CORPORATE INVESTMENT AND INSTITUTIONAL INVESTORS

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Abstract

This paper examines corporate governance provided by different types of institutional investors on REIT investment decisions and its impact on firm performance. First, we find that property-type Q (firm-specific stock valuation) positively affects REIT investment decisions and such effect is materially influenced by institutional ownerships. Second, we expand Hartzell, Sun, and Titman (2006), and find negative impacts of investments on future REIT performance. We argue that firms over-invest when they see stock prices in their particular sectors are over-valued, and over-investments subsequently depress firm value. We also find that the over-investment problem is mitigated by corporate governance and monitoring performed by institutional investors.

Keywords: Stock Market, Corporate Investment, Real Estate Investment Trust (REITs), Institutional Investors

JEL Classification: G31, G34

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1. Introduction

The relationship between stock market and investments is central to the understanding of the causes and consequences of recent observations in real estate industries, including the real estate bubbles and corporate governance (such as over-investment) problems. Existing finance literature [Tobin, 1969; Morck, Shleifer and Vishny,1990; Baker, Stein, and Wurgler, 2003; Polk and Sapienza, 2009] suggests that investment decisions respond to market valuation (Tobin's Q). As Lamont and Stein (2006) argued, there are two classes of theories representing two different views on explaining how corporate investment decisions respond to the stock market valuations. According to the neoclassical view, the market is efficient and important to reallocate capital to the highest-value users; all movements in stock prices rationally reflect changes either in expected future cash flows or in proper discount rates [e.g. Fischer and Merton, 1984; Barro, 1990; Morck, Shleifer and Vishny, 1990; and Blanchard, Rhee and Summers, 1993]. As such, one should expect to see a strong positive association between Tobin's (1969) Q and firm investment, since Q is a summary statistic for the market's information about investment opportunities. In contrast, the behavioral view argues that managers time their equity issues to take advantage of stock prices that are sometimes too high relative to fundamentals [e.g. Loughran and Ritter, 1995; Stein, 1996; Baker and Wurgler, 2000; Baker, Stein, and Wurgler, 2003].

We test two alternate views on corporate investment on Real Estate Investment Trusts (REITs). REITs provide a good opportunity to study the impact of capital market valuation to investments. By law, REITs are required to pay out at least 90% of taxable income as dividends (this ratio was 95% before the passage of the REIT Modernization Act of 1999). As such, REITs must seek growth through external financing, rather than through internal financed capital expenditure. Therefore, REIT investments could be more responsive to capital market valuation. For example, when the stock price is high, it is cheaper to issue new shares for mergers and acquisitions. This is the first view- thee efficient role of investments. Alternatively, opportunistic managers could give investors the false impression of exceptional growth through mergers, and subsequently issues new shares at higher prices. This is the second view- the inefficient role on corporate investments. Hartzell, Sun, and Titman (2006) examines the relation between REIT investments and property-type Q, and finds that well-governed REITs have higher investments-Q sensitivities. Also, few studies have looked at the role of governance, such as institutional investors and analysts, in influencing firm performance [e.g. Ghosh and Sirmans, 2003;

Devos, Ong, and Spieler, 2007; Bianco, Ghosh, and Sirmans, 2007]. Nonetheless, existing literature has not yet examined the impacts of stock market influenced REIT investments on future firm performances. We use the performance implications to distinguish the two theories above.

The finance literature provides mixed evidence on the relation between investments and stock returns. McConnell and Muscarella (1985) find that announcements of increases in planned capital investments are associated with significantly positive abnormal stock returns. However, Titman, Wei, and Xie (2004) find that firms that substantially increase capital investments subsequently achieve negative benchmark-adjusted returns. The evidence is consistent with the argument that investors underreact to the empire building implications of increased investments. Polk and Sapienza (2009) also find a significantly negative relation between investments and future stock returns. They argue that their results are consistent with the catering theory. If the market misprices firms according to their level of investment, managers may try to boost short-run stock prices by catering to current sentiment. Firms may have an incentive to waste resources in negative net present value (NPV) projects when their stock prices are overpriced; and to forego positive NPV projects when their stock price is undervalued.

This study offers new contributions to the understanding of the relationship between REIT investments and stock market valuation and performance, by examining corporate governance provided by different types of institutional investors on REIT investment decisions and its impact on firm performance. Our research questions include: (i) Do REIT firms invest more when there is high market valuation? (ii) What are the impacts of REIT investments on future firm performance? First, we look at how property-type Q affects investment decisions and how these impacts interact with institutional ownerships and financial analysts' coverage. Second, we extend Hartzell et. al. (2006) and assess the impacts of investments on future REIT performance, and study how such impacts are affected by different monitoring agencies that include financial analysts and institutional investors.

Our empirical tests examine the governance role of institutions in the context of the Polk and Sapienza's (2008) catering theory. High stock prices may encourage managers to over-invest to cater to investor sentiment. We expect certain types of institutional ownerships may mitigate this over-investment problem. We conjecture the followings: a) that investment expenditures of REITs with higher well-governed institutional ownerships will be more sensitive to the property-type Q, and b) that investment-induced performance will be improved for REITs with higher well-governed institutional ownership, and this effect should be stronger for firms with higher property-type Q.

We are motivated to test the corporate governance theories in the real estate industry because of its following unique characteristics. First, REITs have a high dividend payout ratio. REITs have to pay out 90% of annual income as dividends. The requirement of high dividend payout reduces cash on hand and mitigates Jensen's (1986) free cash flow problem.[1] Limited cash flows implies that REIT need to issue new securities to finance new investments, and hence subject themselves to capital market monitoring, if capital market is efficient. Hence, REIT managers should invest more wisely and avoid inefficient projects, relative to other industrial firms. Financing and investment decisions of REITs are therefore highly sensitive to capital market valuation. Previous literature has found that REITs exhibit market timing behavior to take advantage of strong capital markets [see Gosh, Nag, and Sirmans, 1999; Hartzell et. al., 2006; Brau and Holmes, 2006; Ooi, Ong, and Li, 2010]. Second, the high breadth of ownership in REITs implies that institutional investors play an important role in corporate governance monitoring. REITs need to have at least 100 shareholders, and no more than 50% of a REIT's share can be owned by five or fewer shareholders (the "five or fewer" rule).[2] An increase in institutional ownership is believed to provide external monitoring power, reduce agency problem, and enhance performance. Third, REITs are required to hold at least 75% of the assets in real estate related assets, and at least 75% of their gross income must be derived from real estate rents or interest on mortgages on real properties. This requirement reduces heterogeneity in investment opportunities within the same property-type market.

Using a sample of REITs firms from NYSE, AMEX, and NASDAQ over the 1997 to 2004 period, we provide overall evidence supporting the Behavioral theory and the Governance role of institutional investors. We find that REITs increase investments in periods of high stock valuation. There exists a positive relation between investments and the sector-specific growth opportunity (property-type Q) (As suggested by Hartzell, Sun, and Titman (2006), we use property-type Tobin's Q instead of firm-specific Q in order to avoid endogeneity problem caused by the potential effect of governance on firm price and therefore on firm-specific Q). Our empirical results on investment-induced performance confirm

[1] A REIT is a company that invests in real estate, mortgages, or real estate-related securities. To be a REIT, at least 75 percent of income must come from real estate related sources and at least 75 percent of its assets must be cash, government securities, or real estate related assets, including direct ownership, leaseholds, or options in land or improvements, shares in other REITs, or mortgages. One main benefit of being a REIT is the exemption of corporate tax. In return, REITs have to pay out 90% of annual income as dividends to qualify for the corporate tax exemption. In 2007, there are 183 publicly traded REITs in the U.S., with assets totaling more than $438 billion. REITs can be classified as equity, mortgage or hybrid. Equity REITs own and operate income-producing real estate. Mortgage REITs lend money directly to real estate owners and their operators, or indirectly through acquisition of loans or mortgage-backed securities. Hybrid REITs are companies that both own properties and make loans to owners and operators. Equity REITs are more prevalent than the other two. In 2006, there are 138 equity REITs (75 percent), 38 mortgage REITs (20 percent), and 7 hybrid REITs (5 percent).

[2] See Downs (1998) for detailed discussion on the impact of institutional ownership on REITs due to the "five or fewer" rule.

the Behavioral theory because we find that current investment is negatively related future stock returns. The negative relation is stronger for high property-type Q firms. Such result confirms the Behavioral theory that firms inadequately choose value-destroying projects when stock prices are high.

Another key contribution is that our research sheds new light into understanding: (i) the stock market impact on corporate investment decisions by REIT firms, and (ii) the ultimate value implications of the investment decisions. Unlike Hartzell et al. (2006), which examines how stock markets affect REIT firms' investment decision and such impacts are related to CEO (equity) compensation, we focus on the role of different types of institutional investors in influencing REIT firms' investment decisions and their responses to stock market valuations. Moreover, further robustness tests suggest that the material impacts of current period institutional investors on generating positive performing investments may not go beyond a two-year horizon, suggesting that institutional ownership is needed to support continuous monitoring. Finally, we report that analysts do not provide monitoring mechanism in REITs' investment decisions, consistent with prior findings that analysts specialize more on industry-wide analysis, but not on firm-specific information.

The rest of the paper is organized as follows. Section 2 describes hypotheses and methodologies. Section 3 discusses the data and summary statistics. Empirical results are presented and discussed in Section 4. Finally, Section 5 concludes our paper.

2. Hypotheses and methodologies

This paper investigates how stock market valuation and corporate governance factors such as institutional ownership and analyst coverage change investment behaviors and performance of real estate firms. We are mainly interested in the following research questions.

A: Do REITs invest more when stock valuation is high?

Hartzell, Sun, and Titman (2006) study the relation between REIT investments and property-type Q, and find that the investment choices of REITs are more closely tied to Tobin's Q if they have higher institutional ownership or if they have lower director stock ownership. The authors argue that well-governed REITs tend to invest more when their investment opportunities are better, while poorly-governed REITs with self-interest managers tend to be less sensitive to changes in investment opportunities. Following Hartzell et. al. (2006), we regress REIT investments with property-type Q, after controlling for operating cash flows and leverage ratio. In addition to the governance variable used in Hartzell et. al. (2006) (percentage of shares owned by institutional investors), we also include the number of analysts as one of the governance variables in our investment regression. Previous studies suggest that analyst coverage provides another source of external monitoring [see Chung and Jo, 1996; Chang, Dasgupta, and Hilary, 2006, among others]. In the real estate sector, Devos, Ong, and Spieler (2007) find that analyst coverage increases REIT value (as measured by Tobin's Q), the causality does not run the opposite way.

We estimate the impacts of stock markets on REITs' investment decisions using the following regression.

$$Invest_t = \alpha + \beta_1 Invest_{t-1} + \beta_2 pptQ_{t-1} + \beta_3 num_{t-1} + \beta_4 io_{t-1} + \beta_5 pptQ_{t-1} * io_t + \beta_6 pptQ_{t-1} * num_{t-1} + \beta_7 cf_{t-1} + \beta_8 lev_{t-1} \quad (1)$$

where invest = percentage change in total assets, a measure of investment in year t.

pptQ = average Tobin's Q within a property-type, a measure of stock market valuation

num = number of financial analysts giving earnings forecasts

io = percentage of equity ownership by different institutions

cf = operating cash flow, divided by total assets

lev = total debt, divided by total assets

For the investment regression in equation (1), the dependent variable is the change in total assets (invest), proxying for the rate of investments. Independent variables include stock valuation variables, agency variables, control variables, and interactions between stock valuation and agency variables. We use property-type Q (pptQ) to proxy for stock valuation. Followed Hartzell et. al. (2006), we compute property-type Q as the mean Tobin's Q across all REITs for each property type. We use property-type Tobin's Q instead of firm-specific Q in order to avoid the endogeneity problem caused by the potential effect of governance on firm price and therefore on firm-specific Q. We lag the stock valuation measure so that opportunities available in the beginning of the year can predict investments in the following year. Agency variables are measured by number of analysts (num) and percentage of shares owned by total institutional investors (io). We also lag the agency variables. Interaction terms include interactions between stock valuation variables and agency variables: pptQ*io, and pptQ*num. Control variables include leverages (lev), defined as total debt by total assets, and operating cash flows by total assets (cf).

We predict firm investments are positively correlated with stock market performance. A positive

coefficient for stock market variable is consistent with the following two arguments. (A) Managers maximize firm-value and invest more when there are more growth options (B) Managers over-invest when the stock market is over-valued. We will examine future firm performance to distinguish these two arguments.

B. Does external monitoring from institutional investors or analyst coverage enhance or reduce the investment-Q sensitivity? We hypothesize that external monitoring agency provides monitoring mechanism, and should enhance the investment-Q sensitivity.

Hartzell et. al. (2006) report a positive sign for the interaction between property-type Q and institutional ownership. Their rationale is that firms with institutional investors increase investments when their growth opportunities (as measured by property-type Q) are high. As the monitoring agency provides corporate governance and verification role of good projects, institutional investors and their equity ownership should enhance the investment-Q sensitivity.

C. Do investments positively or negatively affect future firm performance?

If market is efficient, we hypothesize that investments positively affect future firm performance, and this effect should be stronger for firms with higher property-type Q sub-sample. However, if managers overinvest when stock valuations is high, we hypothesize that investment is negatively related to future firm performance, and this effect should be stronger for firms with higher property-type Q sub-sample.

$$perform_t = a + b_1 invest_{t-1} + b_2 num_{t-1} + b_3 cf_{t-1} + b_4 lev_{t-1} + b_5 io_{t-1} * invest_{t-1} \quad (2)$$

$$perform_t = a + b_1 invest_{t-1} + b_2 cf_{t-1} + b_3 lev_{t-1} + b_4 num_{t-1} * invest_{t-1} + b_5 io_{t-1} * invest_{t-1} \quad (3)$$

where perform = car01 or car02

car01 =1-year ahead value-weighted REIT-market-adjusted buy-and-hold return

car02 =2-year ahead value-weighted REIT-market-adjusted buy-and-hold return

For the performance regressions in equations (2) and (3), the dependent variables on the performance equation (2) are one-year ahead cumulative abnormal returns (car01) and two-year ahead cumulative abnormal returns (car02). One-year ahead cumulative abnormal returns are widely adopted as short-term performance measurement in existing performance studies. However, due to long lead time of constructions in the real estate industry, we believe that real estate investments have a prolonged impact on firm performance. As such, we also examine two-year ahead cumulative abnormal returns to study whether real estate investments influence future firm performance in the long run.

Our independent variables include rate of investments (invest), number of analysts (num), interaction between institutional ownership and investments (io*invest), and interaction between analyst coverage and investments (num*invest). Controlled variables are leverage and operating cash flows. In equation (2), we study the impact of institutional ownership on investment-induced performance. Particularly, we are interested in the coefficient on the interaction between institutional ownership and investments (io*invest). In equation (3), we study the impact of both analyst coverage and institutional investors on investment-induced performance. That is, we are interested in the coefficients on num*invest and io*invest. We estimate equation (2) and (3) for two sub-groups: high and low stock valuation groups, separately. We expect to see stronger effect from external monitoring agencies in the high property-type Q sub-sample.

D. Does external monitoring from institutional investors or analyst coverage reduces the over-investment problem and thus improves future performance?

We hypothesize that the monitoring role provided by institutions and financial analysts should enhance investment performance (though the effectiveness and methods of monitoring by institutions and financial analysts are different), and that this monitor role should be more significant in the high property Q subsample.

Bianco, Gosh, and Sirmans (2007) examines REIT performance and governance using the governance index (G-index) developed by Gompers et al. (2003) as the measure for corporate governance. The authors report a negative relation between G-index with REIT performance, i.e. weaker corporate governance adversely affects firm performance. Following Bianco et. al. (2007), we hypothesize that monitoring improves firm performance. We expect to find a positive coefficient on the interaction between institutional ownerships and investments (io*invest) in equation (2), and a positive coefficient on the interaction between analyst coverage and investments (num*invest) in equation (3). The comparison between the two interaction effects will shed light into whether institutions or financial analysts are better monitor. Furthermore, the monitoring mechanism is predicted to be stronger for firms with higher stock valuations (i.e., higher property-type Qs).

3. Data and summary statistics

This study analyzes a sample of 3,231 firm-year observations from NYSE, AMEX, and NASDAQ

over the 1997 to 2004 period. Annual financial data are obtained from the CRSP/ Compustat database, and the percentage equity stake data, as of June-end of every year (including publicly-traded REITs and real estate operating companies) of different institutional investors, comes from the Thomson Ownership Data. Thomson reports the security holdings of institutional investors with greater than $100 million of securities under discretionary management (The Thomson Ownership Data provide detailed ownership information of different types of institutional investors such as pension fund, hedge fund, investment advisor, bank and trust, research firm, insurance company, and others.). Institutional ownership data are then matched to the following fiscal year financial statement data from Compustat. Cumulative abnormal returns are computed as the stock return adjusted by the return of the value-weighted REIT-market portfolio for 1-year or 2-year ahead.

Table 1 provides mean statistics of variables in our sample, for low and high property-type Q subsamples. Consistent with Hartzell, Sun and Titman (2006), one can see that firms with higher property-type Q have significantly higher investments (mean=39%) than those with lower property-type Q (mean=11%). In support of the Behavioral theory, firms with high property Q are associated with poor future stock returns (mean=-5%). This contrasts with the positive future stock return (mean=23%) for firms with low property Q. In addition, the top five institutional investors have significantly higher percentage of equity ownership on firms with higher property-type Q than on firms with lower property-type Q. This evidence is consistent with the argument that institutions target inefficient firms with over-investment problem.

Table 1. Mean Statistics

Variables	All	Low pptyQ	High pptyQ	Difference t-stat
Change in total assets (invest)	0.21	0.11	0.39	-9.83***
Operating cash flow to total assets (cf)	0.05	0.06	0.06	-0.49
Total debt to total assets (lev)	0.46	0.54	0.48	3.61***
Number of financial analyst (num)	0.38	0.44	0.47	-0.38
Institutional equity ownership (io_all)	0.21	0.39	0.37	0.89
Equity ownership by top 5 institutions (io_fiv)	0.12	0.11	0.13	-2.72***
1-year ahead car (car01)	0.06	0.23	-0.05	14.23***
2-year ahead car (car02)	0.16	0.45	0.07	8.52***

This table reports mean statistics for a sample of 3231 firm-year observations of REITs from 1997 to 2004. Invest is the change in total assets, our proxy for investments. Cf is defined as operating cash flows to total assets. Lev is leverage of a firm, defined as total debt over total assets. Num is the number of financial analysts following a firm. io_all is total institutional ownership, defined as percentage of shares owned by institutional investors. Iofiv is percentage of shares held by the top five institutional investors. Car01 is one-year-ahead Cumulative Abnormal Return (CAR). Car02 is two-year-ahead Cumulative Abnormal Return. For t-statistics, ***, **, * denote 1%, 5%, and 10% significance respectively.

4. Results

Do REITs invest more when stock valuation is high? Table 2 presents our results. Column 1 shows that investments of REITs are positively and significantly related to our measure of stock valuation, pptQ, with a coefficient of 0.65 (t=3.66). The result confirms that firms invest more when stock prices are high, and is also consistent with Hartzell et. al. (2006).

Do institutional ownerships affect the investment-property type Q sensitivity? As shown in Column 1 of Table 2, we do not find any significant impact from total equity institutional ownership on firm investments through the channel of stock market valuation. The coefficient on the pptQ*io is positive (0.40) but insignificant (t-value = 1.13). In contrast, Hartzell et. al. (2006) find total equity institutional ownership has a significantly positive impact on the investment-property Q sensitivity. In addition, analysts do not affect firm investments in periods of high stock markets, as the coefficient on pptQ*num is also insignificant in Column 1.

However, when we look at the impact of equity ownerships in detail, we have a different picture. If institutional investors monitor managers' investment decisions, we expect the equity stake owned by the top five institutional investors (rather than the equity

stake by all institutional investors) would have a more significant impact on investments. Specifically, column (2) shows that the significantly positive coefficient on the interaction term between property-type Q and top-five institutional ownership. The result indicates that with the presence of large equity stake from institutional investors, real estate firms are more inclined to increase investments when their property-type Qs are higher, and is consistent with findings of Hartzell, et al (2006). There are two explanations of our result. First, firms with such institutional investors increase investments (overinvest) when the stock market valuation is high (Behavioral theory). Second, firms with institutional investors increase investments when their growth opportunities are high (Efficient Q theory). We will be able to tearse out these two arguments in our performance regression results presented later.

Table 2. Investment regression results

	io=	
Indep var	io_all	io_top5
	(1)	(2)
$Invest_{-1}$	0.23	0.22
	(5.44)***	(5.11)***
$pptQ_{-1}$	0.65	0.52
	(3.66)***	(4.11)***
Num_{-1}	0.09	0.09
	(1.09)	(1.17)
io_{-1}	-0.48	-2.4
	(-1.17)	(-2.65)***
$pptQ_{-1}$* io_{-1}	0.4	2.11
	(1.13)	(2.68)***
$pptQ_{-1}$* num_{-1}	-0.09	-0.09
	(-1.29)	(-1.32)
Cf_{-1}	-2.02	-2.01
	(-3.15)***	(-3.20)***
Lev_{-1}	-0.28	-0.22
	(-2.57)***	(-2.07)**
Intercept	-0.33	-0.24
	(-1.64)	(-1.46)
N	1022	898
Rsq	0.19	0.21

This table reports regression results for:

$$Invest_t = \alpha + \beta_1 Invest_{t-1} + \beta_2 pptQ_{t-1} + \beta_3 num_{t-1} + \beta_4 io_{t-1} + \beta_5 pptQ_{t-1} * io_{t-1} + \beta_6 pptQ_{t-1} * num_{t-1} + \beta_7 cf_{t-1} + \beta_8 lev_{t-1}$$

Investment is proxied by change in total assets (invest). Stock market valuation is measured property-type Tobin's Q (pptQ). We test the effect of external agency with two variables: institutional equity ownership (io) and analyst coverage, as proxied by number of analysts (num). Institutional equity ownership can be equity ownership by all institutional investors (io_all), or by top five institutions (io_top5). Interaction terms include interaction between property-type Q and institutional ownership (pptQ*io), and interaction between property-type Q and number of analysts (pptQ*num). Control variables include firm characteristics such as operating cash flows to total assets (cf) and leverage (lev). The regressions are estimated with robust and clustered standard errors. The t-statistics are reported in parentheses. ***, **, * denote 1%, 5%, and 10% significance respectively.

In this section, we examine the impact of investments on firm performance and whether

(different types of) institutional investors and analyst coverage affect the impact. Table 3 presents results of equation (2). We find that investments are negatively associated with future stock performance, as suggested by the negative coefficients between investments and one-year and two-year CARs in Columns (1) and (4), respectively. It is consistent with our hypothesis that over-investments destroy future firm performance. Our hypothesis predicts that institutional investors provide monitoring and enhance the investment productivity. Thus, the coefficient on the equity stake by all institutions and investments (io*invest) should be positive. We find that institutional investors does not affect investment-induced performance in the short-run (as measured by one-year ahead CARs), but improve long-term stock performance (as measured by two-year ahead CARs). We divide our sample into high vs low property Q subsamples, based on the annual median values. Further analysis suggests that our significant results are concentrated in the high property Q sub-sample in column (6). We show that the positive impact from institutional investors is relatively long-term, as it improves 2-year- ahead stock performance, not 1-year-ahead performance.

Table 3. Performance regression results on stock performance

	Perform=car01			Perform=car02		
	All	Low pptyQ	High pptyQ	All	Low pptyQ	High pptyQ
Indep. Var	(1)	(2)	(3)	(4)	(5)	(6)
$Invest_{t-1}$	-0.1	-0.1	-0.11	-0.19	-0.47	-0.18
	(-5.98)***	(-1.79)*	(-3.30)***	(-5.94)***	(-2.88)***	(-2.97)***
Num_{t-1}	0.03	0.02	0	0.09	0.1	0.02
	(3.52)***	(1.13)	(-0.13)	(3.33)***	(2.07)**	(0.50)
Cf_{t-1}	0.21	0.02	0.63	0.1	-0.58	0.69
	(1.15)	(0.03)	(1.29)	(0.27)	(-0.57)	(0.74)
Lev_{t-1}	0.15	-0.05	0.21	0.28	0.13	0.33
	(3.98)***	(-0.62)	(2.48)**	(2.87)***	(0.55)	(1.97)**
io_{-1}*$invest_{t-1}$	-0.03	-0.04	0.09	0.15	0.22	0.29
	(-0.83)	(-0.41)	(1.72)*	(2.30)**	(1.19)	(3.22)***
Intercept	-0.01	0.26	-0.16	0.04	0.43	-0.11
	(-0.38)	(3.98)***	(-2.49)**	(0.76)	(2.72)***	(-0.86)
N	2126	524	495	1751	487	381
Rsq	0.04	0.02	0.07	0.05	0.05	0.05

This table reports regression results for equation

$$perform_t = a + b_1 invest_{t-1} + b_2 num_{t-1} + b_3 cf_{t-1} + b_4 lev_{t-1} + b_5 io_{t-1} * invest_{t-1}$$

Stock performance is measured by one-year-ahead and two-year ahead Cumulative Abnormal Returns (car01 and car02). Investment is measured by the percentage change in total assets (invest). Controlled variables include number of analyst (num), leverages (lev), and operating cash flows divided by total assets (cf). Interaction term io*invest measures the impact of institutional investors on investment-induced performance. We run equation (2) for two subgroups: firms with high and low property-type Tobin's Q, based on the annual median values. The regressions are estimated with robust and clustered standard errors. The t-statistics are reported in parentheses. ***, **, * denote 1%, 5%, and 10% significance respectively.

Table 4 presents our empirical results on 1-year-ahead and 2-year-ahead CARs for Equation (2) for the equity stake by top five institutional investors. In column (3), the coefficient on the io*invest is significantly positive for equity ownership by top five institutions. It implies that top-five institutional investors provide better monitoring and improve 1-year-ahead firm performance by mitigating the over-investment problem. Our findings suggest that top-five institutional investors improve one-year ahead stock performance by monitoring the effectiveness of investments, and the monitoring power is stronger when firms experience higher stock valuations (measured by property-type Qs). This is consistent with our hypothesis. However, when we look at two-

year-ahead CARs in column (6), we only find insignificant positive interaction coefficient on stock performance. It implies that the positive impact of top five investors on performance seems to be short-sighted and does not last beyond one year.

Table 4. The impact of top 5 institutional investors' equity stake on investment-induced performance for firms with different property-type Q

	Perform=car01			Perform=car02		
	All	Low pptyQ	High pptyQ	All	Low pptyQ	High pptyQ
Indep. Var	(1)	(2)	(3)	(4)	(5)	(6)
$Invest_{t-1}$	-0.16	-0.08	-0.15	-0.24	-0.33	-0.17
	(-6.57)***	(-1.54)	(-4.05) ***	(-4.70) ***	(-2.56) **	(-2.90) ***
Num_{t-1}	0.01	0.02	0	0.06	0.11	0.01
	(1.21)	(1.61)	(-0.26)	(1.99) **	(2.27) **	(0.32)
Cf_{t-1}	0.21	-0.24	0.59	0.16	-0.34	0.38
	(0.78)	(-0.41)	(1.05)	(0.34)	(-0.32)	(0.36)
Lev_{t-1}	0.15	-0.05	0.26	0.3	0.11	0.38
	(2.45) **	(-0.67)	(2.52) **	(1.73)	(0.46)	(1.88)
$io\_top5_{t-1}*invest_{t-1}$	-0.11	-0.26	0.28	-0.11	-0.19	0.24
	(-0.72)	(-0.85)	(2.14) **	(-0.36)	(-0.35)	(0.98)
Intercept	0.08	0.28	-0.14	0.23	0.42	0.04
	(2.13) **	(3.90) ***	(-1.86) *	(2.62) ***	(2.57) **	(0.24)
N	1051	499	391	883	465	288
Rsq	0.06	0.02	0.08	0.03	0.06	0.05

This table reports regression results for equation (2) for the equity stake by the top five institutional investors.

$$perform_t = \alpha + \beta_1 invest_{t-1} + \beta_2 num_{t-1} + \beta_3 cf_{t-1} + \beta_4 lev_{t-1} + \beta_5 io_{t-1} * invest_{t-1}$$

Stock performance (perform) is measured by one-year-ahead and two-year ahead Cumulative Abnormal Returns (car01 and car02). Investment is measured by the percentage change in total assets (invest). Controlled variables include number of analyst (num), leverage (lev), and operating cash flows divided by total assets (cf). Interaction term io*invest measures the impact of institutional investors on investment-induced performance. We run equation (2) for two subgroups: firms with high and low property-type Tobin's Q, based on the annual median values. The regressions are estimated with robust and clustered standard errors. The t-statistics are reported in parentheses. ***, **, * denote 1%, 5%, and 10% significance respectively.

Do financial analysts also improve firm value by monitoring investment projects? We find the answer is no. Table 5 presents performance regression results for analyst coverage in equation (3). We do not see any significant impact from financial analysts on 1-year-ahead in columns (1) to (3), and 2-year-ahead stock performance in columns (4) to (6). We find that analysts do not provide any monitoring power, whereas institutional investors improve long-term firm performance especially for high-Q firms.

Lastly, our results with respect to the impact of analyst coverage on firm investments and performance are consistent with findings of prior studies. Chan and Hameed (2006) provide evidence that stocks with more analyst's coverage incorporate greater market-wide information, contrary to the conventional belief that financial analysts specialize in firm-specific information. Piotroski and Roulstone (2004) find that analyst's coverage incorporates industry-wide information to security prices, and that institutional trading accelerates the incorporation of the firm-specific information to stock prices. Consistent with Piotroski and Roulstone (2004) and Chan and Hameed (2006), our findings suggest that financial analysts specialize on incorporating market-wide information to stock prices, not on firm-specific information.

Table 5. The impact of analysts coverage on investment-induced performance

	Perform=car01			Perform=car02		
	All	Low pptyQ	High pptyQ	All	Low pptyQ	High pptyQ
Indep. Var	(1)	(2)	(3)	(4)	(5)	(6)
$Invest_{t-1}$	-0.1	-0.09	-0.11	-0.2	-0.46	-0.18
	(-6.18)***	(-1.73)*	(-3.37)***	(-6.20)***	(-2.88)***	(-3.05)***
cf_{t-1}	0.2	-0.04	0.62	0.07	-0.96	0.61
	(1.09)	(-0.08)	(1.32)	(0.17)	(-0.78)	(0.67)
lev_{t-1}	0.15	-0.06	0.21	0.27	0.05	0.33
	(3.83)***	(-0.76)	(2.49)**	(2.69)***	(0.19)	(1.92)*
Num_{t-1}*$invest_{t-1}$	0.01	-0.04	-0.01	0	-0.12	0
	(0.49)	(-1.84)*	(-0.34)	(-0.03)	(-1.84)*	(-0.06)
io_{t-1}* $invest_{t-1}$	-0.02	0.01	0.09	0.16	0.4	0.29
	(-0.49)	(0.10)	(1.78)*	(2.54)**	(1.71)*	(3.26)***
intercept	0	0.27	-0.16	0.08	0.53	-0.1
	(0.06)	(4.14)***	(-2.70)***	(1.37)	(3.11)***	(-0.80)
N	2126	524	495	1751	487	381
Rsq	0.04	0.02	0.07	0.03	0.04	0.05

This table reports regression results for equation (3).

$$perform_t = \alpha + \beta_1 invest_{t-1} + \beta_2 cf_{t-1} + \beta_3 lev_{t-1} + \beta_4 num_{t-1} * invest_{t-1} + \beta_5 io_{t-1} * invest_{t-1}$$

Stock performance (perform) is measured by car01 and car02, one-year-ahead and two-year-ahead Cumulative Abnormal Returns (CARs). Investment is measured by the percentage change in total assets (invest). Control variables include leverages (lev) and operating cash flow, divided by total assets (cf). Interaction terms (num*invest and io*invest) measure the impact of monitoring agency on investment-induced performance. We run the test for two sub-groups: firms with high and low property-type Q, based on the annual median values. The regressions are estimated with robust and clustered standard errors. The t-statistics are reported in parentheses. ***, **, * denote 1%, 5%, and 10% significance respectively.

5. Conclusion

This paper is motivated by existing findings in financial economics literature that investment decisions respond to market valuation [Tobin, 1969; Morck, Shleifer and Vishny, 1990; Baker, Stein, and Wurgler, 2003; Polk and Sapienza, 2009]. There are two views of the impact of stock prices on firm investments. On one hand, traditional efficient Q theory suggests that investments positively respond to stock prices (as measured by Tobin's Q), as Tobin's Q correctly reflects future growth opportunities of the firms. On the other hand, the Behavioral theory suggests that managers tend to increase investments when they see stock prices are relatively high to firms' fundamentals. The implication of this hypothesis is that market is inefficient and managers take advantage of this inefficiency by issuing equity or taking projects with negative net-present-values. We investigate empirically the impact of investment on stock performance to disentangle these two theories, and we provide empirical evidence supporting the latter.

To summarize, we find that firms invest more when their property-type Qs are higher, consistent with Hartzell et. al. (2006). The authors argue that firms increase investments when they face better growth opportunities. We offer an alternative explanation for a positive relation between investments and property-type Q: firms over-invest when they see stock prices in their particular sectors are over-valued (Behavioral theory). Our empirical evidence supports the hypothesis that REIT firms tend to overinvest when their stock valuations are high. Over-investments depress future stock performance, and the effect is stronger for firms with higher property-type Q (more over-valued).

To conclude, this study provides new evidence that the stock market provides material impacts on investment decisions made by REIT firms, yet REIT firms tend to overinvest in the presence of high market valuation, and these investment decisions ultimately lead of worse future firm performance. The crux is that certain types of institutional investors, which have more information, independence, and concentrated ownerships, can perform corporate governance and monitoring in mitigating the over-investment problems.

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