The Effect of Real Estate Prices on Peer Firms*

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May 2, 2020

Abstract

We investigate the peer effects from corporate real estate. Shocks to real estate prices shift firms' debt capacity, which has a significant impact not only on firm investment but also on the investment of peer firms: a $1 of increase in the price of peer real estate assets induces a $0.072 increase in investment. The peer effect from corporate real estate is stronger when firms or their peers have more investment opportunities; financially constrained firms invest more out of their own price shocks, while the peer effect is stronger for unconstrained firms; and we find significant peer effects within - but not between - groups of small and large firms, respectively. Overall, we document a new channel through which real estate is an economically significant determinant of corporate finance.

*We thank seminar participants at Aarhus University for helpful comments.

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1 Introduction

We examine how the financial flexibility of peer firm affects investment decisions. Financial flexibility is the ability of a firm to access financing at a low cost in order to finance investment opportunities and unexpected expenses (e.g., Gamba and Triantis (2008), Denis (2011)), and is therefore one of the most important determining factor of corporate financial policies. Graham and Harvey (2001) provide evidence that corporate executives use peers' valuation for capital budgeting decisions. Hence, one expects firms' investment to be influenced by the market valuation of their peers. In this paper we use variation in market value of real estate assets to study the effect of change in peers' financial flexibility on investment decisions.

Though most of the research in corporate finance assumes that investment and financing decisions are made independently of the actions and characteristics of their peers, there is a recent growing strand of literature that investigates the role of peer firm behavior in corporate decisions. There are several mechanisms that can give rise to firm's actively choosing to make decisions dependent on the decisions of their peers. It is possible that the actions of peers are informative about optimal actions that are otherwise unobservable or costly to uncover Conlisk (1980). Furthermore, competition also induces interdependence in investment and financing actions between industry rivals, e.g., Bolton and Scharfstein (1990). DeMarzo, Kaniel, and Kremer (2007) show how peer effects can arise endogenously due to competition and induce rational overinvestment in risky technology. Overall, there is strong theoretical support for the notion that firms make decisions incorporating information about their peers. Building on this intuition, Leary and Roberts (2014) investigate how peer firm behavior matters for corporate capital structure. In this paper we study the importance of corporate real estate as a channel for peer effects in investment decisions, and examine if exogenous shocks to peer firms' financial flexibility emanating from shocks in local real estate prices affect firm investment. We provide causal evidence that shocks to peer firms' financial flexibility have significant impact on investment decisions of firms.

Corporate Real Estate (CRE) assets represent a significant proportion of tangible assets held by U.S. firms.[1] In a friction-less world, the value of the collateral is irrelevant. However, in the presence of financial frictions, external finance is costly due to, e.g., risk-shifting (Meckling and Jensen (1976)), underinvestment (Myers (1977)), and adverse selection, and therefore, collateralizable assets can be pledged to lenders in order to mitigate inefficiency costs.[2] Therefore, firms with more valuable collateralizable assets have higher financial flexibility. Real estate assets are tangible, durable, traded in an active secondary market, and generally redeployable and therefore such assets can support significant debt capacity. Giambona, Golec, and Schwienbacher (2014) provide evidence on the special role of real estate assets as collateral, while Harrison, Panasian, and Seiler (2011) and Giambona, Harding, and Sirmans (2008) focus on financing in the unique setting of real estate investment trusts. Increased financial flexibility from positive shocks to real estate prices has been shown to have helpe firms to increase their leverage (Cvijanović (2014)), investment (Chaney, Sraer, and Thesmar (2012)), and payouts (Kumar and Vergara-Alert (2020)). We investigate if firms, anticiapting the associated changes in the actions of their peers, learn and respond to increased financial flexibility of their peers.

Shocks to real estate prices provide a unique setting where we can study if an unintentional increase in financial flexibility of peers affect the investment decisions. To our knowledge, we are the first to investigate this effect empirically. Using firm-level data from the 1987-2018 period, we find that an increase in financial flexibility of peer firms leads to an increase in corporate investment: for every \$1 increase in the price of peer real estate assets, there is an associated \$0.072 increase in investment. The peer effect from corporate real estate is stronger when firms or their peers have more investment opportunities. We also

[1]Chaney, Sraer, and Thesmar (2012) show that 59% of public firms in the United States have at least some real estate ownership and that the market value of real estate among these firms accounted for 19% of these firms' total market value in 1993. The market value of U.S. real estate owned by non−financial corporations was estimated to be \$13.1 trillion at the end of 2018, which accounts for 31.1% of the total firms' assets (Source: http://www.federalreserve.gov/releases/z1/20190920/z1.pdf).

[2]Barro (1976), Stiglitz and Weiss (1981), and Hart and Moore (1994) show, theoretically, that collateral pledging enhances a firm's financial capacity. Providing outside investors with the option to liquidate pledged assets ex post acts as a strong disciplining device on borrowers. This, in turn, eases financing ex ante. Asset liquidation values thus play a key role in the determination of a firm's debt capacity.

document that financially constrained firms invest more out of their own price shocks, while the peer effect is stronger for unconstrained firms; and we find significant peer effects within - but not between - groups of small and large firms, respectively. Overall, we document a new channel through which real estate is an economically significant determinant of corporate finance.

Our estimation might be affected by a potential source of endogeniety in that real estate prices may be correlated with the investment decisions of firms. To address this endogeneity concern, we follow Himmelberg, Mayer, and Sinai (2005) and Mian and Sufi (2011) and instrument local real estate prices using the interaction of long-term interest rates and local housing-supply elasticity. This instrument exploits geographic and regulatory constraints to local housing supply to differentiate metropolitan statistical areas (MSAs) where a decrease in nationwide interest rates (and thus increase in housing demand) translates into higher real estate prices or just into higher construction volume. Therefore, the instrument isolates a component of variation in real estate prices that is unrelated to firms' investment decisions. Recently, Davidoff (2016) presents a criticism of this instrument and argues that the orthogonality condition of supply of elasticity is unlikely to be satisfied because land availability and land-use regulations are likely to be correlated with local demand for real estate assets and, therefore, the instrument does not isolate the supply effects of real estate assets. As suggested in Davidoff (2016), we address this criticism by controlling for the interaction between the supply constraint and passage of time in both first- and second-stage IV specifications. Our IV regressions confirm that following an increase in the value of real estate for peer firms, firms increase their investment, which is not only statistically significant but also of significant economic importance. Moreover, our sub-sample and robustness analyses strongly support the channel of peer effects.

This article contributes to the literature in two main ways. First, we add to the recent but growing body of literature that studies peer effects. Leary and Roberts (2014) show that firms adjust their capital structure as a response to changes in capital structure of peer firms. Closely related to our paper is Bustamante and Fresard (2017), who document a significant peer effect in investment decisions and provide evidence in favor of firm learning as an important underlying mechanism. Kang, Oliver, and Park (2020) find that peer effects in investment are higher when economic policy uncertainty is higher. Foucault and Fresard (2014) find that the market valuation of a firm's peers influences its investment. On a similar line, Dessaint et al. (2019) show that firms reduce their investment in response to non-fundamental drops in the stock price of their product-market peers. Kjenstad (2018) estimate a dynamic investment model with peer effects in cash holdings, allowing a study of peer effects based on a quantification of peer effects obtained based on firm's dynamic optimization problems and counterfactual analyses investigating firm behavior under different levels of peer effects. Hoberg, Phillips, and Prabhala (2014) document that firms which experience product market threat from peers pay less to their shareholders and increase cash holdings. Kaustia and Rantala (2015) examine the stock-split policy of firms and document that firms are more likely to split their stock if their peer firms have recently done so. Grennan (2019) demonstrate that dividend decisions of peer firms are important determinants of dividend policy. Cao, Liang, and Zhan (2019) study the corporate social responsibility (CSR) and find that firms adopt similar CSR policies as their peers. To the best of our knowledge, this is the first study to investigative the effect of changes in real estate prices as a channel through which peer financial flexibility impact investment policy.

Second, our paper is related to the growing literature on collateral and corporate financing decisions. Barro (1976), Stiglitz and Weiss (1981), Hart and Moore (1994), and Rampini and Viswanathan (2013) show, theoretically, that real estate assets can be used as collateral and play an important role in mitigating external financing constraints and increasing firms' ability to raise external funds. Chaney, Sraer, and Thesmar (2012) empirically examine how shocks to real estate prices affect firms' corporate investment decisions. Giambona, Golec, and Schwienbacher (2014) show that real estate collateral has a greater positive influence on firm leverage than other tangible assets. Cvijanović (2014) analyzes the effect of real estate prices on the firm's capital structure and shows that an increase in the value of the firms' pledgeable collateral leads to an increase in its leverage ratio. Chen, Harford, and Lin (2017) document that change in a firm's financing capacity as a result of a change in real estate prices has important implications for its cash holdings and cash-flow sensitivity. Kumar and Vergara-Alert (2020) find that increase in firms' financial flexibility induced by changes in value of collateralizable assets helps firms to increase their payout. We contribute to this literature by documenting that shocks to *peer* firms' collateral value is an important determinant of investment in addition to shocks to firms' own collateral values.

The remainder of the paper is organized as follows. Section 2 presents data, summary statistics, and describes the empirical design. Section 3 discusses the main results, additional results, and robustness tests. Section 4 provides concluding remarks.

2 Data and Methodology

2.1 Data

To investgate the effect of variation in peers' financial flexibity caused by shock in the value of their collateralizable assets, we use accounting data on US listed firms for the 1987-2018 period, merged with real estate prices at the Metropolitan Statistical Area (MSA) level. We exclude firms belonging to the finance, insurance, real estate, construction, and mining industries. We obtain accounting data from Compustat and residential real estate prices at the MSA level from the Federal Housing Finance Agency (FHFA). We start our sample from 1987 since the MSA level real estate price index is available for most of the MSAs starting from 1987.

First, we define peer firms based on three-digit SIC industry groups. Following the literature, e.g. Leary and Roberts (2014), we calculate peer variables for firm i as the industry average among all other firms in the same industry, i.e. for variable $x_{i,t}$ the relevant peer variable, denoted as $\overline{x}_{-i,t}$, is calculated as the sample average of $x_{j,t}$ for all firms $j \neq i$

in the same three-digit SIC code as firm i in year t.

Second, we measure the market value of real estate assets. Following Nelson, Potter, and Wilde (2000), we identify three major categories of property, plant, and equipment to include in the definition of real estate assets. These categories are Buildings, Land and Improvement, and Construction in Progress. Unfortunately, these assets are not marked-to-market, but valued at historical cost. Chaney, Sraer, and Thesmar (2012) provide a procedure to recover their market value by calculating the average age of those assets and use historical prices to compute their current market value. To find average age of the buildings, one needs to know accumulated depreciation on buildings. Unfortunately, the accumulated depreciation on buildings is no longer available in COMPUSTAT after 1993. This is the reason why Chaney, Sraer, and Thesmar (2012) restricts their sample to only the active COMPUSTAT firms in 1993 and track variation to market value of real estate assets of only these firms. Given the delimitation of missing accumulated depreciation, using this procedure, market value of real estate assets can not be calculated for firms that started after 1993. This is important for our setting. To define the peer groups, in our study we need to have all the firms active in each year during our sample period. Therefore, we can not use the procedure outlined in Chaney, Sraer, and Thesmar (2012) to measure the market value of real estate assets, because in order to calculate peer characteristics we need to include firms that entered the database also in the post-1993 period. Though we can not measure exact market value of CRE assets, we approximate it by multiplying book value of CRE assets with the local real estate price index at the metropolitan statistical area level. Our measure of market value of CRE assets captures the shocks that firms receive in the value of their collateralizable assets, and therefore shocks to their financial flexibility, which is important for our empirical analysis. We test reliability of our measure by replicating the results in Chaney, Sraer, and Thesmar (2012), (Cvijanović (2014)), and Kumar and Vergara-Alert (2020).[3] This shows

[3]The replication of results in Chaney, Sraer, and Thesmar (2012) is shown in column (2) of Table 3. The replication of results in (Cvijanović (2014)) and Kumar and Vergara-Alert (2020) will be made available upon request.

that our measure captures the shock to the value of firms' collateralizable assets.

Following Chaney, Sraer, and Thesmar (2012), we employ a set of firm level controls as part of our analysis. Cash is defined as ratio of cash flow to lagged PPE. Market-to-book ratio is defined as the market value of equity plus the book value of assets minus the book value of equity, all divided by the book value of assets. The book value of equity is computed as the book value of assets minus the book value of liabilities minus preferred stock plus deferred taxes. A set of firm level variables are employed to carry out additional tests. These variables are: firm size, leverage, payout ratio, bond rating, and MSA size. Firm size is defined as the book value of total assets. Leverage is the is the sum of short- and long-term debt normalized by the book value of assets. Payout ratio is defined as the sum of dividend paid plus shares repurchased, divided by net income. Bond ratings data from compustat is used to identify if a firm is financially constrained or not. We categorize firms with long term debt outstanding but without a bond rating as financially constrained. Financially unconstrained firms are those whose bonds are rated. Large MSA is an indicator variable which takes value 1 if the firm is headquartered in one of top 20 most populated MSAs, and 0 otherwise.

To address the potential endogeneity problem of local real estate prices, we follow Himmelberg, Mayer, and Sinai (2005) and Mian and Sufi (2011) in instrumenting local real estate prices using the interaction of long-term interest rates and local housing-supply elasticity. We use the local housing-supply elasticities provided in Saiz (2010) and Glaeser, Gyourko, and Saiz (2008). These measures capture the amount of developable land in each MSA, and are estimated by processing satellite-generated data on elevation and the presence of water bodies. We use the "contract rate on 30-year, fixed rate conventional home mortgage commitments" from the Federal Reserve website as the measure of long-term interest rates.

Finally, to ensure that our results are robust to the definition of the main investment and real estate variables, we follow Chaney, Sraer, and Thesmar (2012) and winsorize all variables defined as ratios by using the median ± 5 times the interquartile range as thresholds. Table

1 reports summary statistics for the relevant variables used in the empirical analysis.

[Insert Table 1 around here]

For the median firm in the entire sample, the market value of real estate assets represents 17.5% of the book value of their property, plant and equipment, which suggests that real estate holdings represent a significant fraction of a firm's tangible assets. The median investment ratio (Capex/lagged PPE) in our sample is 0.242. On an average, about 50% firms in our sample are headquartered in top 20 most populous MSAs. The median leverage is 16% in our sample, while the median market-to-book ratio is 1.6.

2.2 Empirical Methodology

To test whether firms change their investment following shocks to the value of their real estate assets, we estimate the following model:

$$\begin{aligned} Inv_{i,t}^{l} =& \alpha_j + \delta_t + \beta \cdot REValue_{i,t}^{l} + \omega \cdot \left(\overline{REValue}\right)_{-i,t} + \gamma_1 \cdot P_t^l + \gamma_2 \cdot \left(\overline{P}\right)_{-i,t} \\ &+ \Gamma_1 \cdot Controls_{i,t} + \Gamma_2 \cdot \left(\overline{Controls}\right)_{-i,t} + \epsilon_{i,t}. \end{aligned} \tag{1}$$

where $Inv_{i,t}^{l}$ is the ratio of capex to lagged PPE of firm i with headquarter located in MSA l at year t. $REValue_{i,t}^{l}$ is the market value of firm's real estate assets as defined in previous sub-section. $\left(\overline{REValue}\right)_{-i,t}$ is the average market value of real estate assets of all the peers. P_t^l controls for the level of real estate prices in MSA l in year t. $\left(\overline{P}\right)_{-i,t}$ is the average real estate prices of peers in year t. $Controls_{i,t}$ denotes a set of firm-level controls: ratio of cash flows to lagged PPE and market-to-book ratio as defined in the previous sub-section. $\left(\overline{Controls}\right)_{-i,t}$ is the set of same controls but defined for the peer firms. We also control for industry fixed effects, α_j, and year fixed effects, δ_t. Errors, $\epsilon_{i,t}$, are clustered at the MSA level.

In the above specification, a possible source of endogeneity could be the presence of an omitted variable that affects at the same time real estate prices and the firms's investments.

To address this endogeneity concern, we adapt the empirical strategy in Chaney, Sraer, and Thesmar (2012) and estimate the following equation predicting real estate prices P_t^l for location l at time t:

$$P_t^l = \alpha^l + \delta_t + \gamma \cdot Elasticity^l \cdot IR + u_t^l, \qquad (2)$$

where $Elasticity^l$ measures constraints on land supply at the MSA level, IR is the nationwide real interest rate at which banks refinance their home loans, α^l is a location (MSA) fixed effect, and δ_t captures macroeconomic fluctuations in real estate prices, from which we want to abstract.

The economic intuition behind the use of the interaction between $Elasticity^l$ and IR as our instrumental variable is the following. If interest rates decrease, then demand for real estate increases. This increase in demand translates into higher real estate prices in areas where supply is more inelastic. As the collateral channel is in place, the increase in debt capacity will be higher for firms with real estate assets located in more inelastic supply areas, that is, in areas where real estate prices will increase the most. We use the elasticity of supply of housing as estimated in Saiz (2010), who estimates the amount of developable land at the MSA level using satellite data on terrain slope, rivers, lakes, and other water bodies.

This is a valid instrument for our empirical strategy because the IV has a strong first stage coefficient as it is highly correlated with the value of collateralizable assets, and both the amount of developable land and the interest rates are exogenous to the firms' investments. However, one may argue that the orthogonality condition of supply of elasticity is unlikely to be satisfied because land availability and land-use regulations are likely to be correlated with local demand for real estate assets and, therefore, the instrument does not isolate the supply effects of real estate assets (see Davidoff (2016)). To address this concern, we control for the interaction of the supply constraint and year dummies in both first- and second-stage regressions of our IV specification, as discussed in Davidoff (2016). Given that the interaction term *supply constraint* $\times$ *interest rate* is highly correlated with *supply constraint*

$\times$ *year*, we control for the interaction term *supply constraint* $\times$ *year* in the IV specification to ensure that our results are not purely due to the passage of time during the boom period during which firms would increase their investment.

The results of this fist-stage regression are presented in Table 2. Very constrained land supply MSAs present low values of local housing supply elasticity (i.e., they are inelastic). Therefore, we expect that a decline in interest rates will produce a higher increase in house prices in MSAs with lower elasticity of supply. As expected, the interaction between the measure of local housing supply elasticity and interest rates is positive and significant at the 1% level. The specification in column [3] shows that a 1% decrease in the mortgage rate increases the real estate price index by 2.5% more in supply constrained cities (top quartile) than in unconstrained cities (bottom quartile). Columns [2] and [4] control for the interaction term *supply constraint* $\times$ *year* and show that the result are robust to the critique in Davidoff (2016).

[Insert Table 2 around here]

3 Results

In this section we present our results on peer effects from corporate real estate. Specifically, we consider how firms change investment when peer firms experience changes in financial flexibility induced by changes in the market value of collateralizable assets that stem from shocks to real estate prices.

3.1 The peer effects of corporate real estate

In our first set of tests we investigate how shocks to real estate prices affect investment by peer firms. The results are given in Table 3. The dependent variable is corporate investment, defined as the ratio of firm's capital expenditure to lagged assets, throughout all columns, and all specifications also include year and industry fixed effects.

Before considering the peer effects from corporate real estate, we analyze the intra-firm effect in columns [1] – [2]. Chaney, Sraer, and Thesmar (2012) investigate the effects of real estate shocks on firm investment, and find a similar effect of $0.06 for every $1 increase in real estate prices. Based on column [1], we find, from the coefficient estimate on *RE value*, that receiving an additional $1 in collateralizable assets would increase investment by $0.092, which is quantitatively and qualitatively consistent with the finding of Chaney, Sraer, and Thesmar (2012) that firms increase their investment when they experience a positive shock in the value of their collateralizable assets.[4] In column [2] we include additional explanatory variables common in existing literature in addition to the fixed effects, and find a coefficient estimate on *RE value* of 0.092, which is very similar to the initial estimate from column [1]. Building on this intra-firm effect as the foundation for the peer effects that are the main focus of our study, we next consider extensions of the baseline results in columns [1] and [2] that incorporate peer firm characteristics, allowing us to capture peer effects from corporate real estate.

[Insert Table 3 around here]

In columns [3] – [4] we report our first set of results that investigate peer effects based on shocks to corporate real estate. In addition to *RE value*, we add the corresponding $(\overline{RE\ value})_{-i}$ calculated based on all peers of firm i in the given year under consideration. The coefficient on $(\overline{RE\ value})_{-i}$ captures the effect on firm i from the changes in *RE value* for its peers, i.e. it measures the peer effect from price shocks to corporate real estate assets. Focusing on column [3], which corresponds to the intra-firm specification in column [1], we first observe that the intra-firm effect yields a $0.084 increase in investment for each $1 increase in real estate prices. Thus, our first observation is that the intra-firm effect is robust to the inclusion of peer variables capturing the peer effects from corporate real estate shocks. Our main contribution is, however, to document the extent of peer effects. The

[4]The differences in coefficient estimates are expected, given that we use a different sample period and our proxy *RE value* is correspondingly different due to data availability.

coefficient on $(\overline{RE\ value})_{-i}$ is 0.081 and statistically significant. This estimate implies that for a \$1 increase in the value of real estate for peer firms, firms increase investment by \$0.081, which is not only statistically significant but also of significant economic importance. This finding is also consistent with the significant role of peer effects for corporate investment, as documented in Bustamante and Fresard (2017). In interpreting our results, we note that intra-firm results and peer effects should not be compared directly for the purpose of understanding what effect drives most of the observed data on corporate investment, as the variation in real estate price shocks is larger than the variation in peer real estate price shocks. When including peer explanatory variables in column [4], we find that the estimated peer effect is slightly reduced, with a coefficient estimate of 0.072, that is still statistically significant at the 1% level.

As discussed in the previous section, our results could be influenced from a possible source of endogeneity: real estate prices may be correlated with the investment opportunities of the firms. We address this concern by instrumenting local real estate prices using the interaction of long-term interest rate with local housing supply elasticity. Columns [5] − [8] in Table 3 show the results from our IV specifications. Column [5] presents the results from baseline IV specification without any control variables, similar to the OLS specification in column [3]. Both the coefficients on $RE\ value$ and $(\overline{RE\ value})_{-i}$ are significant at the 1% confidence level, and presents the same order of magnitude as in the corresponding OLS regression. In column [6] we show results for a specification that includes the set of intra-firm and peer control variables. Again, our results remain significant and in line with our previous findings.

In columns [7]-[8] we address the criticism by Davidoff (2016), who argues that land-unavailability and land-use regulation are likely correlated with local demand of real estate assets, that is, the orthogonality condition of supply of elasticity is likely not satisfied. Therefore, the instrument (i.e., land supply elasticity × real interest rate) might not isolate the supply effects of real estate assets. Given that interaction of a supply elasticity × real interest rate could be correlated with supply elasticity × passage of time, in columns 7-8, we also control for the supply elasticity × year fixed effects in the IV specification as suggested in Davidoff (2016). The coefficient estimates on $RE\ value$ and $(\overline{RE\ value})_{-i}$ remain positive and statistically significant at the 1% confidence level, confirming that our findings are not the result of the passage of time and are robust to the critique in Davidoff (2016).

Overall, we find that the established relation between real estate shocks and corporate investment is coupled with economically important effects on peer firms in that firms increase their investment not only when they receive positive shocks to the value of their real estate assets, but also when their *peers* receive such positive shocks. Therefore, real estate prices are important for corporate investment beyond their influence on financial flexibility for the owner of the real estate assets. To the best our knowledge, this is the first study to document that changes in financial flexibility induced by shocks in the value of firms' real estate assets have implication for peer firms investment policy. In the following sections we further analyze this peer effect from corporate real estate, and provide evidence for how this effect varies with the state of firms and their peers, which is the foundation for understanding its underlying mechanisms.

3.2 Investment opportunities

Next, we examine how the effect of shocks to peer financial flexibility on investment varies with the market-to-book ratio of both the firm receiving the shock and its peers. The results are given in Table 4. In columns [1] and [2] we estimate our baseline regression on a sample of firms with low and high market-to-book ratios, respectively. Both the intra-firm and peer effect show strong interactions with market-to-book. From the coefficient on $RE\ value$ in column [1], we find that for firms with low market-to-book, there is a \$0.07 increase in investment for every additional \$1 increase in the value of real estate assets. The corresponding results for firms with high market-to-book values is \$0.132. Thus we find that the intra-firm effect of increased financial flexibility from positive real estate price shocks on investment is much stronger for firms with higher market-to-book values, consistent with the

the notion that the benefit of additional borrowing capacity is worth comparatively more when firms have more investment opportunities. A similar pattern emerges when we analyze the associated peer effect, where the coefficient on $(\overline{RE\ value})_{-i}$ imply that a \$1 increase in the value of real estate for peer firms is associated with an increase in investment of \$0.068 for firms with low market-to-book and \$0.127 for firms with high market-to-book ratios. This demonstrates that there are complementarities between investment opportunities and peer effects in investment, where the attractiveness of investment for the purpose of mimicking peers is increasing in the level of investment opportunities that a firm has.

[Insert Table 4 around here]

In columns [3] − [4] we complement this evidence and study how the level of the market-to-book ratio of peer firms matters for the relation between corporate investment and changes in the financial flexibility of firms and their peers. Comparing the coefficients on *RE value* in columns [3] and [4], we find that the sub-sample of firms whose peers have high market-to-book values have a higher intra-firm effect of real estate price shocks on investment than the sub-sample of firms whose peers have low market-to-book values, with coefficient estimates of 0.131 and 0.098, respectively. Thus, additional financial flexibility is worth more, in terms of firms' ability to invest, when peers have more investment opportunities, which is consistent with firms being subject to more intense competition when peers have more investment opportunities. However, when peer firms receive positive shocks to their financial flexiblity, peers are also able to invest more, which can intensity the level of competition in an industry. When we compare the coefficient on $(\overline{RE\ value})_{-i}$ in columns [3] and [4], we find that this effect is substantial. When peers have low market-to-book ratios, a \$1 increase in the value of real estate for peer firms is associated with an increase in investment of \$0.077, while the effect is \$0.177 when peers have high market-to-book ratios. In this latter case, peers would find it much more valuable to increase investment and thus firms also have correspondingly stronger incentives to "match' their peers in their product market choices.

3.3 The role of firm size

In Table 5, we examine the importance of firm size for the effect of changes in peers' financial flexibility on investment. Column [1] contains estimates for a sub-sample of small firms and column [2] contains estimates for a sub-sample of large firms. The coefficients on *RE value* are statistically significant for both sub-samples, and similar in magnitude to our main OLS and IV results from Table 3. From column [1] we see that a shock in financial flexibility of peers firms does not have a statistically significant effect on the investment for small firms, while the results in column [2] suggest a significant effect on large firms, where a \$1 increase in the value of real estate for peer firms is associated with an increase in investment of \$0.092.

In column [3] we show estimates for a sub-sample of firms with small peer firms, which we compare to the results of column [4] that are obtained from a sub-sample of firms with large peers. We note that the coefficients of both *RE value* and $(\overline{RE\ value})_{-i}$ are statistically significant with coefficient estimates somewhat larger than those obtained for the main sample.

[Insert Table 5 around here]

In order to better understand the role of firm size, and also to further dissect the finding that small firms do not seem to exhibit peer effects, we form sub-samples conditional on both size and peer firm size in columns [5]-[8], where column [5] contains estimates for a sub-sample of small firms with small peer firms, column [6] contains estimates for a sub-sample of small firms with large peer firms, column [7] contains estimates for a sub-sample of large firms with small peer firms, and column [8] contains estimates for a sub-sample of large firms with large peer firms. Comparing columns [5] and [6], we see that a \$1 increase in the value of real estate assets of peers for small firms with small peers is associated with a statistically significant increase in investment of \$0.18, which is considerably larger than the main sample. Thus, although small firms on average do not exhibit peer effect, this is because of the distribution of the size of firms given that small firms do in fact imitate other small firms. It is further interesting to note that, based on columns [7] and [8], large firms imitate both large and small firm, though the statistical evidence in favor of the latter is only marginal.

3.4 Capital structure and financing constraints

In our next test, we investigate how capital structure and financial constraints affect investment choice of firms when their peers receive shock to collateralizable assets. Table 6 shows the results.

[Insert Table 6 around here]

In columns [1] and [2] we show results for sub-samples of firms with low and high leverage, respectively. We find that the effect of *RE value* on investment is higher for firms with high leverage than for firms with low leverage. Interpreting firms with high leverage as more financially constrained, this finding is consistent with Chaney, Sraer, and Thesmar (2012) who find that relaxation of collateral constraints is relatively more beneficial for financially constrained firms, in terms of helping to increase their investment, relative to unconstrained firms. Comparing the coefficients on $(\overline{RE\ value})_{-i}$, we find that a \$1 increase in the value of real estate assets of peers is associated with a statistically significant increase in investment of \$0.158 for firms with low leverage and \$0.039 for firms with high leverage. This parallels the documented intra-firm effect, though with the opposite interaction consistent with the notion that it is easier for firms with low leverage, having exhausted relatively less of their potential for external financing, to mimick their peers.

When we condition our results on the leverage of peer firms in columns $[3]-[4]$, we do not find substantial differences in the coefficients on $(\overline{RE\ value})_{-i}$, though we note that they are individually economically and statistically significant in line with our main results. However, the intra-firm effects, captured by the coefficients on *RE value*, display large variation. A \$1 increase in the value of real estate assets is associated with a statistically significant increase in investment of \$0.138 for firms whose peers have high leverage. When facing peers with low leverage, the effect is only \$0.044. This finding suggest that firms who receive positive shocks to their financial flexibility, invest more aggressively when their peers have limited ability to mimick them, thus obtaining relative advantages in the product market. This interpretation is consistent with Alimov (2016), who find that firms who receive positive shocks to collateral experience ex post increased market shares.

In columns [5] − [6], we show results for sub-samples formed based on payout ratio as a proxy for financing constraints. Considering first the intra-firm effect, we find a \$0.41 increase in investment for every \$1 increase in the price of real estate assets for unconstrained firms, while the corresponding increase for constrained firms is \$0.154, which is in line with existing findings. Furthermore, the coefficient on $(\overline{RE\ value})_{-i}$ is 0.114 for unconstrained firms and 0.081 for constrained firms, providing support to our above findings conditional on firm leverage.

In columns [7] − [8], we provide results for another proxy for financing constraints based on the presence of bond ratings for firms with long-term debt, where firms are considered constrained if they are not rated. A similar pattern emerges: The intra-firm effect is much stronger for constrained firms, with coefficients on *RE value* of 0.046 and 0.277 for unconstrained and constrained firms, respectively, while the peer effect is stronger for unconstrained firms. In fact, when considering the presence of bond ratings as the measure of financing constraints, only the sub-sample of unconstrained firms display statistically significant peer effects, with a coefficient on $(\overline{RE\ value})_{-i}$ of 0.099.

3.5 Robustness Tests

In this section we present results that investigate the robustness of our results. First, in Table 7 we show results for sub-samples conditional on the state of the business cycle. We find that the effect of shock in peers financial flexibility on firms' corporate investment remains robust at different point of business cycle, confirming that our results are not sensitive to states of the economy.

[Insert Table 7 around here]

Second we address the concern that our results might be driven by firms located in large MSAs. Therefore, we estimate our main regression on sub-samples based on firms' locations. Table 8 presents these results. Column [1] presents results for firms located in small MSAs while column [2] shows results for firms in large MSAs. Our coefficient of interest remains positive and statistically significant for both sub-samples, confirming that our results are not driven by the size of geographical areas where the firms are located. We also note that the intra-firm effect displays a similar robustness both in terms of statistical and economic significance.

[Insert Table 8 around here]

In columns [3] – [6], we present results sorted on firms size conditional on MSA size. The intra-firms effect is robust throughout all specifications, while the peer effect displays the same pattern of interaction with firm size as the one documented in table 5 within each group formed on MSA size. Overall we find that our main results are robust to several potentially confounding effects, including both business cycles and MSA size.

4 Concluding Remarks

How important is the financial flexibility of peer firms for investment? We identify this effect by exploiting variation in firms' financial flexibility stemming from shocks to the value of their real estate assets. We find that positive shocks to the financial flexibility of peer firms increases investment. The effect of shocks to peer real estate assets is increasing in both investment opportunities and peer investment opportunities, similar to the effect of shocks to the price of firms' own real estate assets. Different from the intra-firm effect of financial flexibility on investment, the peer effect is stronger when firms have low leverage and are financially less constrained, displaying less variation over business cycles. Overall, we document a new channel through which real estate is an economically significant determinant of corporate investment.

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Table 1: **Summary Statistics**

This table reports descriptive statistics for our 1987-2018 sample of Compustat firms. *MSA prices* are the metropolitan statistical area (MSA) level residential real estate prices from Federal Housing Finance Agency's (FHFA). *RE value* is the ratio of the market value of real estate normalized by previous-year PPE. Size is defined as the book value of total assets, where assets is measured in million USD. Investment is defined as the ratio of capital expenditure to lagged PPE. Cash is the ratio of cash flows to lagged PPE. MB is the ratio of the market value of equity plus the book value of assets minus the book value of equity, all divided by the book value of assets. Leverage is the is the sum of short- and long-term debt normalized by the book value of assets. Payout ratio is defined as the sum of dividend paid plus shares repurchased, divided by net income. Large MSA is an indicator which takes value 1 if the firm is headquartered in one of top 20 most populated MSAs, and 0 otherwise.

	Obs.	Mean	Std. Dev.	25^{th} Pct	50^{th} Pct	75^{th} Pct
MSA prices	78,292	0.60	0.22	0.42	0.56	0.77
RE value	78,292	0.28	0.36	0	0.18	0.42
Size	78,292	1708	8542	37	147	714
Investment	78,292	0.40	0.43	0.13	0.24	0.47
Cash	78,215	-0.03	2.09	-0.28	0.28	0.76
MB	78,292	2.22	1.70	1.14	1.601	2.60
Leverage	78,292	0.22	0.24	.01	0.16	0.34
Payout Ratio	71,456	0.23	0.59	0	0	0.367
Large MSA	78,292	.49	.50	0	0	1

Table 2: **First-stage Results**

This table shows results of the first stage regression of the IV specification, examining the impact of local housing supply elasticity on house prices. The dependent variable is the MSA residential house price index. All the regressions control for year and firm fixed effects and standard errors are clustered at the MSA level. *t*-statistics are reported in parentheses. Statistical significance at the 1%, 5%, and 10% level is denoted by ***, **, and *, respectively.

	[1]	[2]	[3]	[4]
Local housing supply elasticity × Mortgage rate	0.011***	0.010***		
	(5.60)	(4.70)		
First quartile of elasticity × Mortgage rate			−0.025***	−0.025***
			(-6.02)	(-4.08)
Second quartile of elasticity × Mortgage rate			−0.013***	−0.010
			(-2.91)	(-1.56)
Third quartile of elasticity × Mortgage rate			−0.004	−0.008*
			(-1.14)	(-1.89)
Local housing supply elasticity × Year FE	No	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes
MSA FE	Yes	Yes	Yes	Yes
Observations	2,912	2,912	2,912	2,912
R^2	0.914	0.923	0.914	0.926

Table 3: **Investment**

This table contains estimates of the effect of real estate prices on corporate investment of peer firms, where the dependent variable is *Investment* in all specifications. *RE value* is the ratio of the market value of real estate normalized by previous-year PPE. *MSA prices* is the level of the MSA-level real estate price index. Our main independent variables of interest is $(\overline{RE\ value})_{-i}$. The notation $(\overline{A})_{-i}$ for variable A denotes the average of variable A, in the peer group of firm i, over all firms at a given point in time, excluding the observation for firm i itself. Columns (1) - (4) contains estimates from OLS regressions and columns (5) - (8) contains estimates for instrumental variables regressions. Refer to Table 1 for detailed variable definitions. All the columns include year and industry fixed effects. Columns (7)-(8) also include Elasticity × Year fixed effects. Standard errors are clustered at the MSA level. t-statistics are reported in parentheses. Statistical significance at the 1%, 5%, and 10% level is denoted by ***, **, and *, respectively.

	[1] *OLS*	[2] *OLS*	[3] *OLS*	[4] *OLS*	[5] *IV*	[6] *IV*	[7] *IV*	[8] *IV*
RE value	0.085***	0.092***	0.084***	0.090***	0.082***	0.087***	0.088***	0.092***
	(8.78)	(8.68)	(8.52)	(8.30)	(8.58)	(7.64)	(8.48)	(7.57)
$(\overline{RE\ value})_{-i}$			0.081***	0.072***	0.088***	0.077***	0.093***	0.081***
			(13.76)	(12.42)	(13.82)	(11.59)	(13.75)	(11.22)
MSA prices	-0.306***	-0.251***	-0.306***	-0.250***	-0.457***	-0.362***	-0.455***	-0.364***
	(-46.11)	(-38.31)	(-46.44)	(-38.18)	(-36.08)	(-34.90)	(-44.95)	(-36.70)
$(\overline{MSA\ prices})_{-i}$			-0.128***	-0.042	-0.406***	-0.222***	-0.426***	-0.243***
			(-3.07)	(-1.05)	(-16.89)	(-8.80)	(-18.13)	(-10.07)
cash		0.001		0.002		0.002		0.003
		(0.30)		(0.59)		(0.92)		(0.97)
MB		0.059***		0.059***		0.059***		0.059***
		(64.85)		(63.71)		(54.67)		(51.98)
peercash				-0.027***		-0.027***		-0.025***
				(-10.34)		(-8.60)		(-8.66)
$(\overline{MB})_{-i}$				0.017***		0.017***		0.017***
				(11.23)		(8.05)		(7.84)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Elasticity × Year FE	No	No	No	No	No	No	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	81,880	76,985	81,545	76,770	72,013	67,773	72,013	67,773
R^2	0.136	0.181	0.137	0.183	0.138	0.184	0.142	0.187

Table 4: **Interactions with Market-to-Book**

This table contains estimates of the effect of real estate prices on corporate investment of peer firms for subsamples formed on market-to-book for firms and their peers. In column (1) we show estimates for firms with low market-to-book ratios, where low refers to any observation in the three lowest deciles of the market-to-book distribution in any given year. Column (2) contains estimates for the samples of observations with a high market-to-book value, defined analogously. Columns (3) and (4) contain corresponding results for subsamples form on peer market-to-book. The dependent variable is $Investment$ in all specifications. $RE\ value$ is the ratio of the market value of real estate normalized by previous-year PPE. $MSA\ prices$ is the level of the MSA-level real estate price index. Our main independent variables of interest is $(\overline{RE\ value})_{-i}$. The notation $(\overline{A})_{-i}$ for variable A denotes the average of variable A, in the peer group of firm i, over all firms at a given point in time, excluding the observation for firm i itself. Refer to Table 1 for detailed variable definitions. All the columns include year and industry fixed effects and standard errors are clustered at the MSA level. t-statistics are reported in parentheses. Statistical significance at the 1%, 5%, and 10% level is denoted by ***, **, and *, respectively.

	MB		Peer MB	
	Low	High	Low	High
	[1]	[2]	[3]	[4]
$RE\ value$	0.070***	0.132***	0.098***	0.131***
	(9.55)	(6.75)	(11.47)	(13.03)
$(\overline{RE\ value})_{-i}$	0.068***	0.127***	0.077***	0.177***
	(6.63)	(3.41)	(6.46)	(5.55)
$MSA\ prices$	-0.175***	-0.286***	-0.164***	-0.291***
	(-17.58)	(-13.00)	(-21.96)	(-16.62)
$(\overline{MSA\ prices})_{-i}$	-0.074***	0.254**	-0.080***	0.156*
	(-3.06)	(2.05)	(-3.18)	(1.94)
cash	-0.002	-0.002	0.021***	-0.009**
	(-0.67)	(-0.61)	(8.70)	(-2.56)
MB	0.061***	0.038***	0.063***	0.057***
	(5.36)	(28.71)	(57.74)	(46.21)
peercash	-0.021***	-0.042***	0.008***	-0.030***
	(-4.58)	(-6.04)	(5.15)	(-9.27)
$(\overline{MB})_{-i}$	0.005*	0.049***	0.044***	0.000
	(1.95)	(10.04)	(9.51)	(0.01)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	23,062	22,949	23,177	22,670
R^2	0.132	0.147	0.179	0.138

Table 5: **The Role of Firm Size**

This table contains estimates of the effect of real estate prices on corporate investment of peer firms for subsamples formed on firms size and peer firm size. Throughout this table we refer to small (large) as any observation in the three bottom (top) deciles of the relevant size distribution in any given year. Column (1) contains estimates for a subsample of small firms, column (2) contains estimates for a subsample of large firms, column (3) contains estimates for a subsample of firms with small peer firms, column (4) contains estimates for a subsample of firms with large peer firms, column (5) contains estimates for a subsample of small firms with small peer firms, column (6) contains estimates for a subsample of small firms with large peer firms, column (7) contains estimates for a subsample of large firms with small peer firms, and column (8) contains estimates for a subsample of large firms with large peer firms. Firms are sorted unconditionally in cases where the sample is formed based on two variables. The dependent variable is $Investment$ in all specifications. $RE\ value$ is the ratio of the market value of real estate normalized by previous-year PPE. $MSA\ prices$ is the level of the MSA-level real estate price index. Our main independent variables of interest is $(\overline{RE\ value})_{-i}$. The notation $(\overline{A})_{-i}$ for variable A denotes the average of variable A, in the peer group of firm i, over all firms at a given point in time, excluding the observation for firm i itself. Refer to Table 1 for detailed variable definitions. All the columns include year and industry fixed effects and standard errors are clustered at the MSA level. t-statistics are reported in parentheses. Statistical significance at the 1%, 5%, and 10% level is denoted by ***, **, and *, respectively.

					Small Firms		Large Firms	
	Small Firms [1]	Large Firms [2]	Small Peers [3]	Large Peers [4]	Small Peers [5]	Large Peers [6]	Small Peers [7]	Large Peers [8]
$RE\ value$	0.085***	0.103***	0.127***	0.154***	0.124***	0.166***	0.099*	0.159***
	(8.91)	(5.03)	(13.94)	(18.21)	(10.05)	(8.39)	(1.75)	(5.82)
$(\overline{RE\ value})_{-i}$	0.005	0.092***	0.100***	0.116***	0.180***	-0.027	0.096*	0.083***
	(0.18)	(6.92)	(2.74)	(9.90)	(7.14)	(-0.49)	(1.73)	(9.07)
$MSA\ prices$	-0.149***	-0.240***	-0.322***	-0.188***	-0.195***	-0.000	-0.372***	-0.153***
	(-11.95)	(-10.71)	(-18.78)	(-15.88)	(-9.81)	(-0.00)	(-8.60)	(-9.90)
$(\overline{MSA\ prices})_{-i}$	0.144**	-0.212***	0.007	-0.113**	0.090	0.262	-0.171***	-0.169***
	(1.97)	(-9.74)	(0.13)	(-2.25)	(1.19)	(1.41)	(-3.12)	(-6.66)
cash	-0.006***	0.020**	-0.012***	0.007***	-0.015***	0.000	-0.014**	0.038***
	(-3.27)	(2.00)	(-2.79)	(3.56)	(-5.44)	(0.17)	(-1.97)	(5.82)
MB	0.043***	0.050***	0.053***	0.062***	0.038***	0.050***	0.049***	0.033***
	(41.19)	(25.28)	(25.65)	(51.92)	(28.11)	(24.17)	(4.50)	(8.30)
peercash	-0.021***	-0.015***	-0.043***	-0.007**	-0.020***	0.028***	-0.029***	-0.001
	(-6.71)	(-5.43)	(-11.06)	(-2.43)	(-3.46)	(4.54)	(-5.00)	(-0.20)
$(\overline{MB})_{-i}$	0.010**	0.021***	0.027***	0.027***	0.013**	0.042***	0.035***	0.013***
	(2.43)	(7.54)	(3.89)	(6.90)	(2.25)	(3.93)	(6.44)	(2.61)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	22,251	23,271	22,788	23,035	9,347	3,236	4,095	11,411
R^2	0.098	0.295	0.154	0.195	0.096	0.170	0.303	0.287

Table 6: **Capital Structure and Financing Constraints**

This table contains estimates of the effect of real estate prices on corporate investment of peer firms for subsamples formed on leverage, peer leverage, payout rate, and bond ratings. The dependent variable is *Investment* in all specifications. *RE value* is the ratio of the market value of real estate normalized by previous-year PPE. *MSA prices* is the level of the MSA-level real estate price index. Our main independent variables of interest is $(\overline{RE\ value})_{-i}$. The notation $(\overline{A})_{-i}$ for variable A denotes the average of variable A, in the peer group of firm i, over all firms at a given point in time, excluding the observation for firm i itself. Refer to Table 1 for detailed variable definitions. All the columns include year and industry fixed effects and standard errors are clustered at the MSA level. t-statistics are reported in parentheses. Statistical significance at the 1%, 5%, and 10% level is denoted by ***, **, and *, respectively.

	Leverage		Peer Leverage		Payout Rate		Bond Rating	
	Low	High	Low	High	Unconstr.	Constr.	Unconstr.	Constr.
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
RE value	0.048***	0.184***	0.044***	0.138***	0.041***	0.154***	0.046***	0.277***
	(3.81)	(20.63)	(3.35)	(11.80)	(2.89)	(22.09)	(6.10)	(29.46)
$(\overline{RE\ value})_{-i}$	0.158***	0.039***	0.101***	0.116***	0.114***	0.081***	0.099***	0.003
	(6.83)	(5.76)	(4.73)	(12.84)	(4.37)	(3.27)	(14.24)	(0.18)
MSA prices	-0.282***	-0.178***	-0.238***	-0.197***	-0.256***	-0.252***	-0.207***	-0.406***
	(-17.16)	(-17.75)	(-16.80)	(-10.50)	(-21.42)	(-29.43)	(-19.88)	(-30.54)
$(\overline{MSA\ prices})_{-i}$	-0.007	0.024	-0.208***	-0.143***	-0.154***	0.007	-0.039	-0.158**
	(-0.08)	(1.10)	(-2.77)	(-3.07)	(-6.62)	(0.10)	(-1.01)	(-2.35)
cash	0.004***	-0.000	0.008***	0.003	0.008*	-0.001	0.006**	-0.007**
	(2.73)	(-0.14)	(2.83)	(1.12)	(1.95)	(-0.63)	(2.09)	(-2.43)
MB	0.061***	0.038***	0.064***	0.061***	0.053***	0.063***	0.056***	0.068***
	(61.71)	(33.34)	(47.16)	(30.40)	(44.56)	(84.92)	(79.02)	(24.70)
peercash	-0.033***	-0.012***	-0.026***	-0.009***	-0.030***	-0.030***	-0.019***	-0.057***
	(-7.15)	(-4.09)	(-10.08)	(-4.17)	(-11.98)	(-6.01)	(-8.56)	(-7.35)
$(\overline{MB})_{-}-i$	0.021***	0.009***	0.018***	0.018***	0.026***	0.012***	0.013***	0.029***
	(4.47)	(4.27)	(6.54)	(4.87)	(6.62)	(5.49)	(4.97)	(8.53)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	23025	22672	23239	22811	28243	41449	56927	19843
R^2	0.183	0.161	0.199	0.187	0.220	0.172	0.186	0.220

Table 7: **Boom and Bust Periods**

This table contains estimates of the effect of real estate prices on corporate investment of peer firms conditional on the overall macroeconomic environment, where the dependent variable is $Investment$ in all the specifications. Columns (1) contains estimates from a sample formed using data before 2001, column (2) contains estimates based on the 2001 - 2006 period, column (3) contains estimates based on the 2007 - 2011 sample, and column (4) contains estimates based on the post-2011 sample. $RE\ value$ is the ratio of the market value of real estate normalized by previous-year PPE. $MSA\ prices$ is the level of the MSA-level real estate price index. Our main independent variables of interest is $(\overline{RE\ value})_{-i}$. The notation $(\overline{A})_{-i}$ for variable A denotes the average of variable A, in the peer group of firm i, over all firms at a given point in time, excluding the observation for firm i itself. Refer to Table 1 for detailed variable definitions. All the columns include year and industry fixed effects and standard errors are clustered at the MSA level. t-statistics are reported in parentheses. Statistical significance at the 1%, 5%, and 10% level is denoted by ***, **, and *, respectively.

	[1]	[2]	[3]	[4]
	$Pre-2001$	$Boom$	$Bust$	$Recovery$
$RE\ value$	0.285***	0.065**	0.035	0.039***
	(24.93)	(2.36)	(1.49)	(4.56)
$(\overline{RE\ value})_{-i}$	0.233***	0.167***	0.180***	0.164***
	(21.11)	(6.06)	(9.04)	(6.94)
$MSA\ prices$	-0.554***	-0.148***	-0.064**	-0.231***
	(-33.82)	(-3.82)	(-2.36)	(-6.06)
$(\overline{MSA\ prices})_{-i}$	-0.657***	-0.026	-0.072	-0.263***
	(-23.30)	(-0.49)	(-1.21)	(-3.86)
cash	0.000	0.010***	0.011***	-0.010***
	(0.08)	(2.78)	(5.22)	(-3.95)
MB	0.069***	0.050***	0.051***	0.044***
	(60.02)	(35.65)	(15.99)	(13.90)
peercash	-0.046***	0.024***	0.002	-0.014***
	(-9.53)	(3.87)	(0.54)	(-3.66)
$(\overline{MB})_{-i}$	0.013***	-0.003	-0.024***	0.005
	(3.61)	(-0.44)	(-4.41)	(0.84)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	36,590	16,211	10,713	13,256
R^2	0.221	0.154	0.179	0.178

Table 8: **Robustness Test: MSA Size**

This table shows results for sub-samples formed on MSA size, as well as for subs-samples formed on both firm and MSA size. The dependent variable is $Investment$ in all specifications. $RE\ value$ is the ratio of the market value of real estate normalized by previous-year PPE. $MSA\ prices$ is the level of the MSA-level real estate price index. Our main independent variables of interest is $(\overline{RE\ value})_{-i}$. The notation $(\overline{A})_{-i}$ for variable A denotes the average of variable A, in the peer group of firm i, over all firms at a given point in time, excluding the observation for firm i itself. Refer to Table 1 for detailed variable definitions. All the columns include year and industry fixed effects and standard errors are clustered at the MSA level. t-statistics are reported in parentheses. Statistical significance at the 1%, 5%, and 10% level is denoted by ***, **, and *, respectively.

			Small MSAs		Large MSAs	
	Small MSAs [1]	Large MSAs [2]	Small Firms [3]	Large Firms [4]	Small Firms [5]	Large Firms [6]
$RE\ value$	0.091***	0.101***	0.088***	0.108***	0.105***	0.120***
	(5.84)	(10.42)	(9.86)	(3.45)	(7.25)	(6.77)
$(\overline{RE\ value})_{-i}$	0.083***	0.075***	-0.025	0.099***	0.023	0.086***
	(9.50)	(8.76)	(-1.20)	(7.45)	(0.47)	(4.41)
$MSA\ prices$	-0.338***	-0.148***	-0.218***	-0.286***	-0.085**	-0.202***
	(-33.83)	(-8.71)	(-11.51)	(-7.21)	(-2.43)	(-9.01)
$(\overline{MSA\ prices})_{-i}$	0.019	-0.126***	0.045	-0.112***	0.241	-0.313***
	(0.50)	(-3.55)	(0.57)	(-4.67)	(1.44)	(-6.47)
cash	0.003	-0.000	-0.005*	0.024*	-0.007***	0.016*
	(0.98)	(-0.07)	(-1.96)	(1.87)	(-4.40)	(1.70)
MB	0.061***	0.057***	0.048***	0.058***	0.038***	0.044***
	(64.56)	(41.65)	(37.25)	(15.30)	(28.88)	(13.31)
peercash	-0.024***	-0.031***	-0.041***	-0.009**	-0.006	-0.025***
	(-11.30)	(-7.95)	(-11.19)	(-2.14)	(-1.08)	(-5.04)
$(\overline{MB})_{-i}$	0.022***	0.012***	0.021***	0.019***	0.004	0.019***
	(10.53)	(4.42)	(4.57)	(5.90)	(0.46)	(3.45)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	38,987	37,783	10,472	12,852	11,779	10,419
R^2	0.207	0.170	0.122	0.339	0.099	0.279