensions of their revealed trading behavior:

(1) The degree of diversification in their portfolio holdings.
(2) The ownership stability in their portfolio holdings.

The cluster analysis and resulting classification scheme is updated annually (i.e., year *t*) based on rolling two years of data (i.e., years *t-1* and *t*) from the Thomson Reuters' Institutional Holdings (13F) database. Therefore, Bushee's (2004) institutional investor classification is time-varying and does not suffer from a potential look-ahead bias.

To capture the first dimension of institutional investor-level characteristics (i.e., level of diversification), Bushee (2004) used the following three variables:

(1) Average percentage ownership (in portfolio stocks).
(2) Percentage of portfolio stocks that are block holdings.
(3) Average market value of investment in portfolio firms.

To measure the second dimension of institutional investor-level characteristics (i.e., stability), Bushee (2004) used the following two variables:

(1) Portfolio turnover (i.e., total market value of trading divided by the total market value of beginning-of-the-period holdings).
(2) Percentage of continuous (i.e., over the past two years) holding statistics.

Table 1. Descriptive statistics.

This table reports descriptive statistics of main regression variables over the sample period 1990-2010. * indicates Pearson correlations significant at the 5% level (two-tailed).

		Mean	S.D.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1)	*Capital Expenditure*	0.2293	3.1177									
(2)	*ROA*	0.0378	0.6791	-0.0045								
(3)	*Tobin's Q*	1.9251	3.0520	0.0171*	-0.1886*							
(4)	*Sales Growth*	0.0915	0.4180	0.0709*	0.0425*	0.1039*						
(5)	*Cash*	0.1920	0.2295	0.0219*	-0.1528*	0.3049*	0.0468*					
(6)	*Leverage*	0.2300	0.3116	-0.0004	-0.1098*	-0.0044	-0.0464*	-0.2969*				
(7)	*Free Cash Flow*	-0.0025	0.4865	-0.0068	0.9796*	-0.2940*	0.0595*	-0.1910*	-0.2472*			
(8)	*Total Institutional investors*	0.4124	0.3020	-0.0102*	0.1256*	-0.0318*	0.0334*	-0.0569*	-0.0180*	0.1525*		
(9)	*Transient Institutional investors*	0.1093	0.1277	0.0021	0.0688*	0.0520*	0.0517*	0.0646*	-0.0286*	0.0843*	0.6594*	
(10)	*Dedicated Institutional investors*	0.0657	0.1011	-0.0021	0.0615*	-0.0414*	0.0128*	-0.0724*	0.0099*	0.0736*	0.3297*	0.0658*

Table 2. OLS with fixed effects—capital expenditure (H1).

This table tests the long-term impact of dedicated institutional investor ownership on a firm's capital expenditure (hypothesis 1) over the sample period 1990-2010. Panel A reports OLS regression results with fixed effects and standard errors clustered at the firm-level (Peterson, 2009). Panel B summarizes economic interpretations using various ranges of dedicated ownership.

Panel A. Regression results.

Dependent Variable: Capital Expenditure	**Model 1**		**Model 2**		**Model 3**		**Model 4**		**Model 5**		**Model 6**	
	(t+1; controls only)		***(t+1)***		***(t+2)***		***(t+2)***		***(t+3)***		***(t+4)***	
	Coef.	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**
Tobin's Q	0.019	4.89	0.019	4.97	0.019	4.97	0.019	4.94	0.016	4.86	0.014	4.08
Sales Growth	0.049	1.82	0.049	1.87	0.048	1.82	0.049	1.83	0.025	0.98	0.009	0.22
Cash	0.451	2.82	0.450	2.76	0.450	2.75	0.448	2.76	0.427	3.8	0.403	4.38
Leverage	-0.205	-5.19	-0.204	-5.19	-0.206	-5.11	-0.205	-5.18	-0.202	-3.66	-0.187	-3.45
FreeCashFlow	0.046	0.78	0.046	0.78	0.046	0.8	0.046	0.78	0.049	1.06	0.026	0.55
Transient Institutional Investors			0.024	0.57	-0.015	-0.18	-0.019	-0.22	-0.004	-0.05	0.031	0.61
Dedicated Institutional Investors (fixed at year *t*)			**0.127**	**0.82**	**-0.172**	**-2.79**	**-0.240**	**-2.15**	**-0.086**	**-1.89**	**0.013**	**0.37**
Interaction between Transient and Dedicated Institutional Investors			-0.215	-0.55	0.217	1.49	0.320	1.47	0.342	1.27	0.081	0.6
Dedicated Institutional Investors (one-year lag from D.V.)							0.169	1.24	0.060	1.27	0.106	1.75
Industry Fixed Effects	Yes		Yes		Yes		Yes		Yes		Yes	
Firm Fixed Effects	Yes		Yes		Yes		Yes		Yes		Yes	
Year Fixed Effects	Yes		Yes		Yes		Yes		Yes		Yes	
Number of Observations	42,869		42,869		42,811		42,811		36,440		30,657	
Within R-sq	11.71%		11.73%		11.70%		11.70%		26.40%		35.57%	

Panel B. Economic impact of dedicated ownership on capital expenditure.

Dedicated Institutional Investors in year *t* (Based on Model 3)	Capital Expenditure in year *t+2*
0%	17.53%
5%	16.78%
10%	16.03%
15%	15.28%
20%	14.53%
25%	13.78%
30%	13.03%
35%	12.29%
40%	11.54%
Dedicated Institutional Investors in year *t* (Based on Model 4)	Capital Expenditure in year *t+2*
0%	17.93%
5%	16.90%
10%	15.86%
15%	14.83%
20%	13.80%
25%	12.76%
30%	11.73%
35%	10.69%
40%	9.66%

Table 3. OLS with fixed effects—performance implications (H2/H3).

This table tests the long-term impact of dedicated institutional investor ownership on a firm's performance, as measured by ROA and sales growth (hypotheses 2 and 3, respectively) over the sample period 1990-2010. Panel A reports OLS regression results with fixed effects and standard errors clustered at the firm-level (Peterson, 2009). Panels B and C summarize economic interpretations using various ranges of dedicated ownership.

Panel A. Regression results.

Dependent Variable:	**Model1**		**Model2**		**Model3**		**Model4**		**Model5**		**Model6**	
	ROA(t+1)		***ROA(t+2)***		***ROA(t+3)***		***Sales Growth(t+1)***		***Sales Growth(t+2)***		***Sales Growth(t+3)***	
	coef.	**t-stat.**	**coef.**	**t-stat.**	**coef.**	**t-stat.**	**coef.**	**t-stat.**	**coef.**	**t-stat.**	**coef.**	**t-stat.**
Tobin's Q	0.006	3.56	0.005	2.57	0.007	4.35	0.022	4.77	0.025	4.47	0.026	3.85
Cash	-0.089	-4.96	-0.086	-4.98	-0.078	-4.66	0.149	4.37	0.033	0.9	-0.028	-0.68
Leverage	-0.006	-0.25	-0.020	-1.18	-0.019	-1.03	-0.025	-0.57	0.008	0.16	0.034	0.59
Transient Institutional Investors	0.100	5.87	0.089	6.62	0.090	7.46	0.025	1.03	0.076	2.94	0.076	2.81
Dedicated Institutional Investors (fixed at year *t*)	**0.003**	**0.17**	**-0.031**	**-2.59**	**-0.006**	**-0.54**	**-0.109**	**-4.08**	**-0.101**	**-3.85**	**-0.062**	**-2.24**
Interaction between Transient and Dedicated Institutional Investors	-0.031	-0.61	0.030	0.82	-0.029	-0.83	0.423	3.78	0.196	2.4	0.174	1.96
Dedicated Institutional Investors (one-year lag from D.V.)			0.014	1.47	-0.001	-0.08			0.046	2.07	0.037	1.58
Industry Fixed Effects	Yes		Yes		Yes		Yes		Yes		Yes	
Firm Fixed Effects	Yes		Yes		Yes		Yes		Yes		Yes	
Year Fixed Effects	Yes		Yes		Yes		Yes		Yes		Yes	
Number of Observations	59,625		52,877		44,368		55,375		49,350		41,527	
Within R-sq	1.40%		2.20%		2.80%		6.20%		6.20%		6.20%	

Panel B. Economic impact of dedicated ownership on ROA.

Dedicated Institutional Investors in year *t* (Based on Model 2)	ROA in year *t+2*
0%	6.3%
5%	6.2%
10%	6.0%
15%	5.9%
20%	5.7%
25%	5.6%
30%	5.5%
35%	5.3%
40%	5.2%

Panel C. Economic impact of dedicated ownership on sales growth.

Dedicated Institutional Investors in year *t* (Based on Model 5)	Sales Growth in year *t+2*
0%	7.9%
5%	7.5%
10%	7.1%
15%	6.7%
20%	6.3%
25%	5.9%
30%	5.5%
35%	5.1%
40%	4.7%

Table 4. OLS with fixed effects—post-regulation period (2011-2015).

This table reports OLS regression results with fixed effects and standard errors clustered at the firm-level (Peterson, 2009) over the sample period 2011-2015. Panel A (Panel B) tests the long-term impact of dedicated ownership by institutional investors on a firm's capital expenditure (performance, as reflected in ROA and sales growth).

Panel A. Capital expenditure.

Dependent Variable:	**Model 1**		**Model 2**		**Model 3**		**Model 4**		**Model 5**		**Model 6**	
Capital Expenditure	***(t+1; controls only)***		***(t+1)***		***(t+2)***		***(t+2)***		***(t+3)***		***(t+4)***	
	Coef.	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**
Tobin's Q	0.093	3.27	0.092	3.25	0.089	3.17	0.089	3.17	0.095	3.54	0.083	3.80
Sales Growth	-0.007	-0.29	-0.008	-0.35	-0.010	-0.42	-0.009	-0.41	-0.023	-0.85	-0.025	-0.91
Cash	0.448	1.94	0.440	1.92	0.433	1.87	0.433	1.88	0.441	2.00	0.424	1.79
Leverage	-0.279	-5.43	-0.278	-5.30	-0.275	-5.48	-0.276	-5.44	-0.271	-5.77	-0.259	-4.69
FreeCashFlow	0.199	2.24	0.194	2.24	0.217	2.08	0.217	2.08	0.178	2.34	0.170	2.16
Transient Institutional Investors			0.261	1.82	0.064	0.74	0.068	0.76	-0.015	-0.24	-0.093	-1.55
Dedicated Institutional Investors (fixed at year *t*)			**0.091**	**0.59**	**-0.004**	**-0.04**	**-0.009**	**-0.09**	**0.020**	**0.14**	**-0.153**	**-1.73**
Interaction between Transient and Dedicated Institutional Investors			-0.201	-0.93	-0.060	-0.49	-0.077	-0.56	-0.571	-0.87	0.322	0.53
Dedicated Institutional Investors (one-year lag from D.V.)							0.040	0.36	0.019	0.18	0.011	0.09
Industry Fixed Effects	Yes		Yes		Yes		Yes		Yes		Yes	
Firm Fixed Effects	Yes		Yes		Yes		Yes		Yes		Yes	
Year Fixed Effects	Yes		Yes		Yes		Yes		Yes		Yes	
Number of Observations	8,236		8,236		8,175		8,175		7,993		7,767	
Within R-sq	19.00%		19.00%		18.70%		18.70%		14.60%		13.10%	

Panel B. ROA and sales growth.

Dependent Variable:	**Model1**		**Model2**		**Model3**		**Model4**		**Model5**		**Model6**	
	ROA(t+1)		***ROA(t+2)***		***ROA(t+3)***		***Sales Growth(t+1)***		***Sales Growth(t+2)***		***Sales Growth(t+3)***	
	coef.	**t-stat.**	**coef.**	**t-stat.**	**coef.**	**t-stat.**	**coef.**	**t-stat.**	**coef.**	**t-stat.**	**coef.**	**t-stat.**
Tobin's Q	0.019	2.97	0.017	3.15	0.016	3.45	0.04	2.53	0.039	2.48	0.046	2.35
Cash	0.068	1.21	0.075	1.38	0.092	1.57	-0.138	-0.65	-0.160	-0.76	-0.168	-0.73
Leverage	0.08	2.24	0.08	2.29	0.078	2.43	-0.022	-0.34	-0.022	-0.34	-0.012	-0.17
Transient Institutional Investors	0.026	1.15	-0.040	-1.09	-0.035	-1.16	0.057	1.13	-0.073	-1.2	-0.056	-1.59
Dedicated Institutional Investors (fixed at year *t*)	**-0.049**	**-1.42**	**-0.073**	**-1.89**	**-0.068**	**-3.39**	**-0.066**	**-0.72**	**0.081**	**0.79**	**-0.173**	**-2.15**
Interaction between Transient and Dedicated Institutional Investors	0.001	0.03	0.018	0.27	0.125	1.38	0.062	0.32	-0.158	-1.18	0.395	1.94
Dedicated Institutional Investors (one-year lag from D.V.)			-0.033	-0.53	-0.046	-0.78			-0.044	-0.59	-0.015	-0.15
Industry Fixed Effects	Yes		Yes		Yes		Yes		Yes		Yes	
Firm Fixed Effects	Yes		Yes		Yes		Yes		Yes		Yes	
Year Fixed Effects	Yes		Yes		Yes		Yes		Yes		Yes	
Number of Observations	8,235		8,174		7,992		8,236		8,175		7,993	
Within R-sq	1.24%		1.20%		1.11%		8.70%		7.10%		6.50%	