The Effect of Institutional Investor Portfolio Diversification on Corporate Diversification*

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Abstract

This paper examines whether institutional investors' portfolio diversification strategies reveal their preferences for a constituent's corporate diversification policies. We estimate investor portfolio diversification using return characteristics of institution's 13F holdings relative to a benchmark asset pricing model and find a negative relationship between portfolio and corporate diversification. This relationship is robust to a quasi-natural experiment, and more pronounced when blockholders are fewer, managers are highly incentivized, and quasi-indexer ownership is higher. Further, diversified owners are associated with a reduced propensity of firms engaging in diversifying acquisitions and having product market similarities to rivals. Our findings illustrate how evolving ownership structures reshape the corporate landscape.

JEL classification: G23, G34, L25

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Shareholdings by institutional investors have risen dramatically over the past few decades, affording them more power to potentially influence corporate policies. Further, much of the ownership increase stems from the dramatic rise in assets held by diversified investors.[1] This distinction is important because investors' collective portfolio holdings can impact their preferences for a given firm's own corporate strategies (McCahery, Sautner, and Starks, 2016). Prior studies, for example, show that investors' portfolio diversification positively influences firms' risk-taking behavior (e.g., Amihud and Lev, 1981; Faccio, Marchica, and Mura, 2011; Lyandres, Marchica, Michaely, and Mura, 2019).

In this paper, we provide evidence on how institutional owners' portfolio composition impacts their portfolio firms' own diversification practices. The case for diversified investors preferring portfolio firms to have lower firm-specific diversification is relatively straightforward. When firms are less diversified, it reduces the correlation of the returns across firms and minimizes the investor's overall portfolio variance. Yet, having a diversified portfolio can come at the expense of more specialized knowledge of a particular set of assets (Van Nieuwerburgh and Veldkamp, 2010).

Our empirical specifications indicate a strong negative relation between an institutional investor's portfolio diversification and the diversification of their constituent firms, which supports the notion that diversified investors exhibit preferences for firms to have lower diversification. We then explore how institutions are able to influence such corporate policies. Based on existing research, we propose two competing hypotheses to explain the effect of investors' portfolio diversification on corporate diversification: *preference imposition* and *preference rejection* hypotheses.

The *preference imposition* hypothesis suggests that diversified investors are particularly effective in translating their preferences to observable corporate policies at their investee firms. They can exert influence mainly by 'voice' and 'exit' strategies as enunciated in the literature (e.g., Edmans, 2014; Edmans and Holderness, 2017). Recently, Edmans, Levit, and Reilly (2019) argue that diversified investors can be more effective in voice than less diversified investors because of the higher recoverability of their monitoring costs. Having more securities in their portfolio allows

[1] Diversified investor holdings have been spurred by recent trends including growth in passively managed assets (Schmidt and Fahlenbrach, 2017; Anadu, Kruttli, McCabe, and Osambela, 2020), consolidation among asset managers (Schmalz, Azar, and Tecu, 2018), and the combined effect of an increase in institutional assets and a reduction in the number of public firms (Doidge, Karolyi, and Stulz, 2017). The concatenate effect of higher fund inflows and the decline of public firms increases portfolio managers' incentives to diversify their portfolio holdings to mitigate the effect of sudden redemption shocks.

institutions to better withstand potential liquidity shocks, thereby reducing their hesitation to incur monitoring costs ex-ante.

Similarly, exit strategies, which involve disciplining management by selling the stock and depressing prices, can work more effectively for a diversified shareholder who ex-ante has greater choice in which security to sell. Hence, their selling ex-post proves to be a stronger negative signal about firm quality than selling by an under-diversified investor who is responding to a liquidity shock. Therefore, the *preference imposition* hypothesis predicts that a firm with a high amount of diversified ownership is more likely to reflect the preferences of diversified owners (i.e., low level of corporate diversification strategies).

Alternatively, the *preference rejection* hypothesis is based on the notion that a diversified investor faces constraints in governing. For example, restrictions that require maintaining narrow tracking errors (He and Xiong, 2013) reduce diversified investors' incentives to sell a security with a large portfolio weight in their benchmark index. Moreover, unlike concentrated investors or blockholders, diversified institutional investors could lack the incentives and experience to effectively monitor, thereby limiting their ability to impose their preferences on corporate policies. Schmidt and Fahlenbrach (2017) contend that voice is expensive for investors holding diversified portfolios as they prefer to incur low costs and fewer overheads. Similarly, regulations requiring institutional investors to vote can have unintended effect of leading diversified firms to outsource voting decisions to proxy advisory firms (Larcker, McCall, and Ormazabal, 2015). Therefore, the *preference rejection* hypothesis predicts that a firm with higher diversified ownership faces less scrutiny and pressure to reflect such shareholder preferences, allowing them to pursue corporate diversification.

A key feature of our study is the segmentation of investors into diversified and under-diversified using a relative classification schematic. Although a truly diversified investor is one who holds a global minimum variance portfolio on the efficient frontier, our measure does not proxy for such an ideal theoretical construct. Instead, we rely on the notion that there is relative variation between institutions in their portfolio diversification.

Specifically, we measure institutional investor diversification by constructing proxies based on their reported holdings. We regress the buy-and-hold quarterly return of the an investor's 13F portfolio on the Fama-French three factors in a three-year rolling window.[2] We then construct

[2]By using the 13F portfolio to construct our measures, we overcome concerns with other measures, such as passive

the portfolio idiosyncratic volatility for each institution-quarter as the standard deviation of the residuals from the regression. Institutions with lower than sample median idiosyncratic volatility in the quarter are classified as diversified, and under-diversified otherwise. For robustness, we use an alternate classification measure based on the goodness of fit or R^2 obtained from the Fama-French three-factor model regression (Chen and Zhang, 2015) and based on the concentration of portfolio holdings and count of the number of securities in the portfolio that helps overcome model dependence. Next, we aggregate the shareholdings held by each subgroup of investors along these four dimensions to the firm to obtain firm-level measures of diversified and under-diversified institutional ownership.

Compared to a more widely adopted institutional categorization (i.e., Bushee, 1998; Bushee and Noe, 2000), our classification splits both *Quasi-indexers* and *Transient* investors almost in half, suggesting that investors belonging to these categories could pursue either a diversified or under-diversified strategy. Thus, our classification system can capture the institutional preferences in a manner that is not possible in such investor groupings. Furthermore, our measure, by accommodating time-varying preferences and heterogeneity in institutions, allows it to reflect the effect on corporate policies better compared to firm-side measures used in prior literature, such as ownership concentration or count-based measures.

To explore the relation between investor diversification and corporate policies, we first focus on corporate diversification, which we measure as the difference in volatility of investment opportunities (*Corp. Div. Q*) and cash flow (*Corp. Div. CF*), respectively, between imperfect and perfect cross-divisional correlations in a multi-segment firm, using a 10-year rolling window (Duchin, 2010). We find that our measure of diversified institutional ownership is negatively related to corporate diversification. Beyond statistical significance, these results are also economically meaningful. For example, a one-standard-deviation change in *Diversified Ins. Own.*$_{Idio\_vol}$ (0.244) reduces *Corp. Div. Q* by 11.8 percent (coefficient -0.901×0.244 divided by mean *Corp. Div. Q* of 1.871). However, *Under-diversified Ins. Own.*$_{Idio\_vol}$ is not related in a statistically significant manner with corporate diversification. These results are also robust to alternative measures of corporate diversification and investor portfolio diversification, lending support to *preference imposition* hypothesis.

institutional ownership, that rely on investment style that is either self-disclosed or identified by a vendor at a single point in time.

To help draw a causal inference on the effect of investors' portfolio diversification on firm policies, we use on the annual reconstitution of the Russell 1000/2000 indices, which creates potentially exogenous variation in diversified institutional ownership, who are arguably more sensitive to benchmark indices (e.g., Boone and White, 2015; Fich, Harford, and Tran, 2015; Crane, Michenaud, and Weston, 2016; Appel, Gormley, and Keim, 2016, 2019). Our findings are robust to this setting and a battery of alternate measures of corporate diversification and diversified ownership. We also use alternate time windows, bandwidths of firms near the index thresholds, and specifications to address potential flaws in the Russell index reconstitution techniques.

After establishing robust empirical support to *preference imposition* hypothesis, we analyze whether diversified owners tend to rely on voice or exit strategies to transfer their preferences to corporate policies. Re-estimating our regressions using low and high subsamples based on the number of blockholdings, managerial incentive schemes, and *Quasi-indexer* ownership, we find that the negative effect on corporate diversification prevails in firms with a low number of blockholdings, highly incentivized managers, and in high *Quasi-indexers* subsamples.[3]

These findings suggest that, in the absence of blockholdings, diversified owners could be more effective in exit due to the signaling effects of their sales. Further, firm managers might be more inclined to reflect diversified owners' preferences when they are highly incentivized, which increases exit effectiveness. Moreover, the results on high *Quasi-indexers* suggest that diversified owners could also rely on voice strategies to achieve their intended outcomes. Together, these findings support both voice and exit theories, suggesting that investors can be most successful in influencing corporate policies when they can exert both. Thus, the circumstances of the portfolio firms (e.g., the severity of agency problems) and their holdings (e.g., attention demands) determine which one is more appropriate to each one of them.

Our findings are generalizable beyond diversification-specific corporate policies to other avenues where investor preferences matter. Specifically, we find that ownership by diversified investors is associated with a lower propensity to engage in diversifying M&A and a reduction in product market similarity with peers. These results provide additional support to our main findings and

[3]Generally, exit strategies are more effective in firms with a higher number of blockholdings (Edmans, Fang, and Zur, 2013). But even in the absence of blockholdings, diversified owners could govern through exit due to their greater flexibility in choosing which asset to sell (Edmans and Manso, 2011). Steeper incentives would further increase the responsiveness of managers to the threat of exit from investors. Moreover, *Quasi-indexers* benchmarked to indices face more incentives to govern through voice to minimize tracking errors (Schmidt and Fahlenbrach, 2017).

suggests that diversified owners influence the firm to become particularly unique.

Finally, we confirm that our main results in our sample are not driven by the concurrent increase in common ownership. Specifically, we study the effect of diversified ownership on common ownership measures proposed by Gilje, Gormley, and Levit (2020) and find that diversified ownership is not associated with common ownership. Further, our main findings of portfolio diversification's negative effect on corporate diversification do not systematically vary by levels of common ownership. Therefore, the influence of diversified ownership on corporate diversification is likely not driven by managers internalizing the externalities on rivals in their decision making.

Our paper makes the following contributions. First, our study adds to the literature examining the effect of investor portfolio diversification (e.g., Amihud and Lev, 1981; Faccio, Marchica, and Mura, 2011; Kang, Luo, and Na, 2018; Lyandres et al., 2019). Unlike past studies that either treat institutions as homogeneous or examine the effect of institutional heterogeneity on monitoring effectiveness, our time-variant portfolio diversification measures overcome the caveats of other measures (e.g., passive ownership) by allowing us to capture heterogeneous preferences of institutional investors.

Second, by highlighting the role of ownership structure in corporate diversification decisions, we contribute to studies that examine the determinants of corporate diversification (e.g., Lang and Stulz, 1994; Campa and Kedia, 2002) and factors that drive firms to differentiate themselves from rivals (Hoberg and Phillips, 2016). Our findings help connect the recent developments in the institutional investing environment with the evolution in firm boundaries and scope.

Third, our study contributes to the debate on common ownership. Many studies investigating the increasing trend in common ownership by large institutions suggest that such increases might be welfare decreasing or anti-competitive.[4] However, common ownership can also relieve contracting frictions between customers and suppliers (Fee, Hadlock, and Thomas, 2006; Cici, Gibson, and Rosenfeld, 2015; Freeman, 2019), borrowers and lenders (Ojeda, 2018), and facilitate technological spillovers (Kostovetsky and Manconi, 2016; Anton, Ederer, Gine, and Schmalz, 2018). By show-

[4]For example, institutional common owners might vote in favor of overpriced M&A transactions if the gains from the target exceed losses for the acquirer (Hansen and Lott Jr, 1996; Matvos and Ostrovsky, 2008; Brooks, Chen, and Zeng, 2018). Common ownership can also reduce product market competition in the airline industry (Schmalz, Azar, and Tecu, 2018), increase profitability (He and Huang, 2017), reduce cash holdings (Semov, 2017), and increase idle capacity (Lundin, 2016), all of which can be anti-competitive and consumer-unfriendly. For an overview of theoretical and empirical studies on common ownership refer to the survey by Schmalz (2018).

ing that diversified owners influence governance to achieve their preferred industry exposures, our study shows the that these investors help firms differentiate themselves in the product markets. Such evidence can inform a regulator to adopt a more balanced approach in regulating large institutional shareholders, without which, even well-intended regulation that restricts the size of asset managers might curtail diversified investment strategies and have unintended consequences such as the proliferation of conglomerates.

1 Data and Sample Description

1.1 Sample and variable construction

We construct our sample by identifying a list of U.S. public companies during the 1995 to 2016 period from Compustat. We then exclude observations with missing historical business segment data and fundamental data from Compustat, missing stock return data from CRSP, and missing key variables used in the analyses. This process yields a sample of 87,190 firm-year observations, consisting of 12,280 unique firms. For our analyses based on the Russell index reconstitutions, we further restrict to those firms who are constituents of either the Russell 1000 or 2000 indices during the 1995 to 2006. We implement this time period restriction because of a banding policy introduced by Russell in 2006, which reduces the random nature of firms around the threshold and makes the Russell reconstitution less effective as a potential identification strategy for the post-2006 period (Appel, Gormley, and Keim, 2020). All variables used in the study are defined in Appendix A1.

1.2 Measures of Investor Portfolio Diversification

To construct measures of investor level portfolio diversification, we use the characteristics of institutional investors' portfolios based on their quarterly 13F filing during our sample period.[5] Specifically, we construct four measures of investor portfolio diversification. First, we merge the holdings data with CRSP to obtain stock return data, and then we simulate the return of a buy-and-hold value-weighted portfolio based on the current 13F filing for the past twelve quarters and regress

[5]Bushee (1998) classification uses factor analysis to examine institutions past portfolio management behavior. Quasi-indexers are those investors with low turnover, low momentum strategy, and high portfolio diversification, making it, at best, a noisy proxy for portfolio diversification.

them on the contemporaneous three Fama-French factors to obtain the residuals.[6] We use the standard deviation of these residuals for each institution-quarter as our first measure: the idiosyncratic volatility of the investor's portfolio (*Idio_vol*).

Li, Rajgopal, and Venkatachalam (2014) argue that the effect of noise on stock returns, when examining the relationship between stock return variation and information or governance structures, makes these measures insufficient to capture firm-specific news. If, for example, an institutional investor's *Idio_vol* turns out to be high due to the noisy stock prices of their portfolio constituents, we could incorrectly conclude that they are under-diversified. Hence, our second measure is the inverse return synchronicity (*Inv_sync*) measured as the natural logarithm of the ratio of (1-R^2) to R^2, where R^2 is obtained from regression analysis of historical returns as we explained above using the Fama-French 3 factor model over the 12 quarters. Consistent results using *Idio_vol* and *Inv_sync* mitigate the concern that our findings are influenced by a positive association with systematic risk (Li, Rajgopal, and Venkatachalam, 2014). Our third and fourth measures of portfolio diversification are raw measures based on the institution's concentration of holdings (*HHI_conc*) and the number of securities (*Hold_count*) reported in the 13F filing. *HHI_conc* is measured as the Herfindahl index or the sum of the squares of the fractional value of each reported holding.

To understand how the varied preferences of institutional investors potentially affect firm policies, we aggregate the investor-level diversification measures to firm-level measures of institutional ownership in the following manner. First, we split the sample of institutions as being diversified and under-diversified based on the annual sample median of the four investor diversification measures, respectively. Specifically, institutions with below-median *Idio_vol*, below-median *Inv_sync*, below-median *HHI_conc*, and above-median *Hold_count* are classified as diversified institutions, respectively, and under-diversified institutions otherwise. Next, we aggregate institutional ownership at the firm level by summing up the fraction of shares held by each type of institution to obtain four pairs of *Diversified Ins. Own.* and *Under-diversified Ins. Own.*, with subscripts indicating the portfolio diversification measure used to classify the institutions.

[6]We calculate the institutional portfolio returns as the holding period returns on their long positions in equities observed quarterly. In doing so, we assume that any changes in holdings (i.e. trades) occur at end-of-quarter observed prices rather than at possibly more favorable prices during the quarter. Therefore, our estimation of institutional portfolio returns provides a conservative estimate of institutional trading performance, especially for institutions that trade more frequently.

[Insert Table 1 about here]

Table 1 presents summary statistics for institutional investors based on our primary classification schemes and a comparative benchmark for institution classification from Bushee (1998) and Bushee and Noe (2000) (hereafter Bushee classification). In Panel A, we divide institutional investors into diversified and under-diversified institutions based on our four portfolio diversification measures. Interestingly, we find that diversified institutional investors, when compared to under-diversified institutional investors, show lower turnover in their portfolios (e.g., 9.8% versus 15.4% using *Idio_vol*), greater outflows (e.g., –$ 21.5 million versus $ 8.8 million), greater assets under management or AUM (e.g., $ 7.4 billion versus $ 1.6 billion), and higher estimated buy-and-hold quarterly return in the subsequent quarter (e.g., 2.6% versus 2.4%). The higher AUM in diversified institutions is consistent with the shift towards passively managed investment strategies during our sample period (Fichtner, Heemskerk, and Garcia-Bernardo, 2017).

In Panel B of Table 1, we provide statistics similar to those in Panel A but within the context of Bushee's *Dedicated*, *Quasi indexer*, and *Transient* institutional owner classifications. In our sample, 107,377 (60.3%) of institution-quarter observations are classified as *Quasi indexer Ins. Own.*, followed by 63,508 (35.6%) as *Transient Ins. Own.* observations, and 7,319 (4.1%) as *Dedicated Ins. Own.* observations. Panel B shows that, compared to *Transient*, *Quasi indexers*, on average, show lower turnover, lower outflows, higher AUM, and similar quarterly returns. Furthermore, *Quasi indexers* are more diversified according to all four measures compared to both *Transient* and *Dedicated* institutional owners.[7] Pairwise correlations between institution-level measures of portfolio diversification in Panel C show that they are highly correlated.

Our descriptive findings show that *Quasi indexers* demonstrate similar characteristics as diversified owners as one can expect, and hence, before proceeding further, we investigate whether the latter classification schemes capture any information beyond the Bushee classification. Specifically, we examine the distribution of our classification schemes within the Bushee classification by 1) examining the overlap in the two classification schemes, and 2) examining the time series persistence in each type of classification. The results are reported in Table 2.

[7] *Dedicated* institutions show stark differences in characteristics compared to the two other types of institutions. These investors have lower (higher) turnover rates than *Transient* (*Quasi indexers*) on average. They also demonstrate greater inflows, larger AUM, and better estimated performance on average than the other two groups.

The ex-ante expectation for diversification preferences of the Bushee classification is that *Dedicated* and *Transient* are more likely to be undiversified, whereas *Quasi indexers* are more likely to be diversified. Unsurprisingly, we find that a greater number of *Dedicated* and *Quasi indexers* are classified as under-diversified and diversified, respectively, across all our measures of portfolio diversification. Results for *Transient* are mixed. However, a non-trivial number of *Dedicated* and *Quasi indexers* are still included among diversified and under-diversified, respectively. For example, 37.5% of *Quasi indexers* observations in our sample are classified as under-diversified based on *Idio_vol* measure (i.e., 39,353 institution-quarters). We also find that non-Quasi indexers classified as diversified using our methods constitute a non-trivial 13.25% of all institutional investors and 20.30% of total institutional investor AUM, respectively. These observations suggest that our portfolio diversification measure likely captures further variation in preferences when compared to Bushee's institutional classification. Furthermore, to understand the implications of institutional ownership for corporate policies, it is more useful to rely on classification schemes based on holdings data (like ours) rather than prior trading behaviors (such as Bushee classification).

[Insert Table 2 about here]

When an institution has a lower portfolio churn and at the same time exhibits persistent portfolio diversification preferences, then the implications for long-term corporate policies, such as corporate diversification, in their constituent firms would likely be stronger. In Panels B and C of Table 2, we examine the persistence in the different types of classification. By using annual rankings, our measures already account for aggregate time-series changes in institutional portfolio preferences. In these tests, we focus on relative variation between institutions. Panel B first presents the proportion of institutions that retain their classification in the subsequent year. We find that 73.5-84.8 percent of institutions continue to be classified as diversified in the next year if they are classified as being diversified in the current year, across all our four measures. However, only 64.7-78.0 percent of institutions maintain their *Dedicated*/*Quasi indexers*/*Transient* classification in a subsequent year.

Panel C of Table 2 presents the regression analysis of our various portfolio diversification measures. We begin by showing the effect of institution and year fixed effects in predicting the current portfolio diversification measures. Column (1) of Panel C shows that institution fixed effects alone explain 54.3% of current *Idio_vol*, supporting the view that there exists a permanent institution-

specific component in investor portfolio diversification. Column (2) shows that a combination of institution and year fixed effects explains 58.0% of *Idio_vol*, indicating that the explanatory power of institution fixed effects is significantly greater than that of year fixed effects.

Next, we regress the current *Idio_vol* on the past five-year average of *Idio_vol* after controlling for other key institution characteristics such as logarithm of total assets and annual estimates of lagged return and netflows in column (3). In this specification, we exclude institution fixed effects to examine the explanatory power of the previous five-year *Idio_vol*. We find that the lagged five-year *Idio_vol* has high predictive power on an institution's current *Idio_vol*, with the coefficient being positive and significant at the 1% level. Further, Adjusted R^2 in columns (2) and (3) do not change substantially, suggesting that the lagged *Idio_vol* captures significant variation in *Idio_vol* as done by the inclusion of institution fixed effects. In columns (4)–(12), we repeat the analysis with the other three portfolio diversification measures and obtain qualitatively similar results. In sum, the results in Table 2 suggest that our portfolio diversification-based measures of institutional ownership are quite distinct from Bushee classification. Diversified institutions also exhibit lower portfolio turnover and high preference persistence, indicating that they could have significant implications for corporate policies.

[Insert Figure 1 and 2 about here]

We also explore the time trends graphically during the period between 1995 and 2016 in AUM and annual netflows (Figure 1) and the median level of different types of institutional ownership (Figure 2). We find that, in general, diversified ownership has steadily increased over the period using all four measures, whereas growth in under-diversified ownership has been volatile. Diversified institutions also experience inflows every year except following crises, such as the burst of the dot-com bubble in 2001 and the financial crisis in 2007.

In Figure 2, we find that the median level of diversified institutional ownership is higher than under-diversified ownership during our sample, with the difference widening gradually during our sample period. Using the Bushee classification, we find that, although median ownership of *Dedicated*, *Quasi-indexers*, and *Transient Ins. Own.* is comparable at the beginning of our sample period, *Quasi-indexers* dwarf the other two types of ownership towards the end of our sample period.

1.3 Measures of Corporate Diversification

To measure corporate diversification, we follow Duchin (2010) by computing it as the cross-divisional correlation in investment opportunities (*Corp. Div. Q*). Duchin's measure is primarily based on Tobin's q, which is often argued to be forward-looking measure because it is captures the value of assets in place and investor's expectations about the firm's growth opportunities and fundamental valuation reflected through current stock prices.[8]

We compute *Corp. Div. Q*, as follows: First, using only the stand-alone firms in each two-digit standard industrial classification (SIC) code for each year, we create a stream of past ten-year annual averages of Tobin's q. Second, we compute the volatility of the past ten-year stream of average Tobin's q at the industry-year level. Third, we use the two-digit SIC codes to identify industry divisions where a multi-segment firm operates. For each segment of the multi-segment firm, we compute the pairwise product of the correlation of each segment's streams of past ten-year annual averages of Tobin's q (from the first step) and the volatilities of the past ten-year annual averages of Tobin's q (from the second step), aggregated using sales weight of each segment across all the segments of the firm. Fourth, to compute a benchmark measure, we repeat step three, assuming perfect correlation between all segments to obtain "no diversification" average volatility of investment opportunity. Finally, we compute the difference between the volatility of a firm's investment opportunities between imperfect and perfect cross-divisional correlations (i.e., step 3 –step 4). Because this computation of *Corp. Div. Q* is less than zero for multi-segment firms or equal to zero for standalone firms, we add a negative sign for the convenience of interpretation. Therefore, higher values of this measure imply greater levels of corporate diversification. As cash flows are correlated with investment opportunities, for robustness, we also construct a corporate diversification measure based on cash flows instead of Tobin's q, denoted by *Corp. Div. CF*.[9]

[8]Similar to the concerns raised by Duchin (2010), this adopted measure is not at the divisional level and hence might not be accurate enough to capture the investment opportunities of conglomerate divisions (Campa and Kedia, 2002; Villalonga, 2004). To address this concern, we extend our analysis beyond diversification and find supporting evidence with firm's acquisition activities and positioning in the product markets.

[9]Duchin (2010) argues that firms with high cash flows and high investment opportunities as well as firms with low cash flows and low investment opportunities face smaller 'financial gaps' (Acharya, Almeida, and Campello, 2007), and thus lower internal financing based incentives to pursue corporate diversification. Thus, diversification in cash flows can be a suitable measure of corporate diversification along with diversification in investment opportunities. However, the responsivity of *Corp. Div. CF.* due to its reliance on realized cash flows might be slower than *Corp. Div. Q* that is forward-looking, to shift in corporate diversification initiatives.

1.4 Descriptive Analysis

Table 3 presents the summary statistics of key dependent and explanatory variables in our sample. More than half of our sample consists of standalone firms that operate in a single segment according to SIC codes. Our sample firms have a mean (median) institutional ownership of 44.2 (42.8) percent. The mean and median values of diversified institutional ownership based on investors' portfolio idiosyncratic return volatility, *Diversified Ins. Own.*$_{Idio\_vol}$, of our sample firms are 31.8 and 28.2 percent, respectively, which accounts for about 65.9 to 71.9 percent of total institutional ownership. Based on the annual sample median of alternative measures for *Inv_sync*, *HHI_conc*, and *Hold_count*, diversified institutional investors hold 33.4, 36.9, and 37.6 percent of total shares outstanding, respectively. Our sample firms have a mean (median) of 98.7 (53.0) number of institutions as shareholders, and 22.1 (22.2) percent of shares are held by Top 5 institutions.

[Insert Table 3 about here]

Given that our identification strategy relies on Russell index reconstitution, in Table 4 we present the sample characteristics employed in the reconstitution setting. We present the mean and median values of the key dependent and explanatory variables for subsamples of firms in the Russell 1000 and 2000 indices, respectively.

[Insert Table 4 about here]

2 Empirical Strategy

To examine the association between corporate diversification and portfolio diversification, we estimate ordinary least squares (OLS) regressions with firm and year fixed effects. This estimation, however, could be exposed to significant endogeneity concerns due to omitted variables or reverse causality. For example, good governance might be correlated with both diversified institutional ownership and corporate diversification measures. Diversified institutions, due to their time and resource constraints, might choose to invest in firms with ex-ante good governance practices. Also, well-governed firms might show a lower proclivity to engage in value-destroying corporate diversification strategies such as managerial empire building, giving rise to a spurious correlation between

diversified ownership and corporate diversification. Further, diversified institutions might seek out standalone firms to invest to reduce the inefficiencies of corporate diversification in their portfolio. Thus, the relationship between corporate diversification and diversified institutional ownership could be due to the selection of standalone firms by diversified owners.

We attempt to overcome these concerns by relying on the Russell index reconstitution as an exogenous shock to diversified institutional ownership, in a sharp regression discontinuity design (RDD) framework, similar to Crane, Michenaud, and Weston (2016). Index reconstitutions create differences in index weights around the index thresholds, leading to a significant discontinuity in institutional ownership.[10] This discontinuity in institutional ownership is arguably likely to be more pronounced for diversified institutions due to their greater desire to reduce tracking errors, whereas under-diversified institutions could specifically follow concentrated strategies by choice or due to some constraints.

By employing the Russell index reconstitution for diversified institutional ownership, we sidestep a recent criticism of this identification technique that it does not meaningfully alter aggregate institutional ownership (e.g., Appel, Gormley, and Keim, 2016). Furthermore, to overcome sorting-induced realignment of institutional owners around index thresholds, we follow prescribed solutions in the literature and find that our results are not driven by empirical misspecification.

In the first stage, we regress diversified institutional ownership measured after the Russell index reconstitution on inclusion in the Russell 2000 index:

$$\begin{aligned} Div.\,Ins.\,Own._{i,t} = \alpha_t + \tau\, Ru2000_{i,t} + \delta_1\, Rank_{i,t} + \delta_2\, Ru2000_{i,t} \times Rank_{i,t} \\ + \delta_3\, Float\, adjustment_{i,t} + Year_t + \epsilon_{i,t} \end{aligned} \tag{1}$$

where diversified institutional ownership variables are measured based on *Idio_vol*, *Inv_sync*, *HHI_hold*, and *Hold_count* measures. *Ru2000* is an indicator variable taking the value of one if the firm belongs to the Russell 2000 index and a value of zero if the firm belongs to the Russell 1000 index. Additionally, we control for $Rank_{i,t}$ the market capitalization ranking of firms, an interaction term $Ru2000_{i,t} \times Rank_{i,t}$, and $Float\ adjustment_t$ (Crane, Michenaud, and Weston, 2016).[11] We estimate

[10] In our sample, compared to the ten smallest firms in the Russell 1000 index with an average index weight of 0.003 percent and *Diversified Ins. Own.*$_{Idio\_vol}$ of 21.08 percent, we find that top ten firms just included in the Russell 2000 index have 0.193 percent and 44.64 percent mean index weight and *Diversified Ins. Own.*$_{Idio\_vol}$, respectively.

[11] $Rank_{i,t}$ in the Russell 1000 and the Russell 2000 indices is computed as actual rank minus 1000 as of index

Eq. (1) using a sample restricted to firms included in the Russell 1000 or 2000 indices within a narrow (±500 or ±200 firms) bandwidth around the thresholds. Additionally, we include year fixed effects to control for trends in institutional money flows and diversified institutional ownership that can affect the sensitivities of institutions to index reconstitutions.[12]

In the second stage, corporate diversification is estimated as a function of instrumented diversified institutional ownership.

$$\begin{aligned} Corp.\,Div._{i,t} = \theta_t + \beta\, Div.\,Ins.\,Own._{i,t} + \gamma_1\, Rank_{i,t} + \gamma_2\, Ru2000_{i,t} \times Rank_{i,t} \\ + \gamma_3\, Float\,adjustment_{i,t} + Year_t + \eta_{i,t} \end{aligned} \tag{2}$$

where *Corp. Div.* is measured in the fiscal year-end following the Russell reconstitution.[13] The regression includes instrumented diversified institutional ownership and the control variables that are included in the first-stage.

3 Empirical Results

3.1 OLS Regression Analysis

The preference imposition (preference rejection) hypothesis predicts that institutional investors' portfolio diversification has a negative (positive) effect on corporate diversification. To test the prediction, we first estimate OLS regressions using 87,190 firm-year observations during the period between 1995 and 2016.

[Insert Table 5 about here]

assignment date (i.e., end of May). By deducting 1000, firms in the Russell 1000 (Russell 2000) have a negative (positive) rank. The interaction term $Ru2000_{i,t} \times Rank_{i,t}$ allows us to isolate the discontinuity in diversified institutional ownership at the threshold and to allow the effect to have different functional forms on either side of the threshold. Also, we control for *Float adjustment*, the difference between the May 31st market capitalization implied rank and the actual rank assigned by Russell in June, to account for the unobservable float calculations performed by Russell.

[12] We confirm the relevance of the instrumental variable for diversified institutional ownership graphically and through regression analyses in Section 3. Although we do not employ additional control variables in the instrumental variable regressions, we examine the robustness of our findings to inclusion of standard corporate diversification controls in Table A.3 of the Online Appendix and discuss the findings in Section 5.

[13] Though the same subscript t in Eq. (1) and (2) is used for *Corp. Div*, *Ru2000*, and *Diversified Ins. Own.* variables, *Ru2000* is measured in June after Russell reconstitution. *Diversified Ins. Own.* is measured as of September 30 of the same year. *Corp. Div* is measured based on the fiscal year end following the June reconstitution. Thus, all variables are measured within a period of one year starting from end of June.

The results are reported in Panel A of Table 5. First, in columns (1)–(4), we regress the contemporaneous and one-year ahead measures of corporate diversification on total institutional ownership (i.e., considering institutions to be homogeneous and their preferences to be monolithic). The coefficient estimates for aggregate institutional ownership are negative and significant in all columns except column (2), suggesting that institutional owners may discourage corporate diversification, on average. In columns (5)–(8), we use portfolio idiosyncratic volatility (*Idio_vol*) as the measure of investor portfolio diversification to bifurcate institutional ownership and re-estimate the regressions.

The coefficient estimates are negative for both types of institutional owners but significant only for diversified institutional ownership. These findings illustrate that institutions holding diversified portfolios exhibit a stronger effect on corporate diversification than institutions holding more concentrated portfolios. The latter finding concerning undiversified investors is unsurprising due to the ambiguity in their preferences. To the extent that undiversified investors strategically hold concentrated portfolios by focusing on certain industries or sectors that they believe will outperform (Choi, Fedenia, Skiba, and Sokolyk, 2017), firm-level diversification might weaken their strategies, leading them to prefer lower firm diversification. Conversely, under-diversified institutions could face frictions (e.g., style constraints or resources) in optimally diversifying their portfolio, leading them prefer their portfolio firms to undertake more corporate diversification as that would reduce the risk of their portfolio in a cost-effective manner. The economic magnitude of our findings concerning diversified institutions is also nontrivial. For example, in column (5), a one standard-deviation increase in *Diversified Ins. Own.*$_{Idio\_vol}$ (i.e., 0.244) leads to a decrease in *Corp. Div. Q* by 0.220 (=0.244×-0.901), which accounts for 11.8% of the unconditional mean of *Corp. Div. Q* (1.871) in our sample.

In Panel B of Table 5, we use institutional ownership split according to the three other alternative measures of portfolio diversification as explanatory variables. Our results remain largely consistent with those in Panel A, showing that diversified institutional ownership has a more pronounced negative effect on corporate diversification. Overall, these results suggest that investor portfolio diversification has a negative impact on corporate diversification.

3.2 Instrumental Variable Approach using Russell Index Reconstitution

To establish the causal effect of diversified institutional ownership on corporate diversification, we use the Russell index reconstitution as a quasi-natural experiment. First, we plot the average diversified institutional ownership around the Russell 1000/2000 index thresholds along with the fitted lines on both sides of the thresholds. *Rank*, the market capitalization ranking of firms as described in Section 3, is the x-axis variable. Figure 3 shows that *Diversified Ins. Own.* is generally decreasing in the firm's ranking. However, firms barely left out of the Russell 1000 index (i.e., included in the Russell 2000 index) have higher *Diversified Ins. Own.* compared with firms barely included in the Russell 1000 index using all our measures of diversified institutional ownership. The stark differences in the intercept of the fitted lines provide graphical evidence of discontinuity in diversified institutional ownership.

[Insert Figure 3 about here]

Additionally, we test our hypothesis that an increase in the diversified institutional ownership decreases corporate diversification. In the last two graphs of Figure 3, using average corporate diversification measures, including *Corp. Div. Q* and *Corp. Div. CF*, we show that the averages are higher on the Russell 1000 side than on the Russell 2000 side of the threshold. The large differences in the intercept of the fitted lines provide graphical evidence of discontinuity in corporate diversification.[14]

[Insert Table 6 about here]

Second, we estimate Eq. (1) and (2) and present the findings in Table 6 with standard errors clustered by industry. In Panel A, we present findings based on aggregate institutional ownership and diversified and under-diversified institutional ownership using *Idio_vol* as the measure of investor portfolio diversification. In Panel B, we present findings on diversified institutional ownership based on our other three measures of investor portfolio diversification. Using a bandwidth of ±500 and ±200 firms around the index thresholds, we find that the inclusion in the Russell 2000 index

[14] In Online Appendix Figure A.1, we plot the mean corporate diversification measures around the Russell 2000 index threshold, along with the fitted lines on both sides of the thresholds during the period 1995–2006 for a subsample of multisegment firms (i.e., firms that report financials in more than one industry segment defined according to the 2-digit Standard Industrial Classification code). Our results do not change.

leads to a significant increase in overall institutional ownership (Panel A first-stage estimates) and all types of diversified institutional ownership (Panels A and B first-stage estimates), respectively. For example, the RDD estimate for the small bandwidth sample in column (8) of Panel A shows that inclusion in the Russell 2000 index increases diversified institutional ownership by about 7.3 percentage points, which is 19.4 percentage (7.3/37.7) of Russell 2000 sample mean for *Diversified Ins. Own.*$_{Idio\_vol}$.[15]

In the second stage, we examine the effect of instrumented measures of institutional ownership on corporate diversification. The dependent variables are *Corp. Div. Q* and *Corp. Div. CF*, measured as the difference in volatility of investment opportunities and cash flow between imperfect and perfect cross-divisional correlations over a 10-year rolling window (Duchin, 2010), respectively. In Panel A of Table 6, we find that aggregate institutional ownership decreases corporate diversification significantly as measured by both measures in a sample of firms around a small bandwidth of ±200 firms in columns (2) and (4) in the second stages. However, in a larger bandwidth of ±500 firms, only *Corp. Div. Q* significantly decreases (i.e., column (1)) with instrumented institutional ownership. In columns (5)–(8), with *Diversified Ins. Own.*$_{Idio\_vol}$ as the explanatory variable, we find that both measures of corporate diversification decrease significantly at least at the 10% level in both broader and narrower bandwidths. In untabulated tests, to mitigate the concern that institutional flows during a crisis period may affect both portfolio diversification and corporate diversification preferences, we reestimate Panel A regressions excluding years 2000 and 2001, that coincide with the "*dot-com*" crisis. Our results remain unaltered.

Furthermore, in Panel B, when we replace diversified ownership measured with alternate computations of investor portfolio diversification, including *Inv_sync*, *HHI_conc*, and *Hold_count*, we find qualitatively similar results, especially using *Corp. Div. Q* as the dependent variable. However, the results based on *Corp. Div. CF* are insignificant when using a sample of firms in a broader bandwidth.

As the median firm in in both Russell 1000 and 2000 indices are single-segment firms (i.e., with *Corp. Div. Q* and *Corp. Div. CF* of zero), we examine our findings in a subsample of multisegment firms based on operating in more than one 2-digit SIC code. We present the findings

[15] However, the first-stage estimates for the Russell 2000 indicator are insignificantly positive for under-diversified institutional owners, suggesting that they are almost insensitive to Russell index changes when compared to diversified owners, further validating our identification strategy.

in Panel C of Table 6. In columns (1)–(4), we measure diversified ownership based on *Idio_vol* and find a significant negative relationship between *Corp. Div. Q* and diversified ownership. For *Corp. Div. CF*, however, we do not observe a significant coefficient on Russell 2000 indicator, despite the coefficient being negative. Using alternate measures of investor portfolio diversification yields similar conclusions.[16]

Having established the baseline causal relationship between investor portfolio diversification and corporate diversification, we examine the robustness of our findings to alternate specifications, bandwidths, sample periods, and other robustness tests, presented in the Online Appendix and discussed in Section 5.

4 Potential Mechanisms

In the following subsections, we examine potential mechanisms through which diversified institutional owners reduce corporate diversification. Specifically, we examine whether voice or exit strategies are more prominent and whether firms with highly diversified ownership show any differences in other related corporate policies such as mergers and acquisition (M&A) policies and product market positioning.

4.1 Voice and Exit Strategies of Governance

Governance by institutional owners, other than protecting their wealth, also provides a mechanism through which institutions can nudge the manager to undertake actions consistent with the institutions' preferences. Therefore, institutions can rely on either voice, i.e., active participation in governance through private communication, shareholder voting, and sponsoring proposals or exit, i.e., selling of shares to express disapproval and depress the price, to achieve their preferred outcomes.

[16]We also examine the distribution of multisegment firms on either side of the index thresholds in our sample to understand if diversified institutional ownership affects corporate diversification at the extensive margin. Within a bandwidth of ±500 (±200) firms, we find that 20.58 percent (19.14 percent) and 15.22 percent (14.87 percent) of our sample firms report results in multiple operational segments on the left and right of the index thresholds, respectively, i.e., the percentage of multisegment firms in the Russell 2000 index near the index thresholds is lower than the percentage of multisegment firms in the Russell 1000 near index thresholds. These distributions suggest that even at the extensive margin, diversified institutional ownership decreases the likelihood of firms reporting performance in multiple operational segments.

Prior literature has long argued that institutional owners use their voice to improve governance and that such interventions are profitable (e.g., Maug, 1998; Faure-Grimaud and Gromb, 2004). Recently, studies have also highlighted that exit or the threat of exit can have a disciplining role on firm managers (e.g., Admati and Pfleiderer, 1997; Edmans, 2009). To estimate whether our results are driven by voice or exit, we require suitable proxies that are associated with each of these styles. Goldstein and Yang (2015) argue that multiple investors trading against each other reveal different kinds of information and improve the overall information environment of the firm. Edmans and Manso (2011) contend that a greater number of blockholdings implies greater competition among them, which increases the effectiveness of exit strategies. More relatedly, Edmans, Levit, and Reilly (2019) note that diversified owners can be more effective in exit, as their greater latitude in choosing which stocks to sell signals quality of firms. Thus, we rely on the number of blockholdings in the firm as our first measure for exit strategies to measure variation in our baseline findings. A greater (lower) number indicates that exit may be effective due to concentrated blockholders (diversified owners).

Steeper managerial incentives increase the sensitivity of managers to exit strategies and better align managers with shareholder preferences. Thus, as a second approach, we split our sample into managers with more and less incentives (based on wealth performance sensitivity measure of Edmans, Gabaix, and Landier (2009).[17]

Finally, passive owners such as *Quasi-indexers* are more likely to be benchmarked to indices, and hence are unable to use the potential threat of exit as a governing tool as that would increase tracking errors and disincentivize them, especially when they are compensated according to tracking errors (Schmidt and Fahlenbrach, 2017). Therefore, such owners are more likely to rely on voice strategies. Thus, as a third approach, we split our sample into those with high and low *Quasi-indexers* to examine variation in our baseline findings.

[Insert Table 7 about here]

We estimate Eq. (1) and (2) using subsamples according to the three measures described above

[17] A related question is whether diversified owners prefer high powered incentive schemes or not. One view is that due to their time and attention constraints, diversified owners might prefer steeper incentives to substitute for intensive monitoring. Another view based on Edmans, Levit, and Reilly (2019) is that the higher recoverability of monitoring costs due to choice in selling, might encourage diversified owners to monitor more and hence reduce incentives to managers. However, this issue is tangential to our research question, so we leave such issues to future work.

and report the findings presented in Table 7. Results using a subsample that consists of a low number of blockholdings are presented in columns (1)–(4) and columns (9) and (10) in Panel A, while the other columns use the subsample with a high number of blockholdings. We find that the negative effect of *Diversified Ins. Own.* on *Corp. Div. Q* and *Corp. Div. CF*, especially in the narrow bandwidth of ±200 firms around index thresholds, is significant only among a subsample of firms with low blockholdings (columns (2), (4), (9), and (10)). Similarly, in Panel B, using wealth performance sensitivity to create the subsamples, we find that the negative effect is significant only among the subsample of highly incentivized managers using both the bandwidth of ±500 and ±200 firms, and using both measures of corporate diversification. Finally, in Panel C, creating subsamples based on the level of *Quasi-indexers*, we find that the results, especially in the narrow bandwidth of ±200 firms, are more prominent in firms with greater *Quasi-indexers* ownership. In sum, the results in Table 7 show that the preferences of diversified owners are reflected in circumstances that support both voice and exit strategies of governance, thus not ruling out one in favor of other, but tentatively support both.

4.2 Diversified Institutional Ownership and M&A

In this subsection, we investigate whether M&A decisions systematically vary according to diversified institutional ownership. Prior studies demonstrate a relationship between ownership structure and acquisition propensities and outcomes. For example, Andriosopoulos and Yang (2015) find that ownership structure influences the type and scale of cross-border M&As. Other studies investigate the relation between ownership structure and M&A outcomes (e.g., Alien and Cebenoyan, 1991; Schmidt and Fahlenbrach, 2017). Consequently, we posit that diversified owners can influence the choice of deals and pressure managers to pursue or halt particular plans. Specifically, diversifying acquisitions of portfolio firms can be at odds with the preferences of their diversified owners for the following reasons. First, diversified owners may ex-ante have an exposure to the target's industry, and hence a diversifying acquisition will increase the correlation in portfolio returns. Thus, the acquisition might undo their efforts in cost-effectively achieving portfolio diversification, i.e., by selecting less correlated stocks. Second, diversifying acquisitions increase agency costs and firm complexity (Shleifer and Vishny, 1986; Denis, Denis, and Sarin, 1997), which are more costly for a diversified shareholder with limited resources to expend on monitoring the firm. Thus, even when

the diversifying acquisition can be value-increasing, a diversified owner might prefer a more focused strategy for their portfolio firms.

[Insert Table 8 about here]

We use the same specification as in Eq. (1) and (2) described in Section 3 but replace the second stage dependent variable with an indicator for whether the firm engages in an acquisition, or specifically, a diversifying acquisition. The findings are presented in Table 8. In columns (1)–(6) and columns (7)–(12), we use diversified ownership computed based on *Idio_vol* and *Inv_sync* as the measure of investor portfolio diversification, respectively. Using data from the Refinitiv SDC Platinum database, the dependent variables in columns (1), (2), (7), and (8) are indicators that equal one if a firm engages in an M&A transaction with a deal value over $ 10 million, and zero otherwise. In columns (3), (4), (9), and (10) (columns (5), (6), (11), and (12)), the dependent variables are indicators that equal one when a firm engages in an above $ 10 million M&A of a firm whose Fama-French 48 industry code (Fama-French 12 industry code) is different from that of the acquiring firm, and zero otherwise. We estimate the regressions using a bandwidth of ±500 and ±200 firms around the index thresholds in odd and even-numbered columns, respectively.

The first two columns have total acquisition activity, M&A (indicator), as the dependent variable. For these specifications, the coefficients on *Diversified Ins. Own.*$_{Idio\_vol}$ are significantly positive, suggesting that firms with highly diversified owners exhibit a greater propensity to engage in acquisitions. However, in columns (3)–(6), where the dependent variables are based on diversifying acquisitions, M&A FF 48 (indicator) and M&A FF 12 (indicator), we find that the propensity to engage in diversifying acquisitions is significantly lower (except column (3)) when levels of diversified institutional ownership are high. In columns (7)–(12), using the alternate computation of diversified ownership, we find robust results. In sum, the results in Table 8 show that an increase in diversified institutional ownership is associated with a reduced propensity to engage in diversifying acquisitions, which in turn lowers overall corporate diversification.

4.3 Diversified Institutional Ownership and Similarity to Industry Peers

In this subsection, we investigate whether diversified institutional owners influence firms to move closer or away from their product market rivals. Corporate diversification might help firms mitigate

the negative effect of competition on firm survival, by 1) allowing firms to nurture a robust internal capital market (Gertner, Scharfstein, and Stein, 1994), 2) by acquiring customers or suppliers which helps internalize important transactions and relieves holdup problems (Williamson, 1975), and 3) to achieve product differentiation from rivals through acquisitions of complementary assets.[18] For example, Cestone and Fumagalli (2001) argue that corporate diversification and divestitures can be optimal responses to a toughening and softening in competition, respectively. Thus, if diversified owners encourage highly idiosyncratic strategies of managers due to their portfolio diversification preferences, these investors then indirectly help relieve the effect of competition, thereby reducing the incentives of managers to engage in corporate diversification.

To examine such predictions in the data, we use the product similarity scores created by Hoberg and Phillips (2010, 2016). They use textual analysis of each firm's annual reports (i.e., 10-Ks) to capture the relatedness of a firm's product market with all other firms in any given year. For each pair of firms, the measure ranges between 0 (very dissimilar) and 1 (highly similar). The datasets are organized as pairwise estimates of similarity in which the data is truncated at three arbitrary thresholds (missing pairs are assumed to have similarity scores of zero, i.e., dissimilar) to make them similar to 4-, 3-, and 2-digit SIC codes, respectively. We use these time and firm-varying similarity scores based on various levels of coarseness to examine how diversified institutional ownership affects the firm's position in its product markets.

Our analysis requires a firm-level measure of similarity with rivals, so we aggregate all the pairwise estimates for each firm with its industry peers. Specifically, we make use of TNIC 3 and TNIC 2 classifications, which use different thresholds of pairwise similarity scores to create coarseness akin to 3- and 2-digit SIC codes. Due to our focus on a firm-specific average measure of similarity with peers, we need to be careful about the influence of the size of peer groups on the average similarity. For example, a firm can have a low average pairwise similarity score when compared to another firm simply because of the presence of some peers that barley makes the threshold with very low similarity scores. To overcome this issue, we employ two specific solutions. First, we restrict our attention to a constant number of closest peers, say 15 closest

[18]For example, Rhodes-Kropf and Robinson (2008) suggest that asset complementarity synergies are a key motivation for mergers. Similarly, Prabhala, Maksimovic, and Phillips (2008) show that the relatedness between the target and the acquirer improves merger performance. Hoberg and Phillips (2010) highlight the incentives for firms to acquire targets with complementary assets to differentiate themselves in the product market. See also Mazzeo (2002) and Seim (2006) for a discussion of firm's incentives for product differentiation.

peers (Boone, Grieser, Li, and Venkat, 2020).[19] Second, we compute the average across another industry classification that uses text-based industry definitions but is static in nature, the Fixed Industry Classification (FIC) system, proposed again by Hoberg and Phillips (2010). Because of being static, the firm-specific average similarity scores are computed on a relatively constant set of peers over time.

[Insert Table 9 about here]

Relying on the same specification as in Eq. (1) and (2) described in Section 3, we use the aggregated firm-level similarity scores based on two different TNIC industry definitions as the second stage dependent variable and present the findings in Table 10. Like in Table 7, columns (1)–(6) and columns (7)–(12) use diversified ownership computed based on *Idio_vol* and *Inv_sync* as the measure of investor portfolio diversification, respectively. We estimate the regressions using a bandwidth of ±500 and ±200 firms around the index thresholds in each pair of columns.

In the first two columns using a dependent variable based on firm-level similarity scores aggregated across the 15 closest peers according to TNIC 3 similarity scores, we find that the coefficients on *Diversified Ins. Own.*$_{Idio\_vol}$ are negative but significant at the 5% level only in column (2), suggesting that firms strive to be more dissimilar (or unique) compared to their rivals, especially in a narrow bandwidth sample. In columns (3)–(4), using the dependent variable as the pairwise average based on 15 closest peers according to TNIC 2 similarity scores, we find that the results are stronger, with the coefficient on *Diversified Ins. Own.*$_{Idio\_vol}$ being negative and significant in both the columns at least at the 10% level. In columns (5)–(6), using the dependent variable as the average TNIC 3 similarity scores computed across all FIC 100 peers, we find results similar to those in columns (1)–(2), further illustrating that firms with highly diversified owners try harder to differentiate themselves in the product markets. In columns (7)–(12) using *Diversified Ins. Own.*$_{Inv\_sync}$, we find similar results. In sum, the results in Table 9 show that firms with an increase in diversified institutional ownership tend to heighten product market differentiation, thereby mitigating the negative effects of competition and the incentives to pursue corporate diversification.

For examining the robustness of Table 9 findings, in untabulated tests, we examine the effect of diversified ownership on the changes in correlation between a firm's Q and the Q measure of

[19] Our results are not sensitive to the number of peers we choose to restrict the average computations. In untabulated tests, we repeat our tests by focusing on closest 5 and closest 10 peers and find qualitatively similar results.

an equally-weighted portfolio of its rivals. High correlation of a firm's products with their peers increases firm investment sensitivity to peers' valuation (Foucault and Fresard, 2014). Adopting the same industry definitions as in Table 9, we find that diversified ownership decreases Q correlation in the narrow bandwidths when defining 15 nearest rivals based on 15 TNIC 3 amd TNIC 2 peers or based on FIC 100 peers, providing further support to interpretation of Table 9 results.

5 Additional Tests

In this section, we perform additional tests to further understand the influence of diversified institutional owners. Specifically, we examine whether diversified institutional ownership is associated with common ownership and discuss the findings of various robustness tests for the natural experiment, which are presented in the Online Appendix.

Common ownership is the simultaneous overlapping ownership by institutions in multiple firms, which has been increasing rapidly in the last few decades and attracted significant academic interest.[20] Common ownership, especially among industry competitors, can potentially distort managerial incentives and affect corporate policies such as acquisitions, innovation, executive pay, corporate governance, and even competitive behavior (e.g., Anton et al., 2018; Schmalz, Azar, and Tecu, 2018; Harford, Jenter, and Li, 2011; He and Huang, 2017). Furthermore, our setting suffers from the concern that our findings on diversified institutional ownership are driven by common ownership.

Using measures of common ownership based on Gilje, Gormley, and Levit (2020), we conduct two types of analyses.[21] First, we examine whether an exogenous increase in diversified institutional ownership increases common ownership. Second, we examine whether our primary findings systematically differ according to levels of common ownership.

[Insert Table 10 about here]

[20] Fichtner, Heemskerk, and Garcia-Bernardo (2017) estimate that the combined holdings of the largest top three asset managers including BlackRock, Vanguard, and State Street is the largest proportion in 88% of S&P 500 firms.

[21] Gilje, Gormley, and Levit (2020) specify three functional forms of common ownership based on investor attention to their portfolio firms using linear, convex, and concave functions. A convex (concave) function to specify investor attention would be appropriate when investors pay attention that is proportionally more (less) when compared to the firm's portfolio weight. In our analyses, we use common ownership measure based on linear investor attention. But in untabulated tests, we do not find that our results are sensitive to the choice of functional forms.

We present the findings in Table 10. In Panel A, we use the specification in Eq. (1) and (2) and replace the dependent variable in the second stage with Common ownership index, computed as the pairwise average of a firm with all other public firms (columns (1), (2), (5), and (6)), with all rivals in the same Fama-French 48 industry (columns (3) and (7)), and all rivals in the same TNIC 3 industry (columns (4) and (8)). Using *Diversified Ins. Own.*$_{Idio\_vol}$ as the key explanatory variable, we find no relationship between diversified ownership and common ownership, both in a bandwidth of ±500 and ±200 firms around index thresholds. Results are similar when using *Diversified Ins. Own.*$_{Inv\_sync}$. The lack of a relationship between our measures of diversified ownership and common ownership is not surprising because diversified ownership and common ownership are theoretically different. High levels of common ownership within an industry is reached when institutions take large stakes in multiple rival firms. Or alternatively, common ownership captures within industry diversification of investors, whereas our measure captures cross-industry diversification of investors. Also, accounting for transaction costs, cost-effective diversification strategies will involve stock picking within industries instead of buying all firms in an industry.[22]

In Panel B of Table 10, we examine the variation in our findings in Table 6 using subsamples split according to ex-ante levels of common ownership. For the sake of brevity, we present findings only based on *Corp. Div. Q* as the measure of corporate diversification, the second stage dependent variable. When using *Diversified Ins. Own.*$_{Idio\_vol}$ in a bandwidth of ±200 firms and common ownership index based on TNIC 3 industry peers, we find that the coefficient is negative and significant among firms with high common ownership but not significant among firms with low common ownership. Using *Diversified Ins. Own.*$_{Inv\_sync}$ as the explanatory variable also produces similar results. These findings suggest that diversified investors are better able to reflect their preferences on firm policies, such as corporate diversification, when the managerial incentives to compete fiercely are lower. However, we do not find such differences between high and low common ownership either based on an aggregate common ownership index or common ownership index within Fama-French 48 industry rivals. These differential findings when using TNIC 3 industry definitions are consistent with our earlier results on product similarity, i.e., firms that face less pressure from competition face lower incentives to pursue corporate diversification.

[22]Our findings are also echoed by Lewellen and Lowry (2020), who show that Russell index reconstitutions do not alter common ownership, and hence are unsuitable as an identification strategy for common ownership.

Recent studies raise concerns about the suitability of Russell index reconstitutions as an identification strategy for institutional ownership. For example, Appel, Gormley, and Keim (2020) suggest that the proprietary float adjustment made by Russell might systematically bias the sample near index thresholds violating exogeneity assumptions.

In our setting, the proprietary float adjustments are likely to have a smaller influence as we estimate ranks using the end of May CRSP market capitalization (see, Crane, Michenaud, and Weston, 2016). To address whether there is still a mechanical difference in market capitalization, we follow the remedial approach prescribed by Appel, Gormley, and Keim (2020) and present the findings in the Table A.2 Online Appendix. Specifically, we instrument diversified institutional ownership on an indicator for inclusion in the Russell 2000 index, a polynomial of the observable market capitalization, and a float adjustment measure and perform two-stage regressions. Our findings remain robust.

We also examine the sensitivity of our results to the inclusion of control variables. In principle, RDD estimates are consistent without control variables or fixed effects. However, the inclusion of controls will reduce sampling variability (Lee and Lemieux, 2010). Thus, following Matvos, Seru, and Silva (2018), we include controls for the standard determinants of corporate diversification including firm size, profitability, Tobin's q, book leverage, and cash holdings in the two-stage instrumental variables analyses. Table A.3 in the Online Appendix presents the results of examining the effect of diversified institutional ownership on corporate diversification. The results are similar to those in Table 6.

Next, to overcome the concern that our main findings could be sensitive to the choice of bandwidths, we examine the robustness of our findings to a data-driven choice of optimal bandwidth. Specifically, we use two algorithms to select optimal bandwidths in our sample, including a mean squared error approach and a coverage error rate approach (Imbens and Kalyanaraman, 2012; Calonico, Cattaneo, and Farrell, 2018). We present the results of these estimations in Table A.4 in the Online Appendix and find our main results are robust.

Finally, starting from June of 2007, Russell instituted a change in their methodology to minimize portfolio turnover for institutions benchmarked to their indices (i.e., introduced a banding policy).[23]

[23]When an existing constituent's market capitalization falls within a band of ±2.5% of the index threshold determined each year, they are retained within the existing indices rather than being switched. Thus, firms that switch indices have to exceed the index thresholds by over 2.5% each year, which maintains index stability and minimizes

Specifically, they modified the index assignment rules to lower the likelihood of firms near the index thresholds to switch indices regularly on reconstitution (Heath, Macciocchi, Michaely, and Ringgenberg, 2020). Such a banding policy introduces significant uncertainties, especially because the market capitalization used by Russell for such decisions is not directly observable. Similar concerns are echoed by Ben-David, Franzoni, and Moussawi (2018) on the validity of Russell index-based natural experiments after the assignment rule change in 2006.

We address this concern in two ways. First, all our earlier analysis focuses on a sample period of 1995–2006, thus naturally avoiding this change in index methodology. Second, using the data for the extended sample period from 1995–2016, we estimate our regressions including additional control variables that take into account the banding policy of Russell. Specifically, following the estimation procedure of Appel, Gormley, and Keim (2020), we include three additional control variables to the specification used in Table A.2 including an indicator for whether a firm will be banded, an indicator for lagged index membership, and the interaction between these two indicators. Additionally, we also interact these three variables with an indicator for the post 2006 years, i.e., the years when the banding policy was applicable. We report the findings in Table A.5 in the Online Appendix. Using both our main measures of diversified institutional ownership based on *Idio_vol* and *Inv_sync*, we find that our results on corporate diversification are robust.

6 Summary and Conclusion

This paper explores the effect of ownership by diversified institutional investors on corporate policies, particularly firm-level diversification. Using 13F holding data, we construct novel measures of diversified ownership based on how much of their performance can be explained by traditional factor models. Using data on U.S. firms, we find strong support for *preference imposition* hypothesis, which argues that that diversified owners are effective in governance through both *voice* and *exit* strategies because having more choice within their portfolio relieves hesitation to monitor and means that their trades signal firm quality, thereby allowing diversified owners to influence firm policies. A one-standard-deviation change in diversified institutional ownership in our sample reduces corporate diversification by 11.8 percent. We establish causality using the Russell index

unnecessary turnover for institutional investors.

reconstitution, which serves as an exogenous shock for diversified institutional ownership.

Our results remain robust to numerous empirical methods, which increases confidence in our inferences. Furthermore, our findings are more prominent among firms with less blockholders, highly incentivized managers, and firms with a high level of quasi-indexer ownership, suggesting that both voice and exit styles of governance may play a role in lowering corporate diversification. These preferences are not only expressed in terms of corporate diversification measured as cross-divisional correlations in investment opportunities and cash flows, but are also observable in the form of a lower propensity to engage in diversifying acquisitions and increased differentiation from rivals. Finally, our results are not coincidental with a common ownership. Overall, our findings illustrate the role of diversified owners in influencing firm policies and contribute evidence to the ongoing debate on the role played by large institutional owners.

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Appendix A1
Variable Definition

Variable	Description
Cash	Ratio of cash and cash equivalents to total assets
Dedicated Ins. Own.	Ratio of dedicated institutional holdings (Bushee, 1998; Bushee and Noe, 2000) to total shares outstanding
Corp. Div. CF	Difference in volatility of cash flow between imperfect and perfect cross-divisional correlations, where the correlations are estimated over a 10-year rolling window (Duchin, 2010). Measure multiplied by 1000 for readability
Corp. Div. Q	Difference in volatility of investment opportunities between imperfect and perfect cross-divisional correlations, where the correlations are estimated over a 10-year rolling window (Duchin, 2010). Measure multiplied by 1000 for readability
Diversified Ins. Own.$_{\text{HHI\_conc}}$	Ratio of shares held by diversified institutional investors to total shares outstanding, where diversified institutional investors are those institutional investors whose *HHI_conc* is below the annual median of the same measure among all 13F filers
Diversified Ins. Own.$_{\text{Hold\_count}}$	Ratio of shares held by diversified institutional investors to total shares outstanding, where diversified institutional investors are those institutional investors whose *Hold_count* is above the annual median of the same measure among all 13F filers
Diversified Ins. Own.$_{\text{Idio\_vol}}$	Ratio of shares held by diversified institutional investors to total shares outstanding, where diversified institutional investors are those institutional investors whose portfolio's *Idio_vol* is below the annual median of the same measure among all 13F filers
Diversified Ins. Own.$_{\text{Inv\_sync}}$	Ratio of shares held by diversified institutional investors to total shares outstanding, where diversified institutional investors are those institutional investors whose portfolio's *Inv_sync* is below the annual median of the same measure among all 13F filers
Firm size	Logarithm of book assets
Float Adjustment	Difference between the market capitalization implied rank as of end of May using CRSP market capitalization and the actual rank implied by Russell index weightages on index implementation date in June
HHI_conc	Measured as the Herfindahl index, i.e., sum of the squares of the value weights of each institutional fractional shareholding in the firm
Hold_count	Number of portfolio holdings as disclosed in the 13F filing
Idio_vol	Computed as the standard deviation of the residuals obtained from regressing the contemporaneous quarterly returns of the 13F portfolio of the institution on Fama-French three factor model for a rolling past three-year window
Inv_sync	Computed as $\phi = ln[(1-R^2)/R^2]$, where R^2 is obtained from regressing the contemporaneous quarterly returns of the 13F portfolio of the institution on Fama-French three factor model for a rolling past three-year window

Appendix A1
Continued

Variable	Description
Institutional ownership	Ratio of shares held by institutional investors to total shares outstanding
Leverage	Sum of short-term and long-term debt divided by total assets
Negative Effective Spread	Negative of the simple averaged dollar effective spread computed using the Lee-Ready method using same second quotes, where effective spread is measured as the difference between the execution price and the midpoint of the prevailing bid-ask quote
Quasi Indexers Ins. Own.	Ratio of quasi-indexer's institutional holdings (Bushee, 1998; Bushee and Noe, 2000) to total shares outstanding
Rank	Market capitalization ranking of firms in the Russell 1000 and Russell 2000 indices computed as actual rank minus 1000 as of index assignment date (i.e., end of May) using CRSP market capitalization
Profitability	Ratio of earnings before interest, taxes, depreciation, and amortization (EBITDA) to total assets
Tobin's q	Ratio of sum of total assets and market value of equity minus book value of equity and deferred taxes, to total assets
Transient Ins. Own.	Ratio of transient institutional holdings (Bushee, 1998; Bushee and Noe, 2000) to total shares outstanding
Under-diversified Ins. Own.$_{\text{HHI\_conc}}$	Ratio of shares held by under-diversified institutional investors to total shares outstanding, where diversified institutional investors are those institutional investors whose portfolio's *HHI_conc* is above the annual median of the same measure among all 13F filers
Under-diversified Ins. Own.$_{\text{Hold\_count}}$	Ratio of shares held by under-diversified institutional investors to total shares outstanding, where diversified institutional investors are those institutional investors whose *Hold_count* is below the annual median of the same measure among all 13F filers.
Under-diversified Ins. Own.$_{\text{Idio\_vol}}$	Ratio of shares held by under-diversified institutional investors to total shares outstanding, where diversified institutional investors are those institutional investors whose portfolio's *Idio_vol* is above the annual median of the same measure among all 13F filers
Under-diversified Ins. Own.$_{\text{Inv\_sync}}$	Ratio of shares held by under-diversified institutional investors to total shares outstanding, where diversified institutional investors are those institutional investors whose portfolio's *Inv_sync* is above the annual median of the same measure among all 13F filers

Table 1

Characteristics of Institutional Ownership According to Portfolio Diversification Preferences

This table provides investor level summary statistics for different types of institutional ownership according to measures of portfolio diversification (Panel A), according to Bushee (1998) classification groups (Panel B), and pairwise correlations between the raw measures of portfolio diversification used to construct institutional investor classification (Panel C). The sample in Panels A, B, and C consist of 206,138 institutional-quarter observations during the period between 1995 and 2016. In Panel A, subsamples of institutions are created using portfolio diversification measures that are defined based on the annual sample median of idiosyncratic volatility or *Idio_vol* (columns (3) and (4)), inverse return synchronicity or *Inv_sync* (columns (5) and (6)), Herfindahl index of portfolio concentration or *HHI_conc* (columns (7) and (8)), and the number of holdings or *Hold_count* (columns (9) and (10)). All the diversification measures are computed based on the quarterly 13F filing of the institution, respectively. Institutions with above annual median of *Idio_vol*, *Inv_sync*, *HHI_conc*, and inverse of *Hold_count* in the sample are classified as under-diversified, respectively, and diversified otherwise. In Panel B, institutional ownership is classified into *Transient Ins. Own.*, *Quasi Indexer Ins. Own.*, and *Dedicated Ins. Own.* based on the classification of institutions according to Bushee (1998). All the variables are defined in the Appendix A1. In Panel C, ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Panel A: Characteristics of subsamples of institutions according to portfolio diversification measures

	Classification of institutional ownership into subsamples based on:								
		Idio_vol		Inv_sync		HHI_conc		Hold_count	
	Full sample (N=206,138)	Diversified (N=92,223)	Under-diversified (N=92,223)	Diversified (N=92,392)	Under-diversified (N=92,391)	Diversified (N=103,069)	Under-diversified (N=103,069)	Diversified (N=102,717)	Under-diversified (N=103,421)
	Mean (median)	Mean (median)	Mean (median)	Mean (median)	Mean (median)	Mean (median)	Mean (median)	Mean (median)	Mean (median)
Portfolio turnover	0.129	0.098	0.154	0.113	0.140	0.123	0.136	0.121	0.138
(%)	(0.080)	(0.066)	(0.101)	(0.074)	(0.086)	(0.081)	(0.080)	(0.079)	(0.082)
Netflows	-4.364	-21.517	8.819	-14.317	1.912	1.792	-10.635	-0.332	-8.444
($ million)	(-1.330)	(-2.265)	(-1.178)	(-2.087)	(-1.376)	(-1.511)	(-1.198)	(-1.617)	(-1.170)
AUM	4,080	7,349	1,591	7,398	1,527	7,246	914	7,468	716
($ million)	(342)	(506)	(302)	(520)	(300)	(610)	(211)	(717)	(183)
Idio_vol	0.040	0.016	0.064	0.020	0.059	0.025	0.056	0.026	0.055
	(0.027)	(0.016)	(0.048)	(0.017)	(0.045)	(0.019)	(0.041)	(0.019)	(0.039)
Inv_sync	-2.446	-3.375	-1.415	-3.746	-1.146	-3.084	-1.758	-2.995	-1.856
	(-2.402)	(-3.341)	(-1.524)	(-3.423)	(-1.375)	(-3.027)	(-1.709)	(-2.943)	(-1.808)
HHI_conc	0.090	0.037	0.131	0.041	0.127	0.019	0.162	0.030	0.151
	(0.036)	(0.023)	(0.056)	(0.023)	(0.054)	(0.019)	(0.076)	(0.019)	(0.067)
Hold_count	244	395	120	389	125	420	67	448	41
	(88)	(146)	(56)	(142)	(60)	(175)	(40)	(201)	(40)
Quarterly return	0.025	0.026	0.024	0.029	0.021	0.026	0.023	0.027	0.023
	(0.031)	(0.031)	(0.032)	(0.036)	(0.027)	(0.032)	(0.030)	(0.033)	(0.030)

Table 1
Continued

Panel B: Characteristics of subsamples of institutions according to Bushee classification

	Dedicated (N=7,319)	Quasi indexers (N=107,377)	Transient (N=63,508)
	Mean (median)	Mean (median)	Mean (median)
Portfolio turnover	0.072	0.069	0.230)
(%)	(0.046)	(0.054)	(0.194)
Netflows	120.634	-9.221	-14.068
($ million)	(-1.110)	(-1.500)	(-2.644)
AUM	10,640	5,352	2,618
($ million)	(768)	(383)	(417)
Idio_vol	0.080	0.029	0.045
	(0.064)	(0.021)	(0.034)
Inv_sync	-1.108	-2.665	-2.302
	(-1.023)	(-2.639)	(-2.286)
HHI_conc	0.210	0.055	0.066
	(0.150)	(0.031)	(0.034)
Hold_count	151	280	252
	(25)	(102)	(93)
Quarterly return	0.034	0.025	0.025
	(0.039)	(0.031)	(0.033)

Panel C: Pairwise correlations between institution level measures of portfolio diversification

Variable	(1)	(2)	(3)	(4)
(1) Idio_vol	1.000			
(2) Inv_sync	0.553***	1.000		
(3) HHI_conc	0.454***	0.357***	1.000	
(4) Hold_count	-0.203***	-0.347***	-0.196***	1.000

Table 2

Overlap and Persistence of Institutional Ownership classified by Diversification Based Measures and Bushee Classification

This table provides firm level nested summary statistics for different types of institutional ownership according to measures of portfolio diversification and Bushee (1998) classification (Panel A) and examines the persistence of institutional ownership according to their classification (Panel B), and persistence of portfolio diversification measures used to classify institutional ownership (Panel C). The sample in Panel A consists of 206,138 institutional-quarter observations during the period between 1995 and 2016. In Panels B and C, we restrict the sample to the final calendar quarter alone. In Panel A, subsamples of institutions are created using portfolio diversification measures that are defined based on the annual sample median of idiosyncratic volatility or *Idio_vol* (columns (3) and (4)), inverse return synchronicity or *Inv_sync* (columns (5) and (6)), Herfindahl index of portfolio concentration or *HHI_conc* (columns (7) and (8)), and the number of holdings or *Hold_count* (columns (9) and (10)). All the diversification measures are computed based on the quarterly 13F filing of the institution, respectively. Institutions with above annual median of *Idio_vol*, *Inv_sync*, *HHI_conc*, and inverse of *Hold_count* in the sample are classified as under-diversified, respectively, and diversified otherwise. In Panel B the persistence of institutional owner classification is analyzed over time. Specifically, the reported values are category wise percentages of firms that retain their classification type in the subsequent year. In Panel C, the measures of institutional owner portfolio diversification including *Idio_vol*, *Inv_sync*, *HHI_conc*, and *Hold_count* are used as dependent variables and are regressed on a lagged mean measure over the past 5 years of the same measures. All the variables are defined in the Appendix A1. In Panel C, ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. The t-statistics reported in parentheses are based on heteroscedasticity-robust standard errors clustered by firm and year.

Panel A: Nested summary of institutional ownership classification

	Count of institutions (AUM $ Trillion)								
	Classification of institutional ownership into subsamples based on:								
		Idio_vol		Inv_sync		HHI_conc		Hold_count	
	Full sample	Diversified	Under-diversified	Diversified	Under-diversified	Diversified	Under-diversified	Diversified	Under-diversified
Total Ins.Own.	206,138	91,608	88,119	91,583	88,455	101,662	95,028	101,388	95,302
	(841.07)	(677.76)	(146.71)	(683.56)	(141.06)	(746.83)	(94.24)	(767.06)	(74.01)
Dedicated Ins.Own.	7,319	997	5,992	1,072	5,929	1,253	6,066 (	1,912	5,407
	(77.87)	(60.18)	(17.50)	(61.63)	(16.05)	(63.46)	(14.41)	(65.63)	(12.25)
Quasi Indexers Ins.Own.	107,377	65,585	39,353	59,369	45,635	61,433	45,944	60,574	46,803
	(574.73)	(506.31)	(66.95)	(495.42)	(77.87)	(524.47)	(50.26)	(539.38)	(35.34)
Transient Ins.Own.	63,508	22,825	37,956	28,337	32,503	33,012	30,496	32,889	30,619
	(166.26)	(107.19)	(56.44)	(121.48)	(42.18)	(144.10)	(22.16)	(146.71)	(19.55)

Table 2
Continued

Panel B: Persistence of individual institutional ownership classification	
Classification category	% of Institutions having same classification in subsequent year
Diversified Ins. Own.$_{\text{Idio\_vol}}$	77.60%
Under-diversified Ins. Own.$_{\text{Idio\_vol}}$	73.50%
Diversified Ins. Own.$_{\text{Inv\_sync}}$	73.50%
Under-diversified Ins. Own.$_{\text{Inv\_sync}}$	67.10%
Diversified Ins. Own.$_{\text{HHI\_conc}}$	82.30%
Under-diversified Ins. Own.$_{\text{HHI\_conc}}$	77.50%
Diversified Ins. Own.$_{\text{Hold\_count}}$	84.80%
Under-diversified Ins. Own.$_{\text{Hold\_count}}$	80.10%
Dedicated Ins. Own.	64.70%
Quasi Indexers Ins. Own.	78.00%
Transient Ins. Own.	68.20%

Table 2
Continued

Panel C: Regression analysis of the persistence of portfolio diversification measures

	Idio_vol			Inv_sync			HHI_conc			Hold_count		
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Mean Idio_vol$_{\text{t-5 to t-1}}$			0.693***									
			(15.200)									
Mean Inv_sync$_{\text{t-5 to t-1}}$						0.824***						
						(94.804)						
Mean HHI_conc$_{\text{t-5 to t-1}}$									0.950***			
									(61.098)			
Mean Hold_count$_{\text{t-5 to t-1}}$												0.979***
												(86.071)
Log (assets)			-0.002***			-0.065***			-0.010***			19.139***
			(-6.675)			(-13.932)			(-14.125)			(9.714)
Lagged estimated annual return			0.015***			0.412***			-0.006			-27.549***
			(2.933)			(7.113)			(-0.684)			(-4.897)
Lagged annual netflows			0.000**			0.000			-0.000			0.004***
			(2.037)			(0.742)			(-0.737)			(4.917)
Institution fixed effects	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No
Year fixed effects	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Observations	48,847	48,847	24,943	48,945	48,945	24,988	57,621	57,621	29,333	57,621	57,621	29,333
Adjusted R^2	0.543	0.580	0.504	0.324	0.417	0.653	0.724	0.726	0.658	0.844	0.848	0.729

Table 3

Firm Level Sample Description

This table provides summary statistics for key variables used in the analysis. The sample consists of 87,190 firm-year observations during the period between 1995 and 2016. We exclude firms that operate in the financial and utility industries from the sample and also firms with key missing variables from the sample. *Corp. Div. Q* and *Corp. Div. CF* are measured as the negative difference in volatility of investment opportunities and cash flow, respectively, between imperfect and perfect cross-divisional correlations (Duchin, 2010). Various measures of *Diversified Ins. Own.* and *Under-diversified Ins. Own.* are computed on the basis of corresponding classification of an institutional owner into diversified (above median) or under-diversified (below median) based on the annual median of idiosyncratic volatility ($Idio\_vol$), inverse synchronicity (Inv_sync), the Herfindahl index of institutional portfolio concentration (HHI_conc), and the inverse of the count of securities in the institutional portfolio ($Hold\_count$) as disclosed in their 13F filing, respectively. For example, *Diversified Ins. Own.*$_{Idio\_vol}$ is the ratio of shares held by diversified institutional investors to total shares outstanding, where diversified institutional investors are those with above sample median measure of institutional investors' portfolio $Idio\_vol$, which is computed as the residuals obtained from regressing the quarterly returns of the 13F portfolio of the institution on Fama-French three factor model for a rolling three-year window. Inv_sync is computed as $ln[(1-R^2)/R^2]$, where R^2 is obtained from regressing the quarterly returns of the 13F portfolio of the institution on Fama-French three factor model for a rolling three-year window. HHI_conc is measured as the Herfindahl index as the sum of the squares of the value weights of each holding in the 13F portfolio of the institution. $Hold\_count$ is measured as the raw number of holdings reported in the 13F portfolio of the institution. *Transient Ins. Own.*, *Quasi Indexer Ins. Own.*, and *Dedicated Ins. Own.* are based on the classification of institutions according to Bushee (1998). All the variables are defined in the Appendix A1.

	Mean	Std. Dev.	Min	50th	Max
Corp. Div. Q	1.871	6.033	0.000	0.000	34.481
Corp. Div. CF	3.489	12.149	0.000	0.000	72.527
Ins. Own.	0.442	0.303	0.000	0.428	1.000
Diversified Ins. Own.$_{\text{Idio\_vol}}$	0.318	0.244	0.000	0.282	0.876
Diversified Ins. Own.$_{\text{Inv\_sync}}$	0.334	0.251	0.000	0.301	0.901
Diversified Ins. Own.$_{\text{HHI\_conc}}$	0.369	0.264	0.000	0.346	0.789
Diversified Ins. Own.$_{\text{Hold\_count}}$	0.376	0.264	0.000	0.357	0.793
Under-diversified Ins. Own.$_{\text{Idio\_vol}}$	0.101	0.093	0.000	0.077	0.369
Under-diversified Ins. Own.$_{\text{Inv\_sync}}$	0.085	0.082	0.000	0.063	0.348
Under-diversified Ins. Own.$_{\text{HHI\_conc}}$	0.056	0.067	0.000	0.030	0.323
Under-diversified Ins. Own.$_{\text{Hold\_count}}$	0.048	0.061	0.000	0.023	0.289
Dedicated Ins. Own.	0.053	0.082	0.000	0.008	0.384
Quasi Indexers Ins. Own.	0.258	0.218	0.000	0.206	0.790
Transient Ins. Own.	0.108	0.109	0.000	0.078	0.451
Ins. Own. Concentration	0.187	0.215	0.022	0.096	1.000
Number of institutions	98.656	129.866	1.000	53.000	689.000
Top 5 Ins. Own.	0.221	0.132	0.000	0.222	0.570
Firm size	5.888	2.074	0.893	5.869	10.836
Leverage	0.167	0.190	0.000	0.097	0.763
Profitability	0.053	0.199	-0.851	0.087	0.429
Tobin's q	1.949	1.658	0.524	1.343	10.477
Cash	0.182	0.222	0.000	0.082	0.897

Table 4

Summary Statistics of Russell Sample

This table provides summary statistics for key variables used in the analysis using Russell indexation as an identification technique. The sample consists of the constituents of the Russell 1000\2000 indices between 1995 and 2006. All the variables are defined in Appendix A1. ***, **, and * denote significance at the 1%, 5%, and 10% levels respectively, based on the t-statistics for the test of difference in mean and z-statistics based on a ranksum test of difference in median, respectively, in the last two columns.

	Russell 1000 index constituent (N=9,128)		Russell 2000 index constituent (N=19,123)		Test of Difference	
	Mean	Median	Mean	Median	Mean	Median
Corp. Div. Q	2.553	0.000	1.559	0.000	0.994***	0.000
Corp. Div. CF	3.917	0.000	2.612	0.000	1.305***	0.000
Ins. Own.	0.637	0.659	0.527	0.530	0.110***	0.129***
Diversified Ins. $\text{Own}_{\cdot\text{Idio\_vol}}$	0.502	0.514	0.377	0.359	0.125***	0.155***
Diversified Ins. $\text{Own}_{\cdot\text{Inv\_sync}}$	0.516	0.529	0.400	0.385	0.116***	0.144***
Diversified Ins. $\text{Own}_{\cdot\text{HHI\_conc}}$	0.564	0.580	0.457	0.446	0.107***	0.134***
Diversified Ins. $\text{Own}_{\cdot\text{Hold\_count}}$	0.581	0.599	0.466	0.459	0.115***	0.140***
Under-diversified Ins. $\text{Own}_{\cdot\text{Idio\_vol}}$	0.122	0.099	0.130	0.109	-0.008***	-0.010***
Under-diversified Ins. $\text{Own}_{\cdot\text{Inv\_sync}}$	0.109	0.088	0.107	0.086	0.002***	0.002***
Under-diversified Ins. $\text{Own}_{\cdot\text{HHI\_conc}}$	0.074	0.054	0.066	0.040	0.008***	0.014***
Under-diversified Ins. $\text{Own}_{\cdot\text{Hold\_count}}$	0.056	0.038	0.054	0.031	0.002**	0.007***
Dedicated Ins. Own.	0.103	0.080	0.076	0.036	0.027***	0.044***
Quasi Indexers Ins. Own.	0.360	0.327	0.283	0.239	0.077***	0.088***
Transient Ins. Own.	0.162	0.131	0.149	0.117	0.013***	0.014***
Firm size	8.369	8.259	6.165	6.154	2.204***	2.105***
Leverage	0.196	0.166	0.175	0.101	0.021***	0.065***
Profitability	0.143	0.138	0.085	0.107	0.058***	0.031***
Tobin's q	2.244	1.630	2.072	1.445	0.172***	0.185***
Cash	0.127	0.055	0.189	0.080	-0.062***	-0.025***
Negative Effective Spread	-0.003	-0.002	-0.008	-0.005	0.005***	0.003***

Table 5

Diversified Institutional Ownership and Corporate Diversification: OLS Regressions

This table reports pooled OLS regressions of the effect of diversified institutional ownership on corporate diversification. The sample consists of 87,190 firm-year observations during the period between 1995 and 2016. We exclude firms with key missing variables from the sample. The dependent variables including *Corp. Div. Q* and *Corp. Div. CF* are measured as the negative difference in volatility of investment opportunities and cash flow, respectively, between imperfect and perfect cross-divisional correlations (Duchin, 2010). *Diversified Ins. Own.* and *Under-diversified Ins. Own.* are computed on the basis of classification of an institutional owner into diversified (above median) or under-diversified (below median) based on portfolio diversification measures including idiosyncratic volatility or *Idio_vol* (columns (3) and (4)), inverse return synchronicity or *Inv_sync* (columns (5) and (6)), Herfindahl index of portfolio concentration or *HHI_conc* (columns (7) and (8)), and the number of holdings or *Hold_count* (columns (9) and (10)). All the diversification measures are computed based on the quarterly 13F filing of the institution, respectively. Institutions with above annual median of *Idio_vol*, *Inv_sync*, *HHI_conc*, and inverse of *Hold_count* in the sample are classified as under-diversified, respectively, and diversified otherwise. Year and firm fixed effects are included in all regressions. The t-statistics reported in parentheses are based on heteroscedasticity-robust standard errors clustered by firm and year. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Panel A: Using portfolio idiosyncratic volatility as the measure of investor portfolio diversification

	Corp. Div. Q_t	Corp. Div. CF_t	Corp. Div. Q_{t+1}	Corp. Div. CF_{t+1}	Corp. Div. Q_t	Corp. Div. CF_t	Corp. Div. Q_{t+1}	Corp. Div. CF_{t+1}
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ins. Own.	-0.370***	-0.289	-0.399***	-0.583**				
	(-3.017)	(-1.076)	(-3.086)	(-1.971)				
Diversified Ins. $\text{Own.}_{\text{Idio\_vol}}$					-0.901***	-1.417***	-0.729***	-1.197***
					(-4.580)	(-3.307)	(-3.685)	(-2.696)
Under-diversified Ins. $\text{Own.}_{\text{Idio\_vol}}$					-0.276	-0.204	-0.260	-0.490
					(-1.111)	(-0.386)	(-1.019)	(-0.895)
Firm size	0.452***	0.693***	0.337***	0.586***	0.481***	0.755***	0.351***	0.610***
	(11.113)	(8.263)	(7.822)	(6.339)	(11.373)	(8.686)	(7.948)	(6.493)
Leverage	0.209	0.278	-0.074	-0.191	0.171	0.190	-0.106	-0.268
	(1.199)	(0.772)	(-0.393)	(-0.479)	(0.976)	(0.524)	(-0.565)	(-0.668)
ROA	-0.292**	-0.484*	-0.123	-0.323	-0.262*	-0.380	-0.079	-0.190
	(-2.070)	(-1.732)	(-0.848)	(-1.047)	(-1.867)	(-1.380)	(-0.554)	(-0.637)
Tobin's q	0.016	0.037	0.014	0.022	0.017	0.041	0.013	0.020
	(1.316)	(1.389)	(1.217)	(0.830)	(1.445)	(1.524)	(1.149)	(0.754)
Cash	-0.608***	-0.352	-0.418***	0.076	-0.593***	-0.319	-0.413***	0.087
	(-4.098)	(-1.123)	(-2.718)	(0.228)	(-3.991)	(-1.015)	(-2.681)	(0.260)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	84,792	84,792	72,026	72,026	84,634	84,634	71,902	71,902
Adjusted R^2	0.614	0.557	0.642	0.588	0.614	0.557	0.642	0.588

Table 5
Continued

Panel B: Using alternate measures for investor portfolio diversification as explanatory variables						
	Corp. Div. Q_t	Corp. Div. CF_t	Corp. Div. Q_{t+1}	Corp. Div. CF_{t+1}	Corp. Div. Q_t	Corp. Div. CF_t
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)
Diversified Ins. Own.$_{\text{Inv\_sync}}$	-0.569***	-0.056***				
	(-3.606)	(-3.667)				
Under-diversified Ins. Own.$_{\text{Inv\_sync}}$	-0.585**	-0.038*				
	(-2.149)	(-1.687)				
Diversified Ins. Own.$_{\text{HHI\_conc}}$			-0.793***	-0.053***		
			(-4.528)	(-3.725)		
Under-diversified Ins. Own.$_{\text{HHI\_conc}}$			-0.566*	-0.045*		
			(-1.744)	(-1.673)		
Diversified Ins. Own.$_{\text{Hold\_count}}$					-0.740***	-0.045***
					(-4.286)	(-3.236)
Under-diversified Ins. Own.$_{\text{Hold\_count}}$					-0.431	-0.065**
					(-1.163)	(-2.145)
Controls in Panel A	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	84,634	84,634	84,634	84,634	84,634	84,634
Adjusted R^2	0.614	0.621	0.614	0.621	0.614	0.621

Table 6

Diversified Institutional Ownership and Corporate Diversification: Instrumental Variable Regressions

This table presents an instrumental variable estimation of corporate diversification on measures of diversified institutional ownership, instrumented by the inclusion in the Russell 2000 index using a sample of firms near the Russell 1000/2000 index inclusion thresholds during the period between 1995 and 2006. As indicated by the column header, the sample is restricted to firms within a bandwidth of ±500 and ±200 firms, respectively, around Russell 1000/2000 index thresholds. *Diversified Ins. Own.* and *Under-diversified Ins. Own.* are computed on the basis of classification of an institutional owner into diversified (above median) or under-diversified (below median) based on portfolio diversification measures including idiosyncratic volatility or $Idio\_vol$ (columns (5)–(12) in Panel A and columns (1)–(4) in Panel C), inverse return synchronicity or Inv_sync (columns (1)–(4) in Panel B and columns (5)–(8) in Panel C), Herfindahl index of portfolio concentration or HHI_conc (columns (5)–(8) in Panel B and columns (9)–(10) in Panel C), and the number of holdings or $Hold\_count$ (columns (9)–(12) in Panel B and columns (11)–(12) in Panel C). All the diversification measures are computed based on the quarterly 13F filing of the institution, respectively. Institutions with above annual median of $Idio\_vol$, Inv_sync, HHI_conc, and inverse of $Hold\_count$ in the sample are classified as under-diversified, respectively, and diversified otherwise. The regressions in Panel C are estimated using a subsample of multisegment firms (i.e., firms that report financial information in more than one industry segment defined according to the 2-digit Standard Industrial Classification code). The estimation is performed using two-stage least squares. Estimates of the first-stage for the control variables are suppressed for the sake of brevity. Year fixed effects are included in all regressions. The t-statistics reported in parentheses are based on heteroscedasticity-robust standard errors clustered by industry (Fama-French 48 industry classification) and year. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Panel A: Using aggregate institutional ownership and diversified institutional ownership measured with idiosyncratic volatility

	Ins. Own.				Diversified Ins. Own.$_{Idio\_vol}$				Under-diversified Ins. Own.$_{Idio\_vol}$			
	±500	±200	±500	±200	±500	±200	±500	±200	±500	±200	±500	±200
Indep. var.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
First-stage:												
τ	0.082***	0.077***	0.082***	0.077***	0.086***	0.073***	0.086***	0.073***	0.007	0.010	0.007	0.010
	(8.927)	(4.850)	(8.927)	(4.850)	(11.947)	(6.041)	(11.947)	(6.041)	(1.614)	(1.359)	(1.614)	(1.359)
	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF	
Second-stage:												
Ins. Own.	-8.367***	-14.146**	-8.080	-19.695*								
	(-2.866)	(-2.007)	(-1.540)	(-1.731)								
Diversified Ins. Own.$_{Idio\_vol}$					-8.127***	-14.577**	-8.733*	-20.291*				
					(-3.206)	(-2.219)	(-1.878)	(-1.870)				
Under-diversified Ins. Own.$_{Idio\_vol}$									-103.893	-112.485	-100.343	-156.584
									(-1.053)	(-0.710)	(-1.008)	(-0.718)
Rank	-0.002***	0.001	-0.003*	0.001	-0.002***	0.001	-0.003**	0.000	0.001	0.007	0.000	0.009
	(-3.678)	(0.468)	(-1.955)	(0.182)	(-3.559)	(0.299)	(-2.053)	(0.024)	(0.419)	(0.489)	(0.122)	(0.451)
Ru2000×Rank	0.002***	0.001	0.003	0.004	0.002***	0.002	0.003	0.005	-0.001	-0.006	0.000	-0.006
	(2.729)	(0.298)	(1.533)	(0.530)	(2.749)	(0.628)	(1.550)	(0.742)	(-0.207)	(-0.413)	(0.050)	(-0.306)
Float Adjusted	0.004***	0.007**	0.004**	0.009**	0.003***	0.006***	0.004**	0.007**	0.009	0.012	0.009	0.016
	(3.232)	(2.461)	(2.082)	(2.057)	(3.312)	(2.770)	(2.279)	(2.229)	(1.239)	(0.805)	(1.250)	(0.797)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	9,302	3,752	9,302	3,752	9,301	3,751	9,301	3,751	9,301	3,751	9,301	3,751

Table 6
Continued

Panel B: Using full sample and diversified institutional ownership measured with alternate measures

	Diversified Ins. Own.$_{Inv\_sync}$				Diversified Ins. Own.$_{HHI\_conc}$				Diversified Ins. Own.$_{Hold\_count}$			
	±500	±200	±500	±200	±500	±200	±500	±200	±500	±200	±500	±200
Indep. var.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
First-stage:												
τ	0.090***	0.077***	0.090***	0.077***	0.102***	0.090***	0.102***	0.090***	0.097***	0.085***	0.097***	0.085***
	(11.402)	(5.864)	(11.402)	(5.864)	(11.192)	(6.071)	(11.192)	(6.071)	(10.695)	(5.771)	(10.695)	(5.771)
	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF	
Second-stage:												
Diversified Ins.Own.$_{Inv\_sync}$	-7.665***	-13.789**	-7.403	-19.195*								
	(-2.891)	(-2.150)	(-1.568)	(-1.877)								
Diversified Ins.Own.$_{HHI\_conc}$					-6.775***	-11.825**	-6.544	-16.461*				
					(-3.093)	(-2.222)	(-1.598)	(-1.909)				
Diversified Ins.Own.$_{Hold\_count}$									-7.122***	-12.492**	-6.879	-17.389*
									(-2.926)	(-2.094)	(-1.577)	(-1.846)
Rank	-0.002***	0.001	-0.003*	0.000	-0.002***	0.001	-0.003*	0.001	-0.002***	0.001	-0.003*	0.000
	(-3.448)	(0.393)	(-1.926)	(0.097)	(-2.919)	(0.460)	(-1.774)	(0.154)	(-3.266)	(0.360)	(-1.869)	(0.092)
Ru2000×Rank	0.002**	0.001	0.003	0.004	0.002**	0.001	0.003	0.004	0.002**	0.002	0.003	0.005
	(2.442)	(0.456)	(1.482)	(0.637)	(2.218)	(0.488)	(1.408)	(0.635)	(2.363)	(0.554)	(1.460)	(0.688)
Float Adjusted	0.003***	0.006***	0.004**	0.007**	0.003***	0.006***	0.004**	0.007**	0.003***	0.006***	0.004**	0.008**
	(3.359)	(2.670)	(2.189)	(2.278)	(3.458)	(2.787)	(2.182)	(2.317)	(3.371)	(2.603)	(2.163)	(2.227)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	9,301	3,751	9,301	3,751	9,301	3,751	9,301	3,751	9,301	3,751	9,301	3,751

Table 6
Continued

Panel C: Using subsample of multisegment firms												
	Diversified Ins. Own.$_{Idio\_vol}$				Diversified Ins. Own.$_{Inv\_sync}$				Diversified Ins. Own.$_{HHI\_conc}$		Diversified Ins. Own.$_{Hold\_count}$	
	±500	±200	±500	±200	±500	±200	±500	±200	±500	±200	±500	±200
Indep. var.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
First-stage:												
τ	0.107***	0.103***	0.107***	0.103***	0.109***	0.105***	0.109***	0.105***	0.119***	0.108***	0.115***	0.104***
	(6.715)	(3.471)	(6.715)	(3.471)	(6.616)	(3.516)	(6.616)	(3.516)	(6.161)	(3.085)	(5.930)	(3.066)
	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF	
Second-stage:												
Diversified Ins. Own.$_{Idio\_vol}$	-29.610***	-44.282**	-16.871	-57.008								
	(-3.158)	(-1.961)	(-1.094)	(-1.332)								
Diversified Ins. Own.$_{Inv\_sync}$					-28.683***	-42.998**	-16.343	-55.356				
					(-2.964)	(-2.210)	(-1.104)	(-1.387)				
Diversified Ins. Own.$_{HHI\_conc}$									-26.935***	-43.586*		
									(-2.859)	(-1.891)		
Diversified Ins. Own.$_{Hold\_count}$											-27.705***	-45.252**
											(-2.932)	(-2.011)
Rank	-0.004*	0.019	-0.000	0.031	-0.004*	0.022	-0.000	0.035	-0.003	0.027	-0.003	0.024
	(-1.672)	(1.366)	(-0.079)	(1.339)	(-1.653)	(1.590)	(-0.052)	(1.483)	(-1.238)	(1.539)	(-1.387)	(1.488)
Ru2000×Rank	0.006*	-0.018	-0.001	-0.024	0.006**	-0.022	-0.001	-0.029	0.005	-0.028	0.005	-0.023
	(1.866)	(-0.926)	(-0.102)	(-0.764)	(1.980)	(-1.155)	(-0.091)	(-0.939)	(1.555)	(-1.204)	(1.644)	(-1.035)
Float Adjusted	0.011***	0.018**	0.006	0.021	0.011***	0.018**	0.005	0.021	0.012***	0.021**	0.012***	0.022**
	(3.556)	(2.042)	(1.058)	(1.312)	(3.534)	(2.237)	(1.093)	(1.366)	(3.390)	(1.985)	(3.541)	(2.058)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,662	637	1,662	637	1,662	637	1,662	637	1,662	637	1,662	637

Table 7

Diversified Institutional Ownership and Corporate Diversification: Cross-sectional Analysis

This table presents an instrumental variable estimation of corporate diversification on measures of diversified institutional ownership, instrumented by the inclusion in the Russell 2000 index using a sample of firms near the Russell 1000/2000 index inclusion thresholds during the period between 1995 and 2006. The regressions are estimated on subsamples of firms with low and high number of *Block*, *WPS* (wealth performance sensitivity), and *Quasi Indexers Ins. Own.* in Panels A, B, and C, respectively. *Block* or blockholders are defined as institutions that hold greater than 5% of the total outstanding shares. *WPS* is measured as the dollar change in CEO wealth for a percentage change in firm value scaled by annual pay and invariant to firm size (Edmans, Gabaix, and Landier, 2009). *Quasi-indexers* are based on the definition of Bushee (1998) classification. As indicated by the column header, the sample is restricted to firms within a bandwidth of ±500 and ±200 firms, respectively, around Russell 1000/2000 index thresholds. *Diversified Ins. Own.* and *Under-diversified Ins. Own.* are computed on the basis of classification of an institutional owner into diversified (above median) or under-diversified (below median) based on portfolio diversification measures including idiosyncratic volatility or *Idio_vol* (columns (1)–(8) in all the Panels and inverse return synchronicity or *Inv_sync* (columns (9)–(12)) in all the Panels. All the diversification measures are computed based on the quarterly 13F filing of the institution, respectively. Institutions with above annual median of *Idio_vol* and *Inv_sync* in the sample are classified as under-diversified, respectively, and diversified otherwise. The estimation is performed using two-stage least squares. Estimates of the first-stage are suppressed for the sake of brevity. Year fixed effects are included in all regressions. The t-statistics reported in parentheses are based on heteroscedasticity-robust standard errors clustered by industry (Fama-French 48 industry classification) and year. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Panel A: Number of institutional blockholdings

	Low No. Blocks				High No. Blocks				Low No. Blocks		High No. Blocks	
	±500	±200	±500	±200	±500	±200	±500	±200	±200			
Indep. var.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF		Corp. Div. Q	Corp. Div. CF	Corp. Div. Q	Corp. Div. CF
Second-stage:												
Diversified Ins. Own.$_{\text{Idio\_vol}}$	-12.924**	-26.632*	-20.935**	-47.652*	-10.733**	-9.727	-7.399	-8.554				
	(-2.061)	(-1.735)	(-2.173)	(-1.884)	(-2.121)	(-1.306)	(-0.731)	(-0.539)				
Diversified Ins. Own.$_{\text{Inv\_sync}}$									-26.632*	-47.652*	-9.727	-8.554
									(-1.735)	(-1.884)	(-1.306)	(-0.539)
Rank	-0.003**	-0.000	-0.002	0.000	-0.001	-0.004	-0.003*	-0.006	-0.000	0.000	-0.004	-0.006
	(-2.538)	(-0.083)	(-1.501)	(0.005)	(-1.215)	(-1.260)	(-1.949)	(-1.011)	(-0.083)	(0.005)	(-1.260)	(-1.011)
Ru2000×Rank	0.002	0.004	0.001	0.006	0.001	0.009*	0.003	0.013	0.004	0.006	0.009*	0.013
	(1.458)	(0.507)	(0.403)	(0.507)	(0.456)	(1.806)	(1.129)	(1.531)	(0.507)	(0.507)	(1.806)	(1.531)
Float Adjusted	0.003**	0.007*	0.005**	0.012*	0.006***	0.006**	0.006**	0.007	0.007*	0.012*	0.006**	0.007
	(2.145)	(1.774)	(2.114)	(1.766)	(3.612)	(2.570)	(2.146)	(1.575)	(1.774)	(1.766)	(2.570)	(1.575)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,147	1,282	3,147	1,282	3,855	1,520	3,855	1,520	1,282	1,282	1,520	1,520

Table 7
Continued

Panel B: Incentive structure

	Low WPS				High WPS				Low WPS		High WPS	
	±500	±200	±500	±200	±500	±200	±500	±200	±200			
Indep. var.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF		Corp. Div. Q	Corp. Div. CF	Corp. Div. Q	Corp. Div. CF
Second-stage:												
Diversified Ins. Own.$_{\text{Idio\_vol}}$	-22.504	-142.205	-16.889	-230.753	-15.562***	-21.397**	-14.526*	-26.329*				
	(-1.284)	(-0.200)	(-0.600)	(-0.195)	(-2.984)	(-2.044)	(-1.857)	(-1.748)				
Diversified Ins. Own.$_{\text{Inv\_sync}}$									-48.489	-78.681	-19.361**	-23.823*
									(-0.476)	(-0.439)	(-2.075)	(-1.774)
Rank	-0.003**	0.027	-0.005***	0.041	-0.001*	0.002	-0.002	0.003	0.013	0.020	0.002	0.002
	(-2.333)	(0.228)	(-2.671)	(0.214)	(-1.855)	(0.452)	(-1.457)	(0.387)	(0.586)	(0.513)	(0.435)	(0.371)
Ru2000×Rank	0.002	-0.034	0.004	-0.050	0.002	0.000	0.003	0.001	-0.018	-0.025	0.000	0.001
	(0.957)	(-0.254)	(1.283)	(-0.228)	(1.075)	(0.081)	(1.115)	(0.080)	(-0.681)	(-0.554)	(0.073)	(0.074)
Float Adjusted	0.008**	0.033	0.008	0.049	0.006***	0.010***	0.005**	0.011**	0.017	0.024	0.009***	0.010**
	(2.189)	(0.261)	(1.297)	(0.235)	(3.521)	(2.577)	(2.240)	(2.040)	(0.834)	(0.658)	(2.648)	(2.081)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,507	973	2,507	973	4,156	1,630	4,156	1,630	973	973	1,630	1,630

Table 7
Continued

Panel C: Quasi indexers												
	Low Quasi Indexers				High Quasi Indexers				Low Quasi Indexers		High Quasi Indexers	
	±500	±200	±500	±200	±500	±200	±500	±200	±200			
Indep. var.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF		Corp. Div. Q	Corp. Div. CF	Corp. Div. Q	Corp. Div. CF
Second-stage:												
Diversified Ins. Own.$_{\text{Idio\_vol}}$	-8.719**	-8.056	-11.305**	-11.038	-7.840*	-23.663**	-3.658	-29.203*				
	(-2.341)	(-1.347)	(-1.995)	(-1.069)	(-1.685)	(-2.045)	(-0.447)	(-1.683)				
Diversified Ins. Own.$_{\text{Inv\_sync}}$									-7.676	-10.518	-22.659**	-27.964*
									(-1.358)	(-1.086)	(-2.073)	(-1.688)
Rank	-0.002***	0.002	-0.004***	0.001	-0.002**	-0.002	-0.002*	-0.004	0.002	0.002	-0.002	-0.003
	(-3.856)	(0.491)	(-3.218)	(0.243)	(-2.501)	(-0.719)	(-1.791)	(-0.725)	(0.544)	(0.285)	(-0.619)	(-0.644)
Ru2000×Rank	0.002**	-0.004	0.003*	-0.005	0.002	0.011*	0.002	0.017*	-0.004	-0.006	0.010*	0.016*
	(2.149)	(-0.841)	(1.943)	(-0.675)	(1.598)	(1.783)	(0.907)	(1.820)	(-0.892)	(-0.714)	(1.747)	(1.779)
Float Adjusted	0.003***	0.004*	0.004**	0.005	0.004***	0.008**	0.003	0.009*	0.004*	0.005	0.007**	0.009*
	(2.724)	(1.806)	(2.217)	(1.286)	(2.630)	(2.175)	(1.367)	(1.781)	(1.820)	(1.306)	(2.204)	(1.788)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,070	2,043	5,070	2,043	4,373	1,760	4,373	1,760	2,043	2,043	1,760	1,760

Table 8

Diversified Institutional Ownership and Mergers & Acquisitions

This table presents an instrumental variable probit estimation of diversifying acquisitions propensity on measures of diversified institutional ownership, instrumented by the inclusion in the Russell 2000 index using a sample of firms near the Russell 1000/2000 index inclusion thresholds during the period between 1995 and 2006. The dependent variables include indicators for whether a firm engages in any type of mergers and acquisitions (M&A) with a value over $ 10 million covered in the SDC database (*M&A (indicator)*), whether the firm engages in an over $ 10 million M&A of another firm in a different Fama-French 30 industry covered in the SDC database (*M&A FF 48 (indicator)*), and whether the firm engages in an over $ 10 million M&A of another firm in a different Fama-French 12 industry covered in the SDC database (*M&A FF 12 (indicator)*). *Diversified Ins. Own.* and *Under-diversified Ins. Own.* are computed on the basis of classification of an institutional owner into diversified (above median) or under-diversified (below median) based on portfolio diversification measures including idiosyncratic volatility or *Idio_vol* (columns (1)–(6)) and inverse return synchronicity or *Inv_sync* (columns (7)–(12)). All the diversification measures are computed based on the quarterly 13F filing of the institution, respectively. Institutions with above annual median of *Idio_vol* and *Inv_sync* in the sample are classified as under-diversified, respectively, and diversified otherwise. The estimation is performed using two-stage least squares. Estimates of the first-stage for the control variables and constant in the second-stage are suppressed for the sake of brevity. Year fixed effects are included in all regressions. The z-statistics reported in parentheses are based on heteroscedasticity-robust standard errors clustered by industry (Fama-French 48 industry classification) and year. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

	±500	±200	±500	±200	±500	±200	±500	±200	±500	±200	±500	±200
Indep. var.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	M&A		M&A FF 48		M&A FF 12		M&A		M&A FF 48		M&A FF 12	
Second-stage:												
Diversified	1.199*	2.440**	-1.024	-2.026*	-1.596**	-2.983***						
Ins. Own.$_{\text{Idio\_vol}}$	(1.838)	(2.504)	(-1.401)	(-1.835)	(-2.563)	(-3.247)						
Diversified							1.157*	2.343**	-0.990	-1.943*	-1.535**	-2.854***
Ins. Own.$_{\text{Inv\_sync}}$							(1.848)	(2.518)	(-1.408)	(-1.840)	(-2.565)	(-3.267)
Rank	0.000	0.000	-0.000*	-0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.000	-0.000	0.000
	(0.165)	(0.373)	(-1.724)	(-0.627)	(-1.096)	(0.017)	(-0.004)	(0.254)	(-1.638)	(-0.538)	(-0.902)	(0.148)
Ru2000×Rank	-0.000	-0.001*	0.000**	0.001*	0.000	0.001	-0.000	-0.001*	0.000**	0.001*	0.000	0.001
	(-0.413)	(-1.779)	(2.170)	(1.755)	(1.147)	(1.302)	(-0.329)	(-1.668)	(2.111)	(1.673)	(1.042)	(1.178)
Float Adjusted	-0.000	-0.001**	0.000	0.001	0.000	0.001**	-0.000	-0.001**	0.000	0.001	0.000	0.001**
	(-0.757)	(-2.023)	(0.652)	(1.533)	(1.274)	(2.548)	(-0.756)	(-2.037)	(0.654)	(1.533)	(1.269)	(2.561)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	9,459	3,806	9,459	3,806	9,459	3,806	9,459	3,806	9,459	3,806	9,459	3,806

Table 9

Diversified Institutional Ownership and Text Based Industry Similarity

This table reports instrumental variable estimation of within industry similarity based on text-based network industry classification (TNIC) based on Hoberg and Phillips (2010) on diversified institutional ownership, instrumented by the inclusion in the Russell 2000 index using a sample of firms near the Russell 1000/2000 index inclusion thresholds during the period between 1995 and 2006. The dependent variables are computed as the mean pairwise similarity score of each firm-year with its industry peers scaled by the sample average. The industry definitions are based on TNIC 3 (TNIC 2) classification in columns (1)–(2), (5)–(8), and (11)–(12) (columns (3)–(4) and (9)–(10)). In columns (1)–(4) and (7)–(10), the average similarity computations are limited to closest 15 peers as per their TNIC 3 and TNIC 2 similarity scores, respectively. In columns (5)–(6) and (11)–(12), the average similarity computations are performed on all Fixed Industry Classification (FIC) 100 groups. *Diversified Ins. Own.* and *Under-diversified Ins. Own.* are computed on the basis of classification of an institutional owner into diversified (above median) or under-diversified (below median) based on portfolio diversification measures including idiosyncratic volatility or *Idio_vol* (columns (1)–(6)) and inverse return synchronicity or *Inv_sync* (columns (7)–(12)). All the diversification measures are computed based on the quarterly 13F filing of the institution, respectively. Institutions with above annual median of *Idio_vol* and *Inv_sync* in the sample are classified as under-diversified, respectively, and diversified otherwise. The estimation is performed using two-stage least squares. Estimates of the first-stage for the control variables and constant in the second-stage are suppressed for the sake of brevity. Year fixed effects are included in all regressions. The t-statistics reported in parentheses are based on heteroscedasticity-robust standard errors clustered by industry (Fama-French 48 industry classification) and year. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

	±500	±200	±500	±200	±500	±200	±500	±200	±500	±200	±500	±200
Indep. var.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	TNIC 3 similarity score using nearest 15 peers		TNIC 2 similarity score using nearest 15 peers		TNIC 3 similarity score using all FIC 100 peers		TNIC 3 similarity score using nearest 15 peers		TNIC 2 similarity score using nearest 15 peers		TNIC 3 similarity score using all FIC 100 peers	
Second-stage:												
Diversified Ins. Own.$_{\text{Idio\_vol}}$	-23.809	-75.745**	-61.658**	-146.821*	-0.309	-1.414**						
	(-1.023)	(-2.255)	(-2.175)	(-1.812)	(-1.079)	(-2.010)						
Diversified Ins. Own.$_{\text{Inv\_sync}}$							-22.713	-72.267**	-59.167**	-141.221*	-0.296	-1.366*
							(-1.035)	(-2.273)	(-2.175)	(-1.808)	(-1.065)	(-1.917)
Rank	-0.003	0.008	-0.000	0.055	0.000	0.001**	-0.003	0.009	0.000	0.058	0.000	0.001*
	(-0.526)	(0.490)	(-0.051)	(1.418)	(1.117)	(1.981)	(-0.485)	(0.599)	(0.057)	(1.494)	(1.174)	(1.921)
Ru2000×Rank	-0.001	0.011	-0.009	-0.065	-0.000**	-0.001*	-0.001	0.009	-0.010	-0.068	-0.000**	-0.001*
	(-0.133)	(0.507)	(-0.624)	(-1.581)	(-2.151)	(-1.872)	(-0.153)	(0.418)	(-0.652)	(-1.631)	(-2.148)	(-1.828)
Float Adjusted	0.005	0.028	0.031	0.067	-0.000	0.001*	0.004	0.027	0.030	0.066	-0.000	0.001
	(0.387)	(1.435)	(1.334)	(1.432)	(-0.036)	(1.689)	(0.379)	(1.506)	(1.342)	(1.482)	(-0.055)	(1.619)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,355	3,371	8,554	3,443	8,003	3,239	8,355	3,371	8,554	3,443	8,003	3,239

Table 10

Diversified Institutional Ownership and Common Ownership

This table presents an instrumental variable estimation of common ownership on measures of diversified institutional ownership in Panel A and instrumental variable estimation of corporate diversification (*Corp Div. Q*) on measures of diversified institutional ownership according to subsamples of ex ante common ownership in Panel B. Common ownership index is computed as the sum of all pairwise common ownership estimates of a firm with all other firms in the following three variations: 1) by using all other firms in the same year; 2) by restricting to industry peers where industry is defined by the Fama-French 48 (FF 48); and 3) by restricting to industry peers where industry is defined by the Text Based Industry Classification 3 (TNIC 3) industry classification. The common ownership measures are computed as the estimates (scaled by 1,000) based on investor attention being a linear function of investor holdings based on Gilje, Gormley, and Levit (2020). In both panels, diversified institutional ownership is instrumented by the inclusion in the Russell 2000 index using a sample of firms near the Russell 1000/2000 index inclusion thresholds during the period between 1995 and 2006. In Panel B, the sample is split into subsamples of high and low common ownership based on the sample median of common ownership index. As indicated by the column header, the sample is restricted to firms within a bandwidth of ±500 and ±200 firms, respectively, around Russell 1000/2000 index thresholds. *Diversified Ins. Own.* and *Under-diversified Ins. Own.* are computed on the basis of classification of an institutional owner into diversified (above median) or under-diversified (below median) based on portfolio diversification measures including idiosyncratic volatility or *Idio_vol* and inverse return synchronicity or *Inv_sync*. All the diversification measures are computed based on the quarterly 13F filing of the institution, respectively. Institutions with above annual median of *Idio_vol* and *Inv_sync* in the sample are classified as under-diversified, respectively, and diversified otherwise. The estimation in both panels are performed using two-stage least squares. Estimates of first-stage (the control variables in the first-stage) and the constants in the second-stages are suppressed for the sake of brevity in Panel A (Panel B). Year fixed effects are included in all regressions. The t-statistics reported in parentheses are based on heteroscedasticity-robust standard errors clustered by industry (Fama-French 48 industry classification) and year. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Panel A: Using aggregate institutional ownership and diversified institutional ownership measured with idiosyncratic volatility

	±500	±200			±500	±200		
Indep. var.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Common ownership index							
	With all firms		Within FF 48 peers	Within TNIC 3 peers	With all firms		Within FF 48 peers	Within TNIC 3 peers
Second-stage:								
Diversified Ins. Own.$_{\text{Idio\_vol}}$	-8.375	-6.080	2.583	11.131				
	(-0.376)	(-0.174)	(0.226)	(1.584)				
Diversified Ins. Own.$_{\text{Inv\_sync}}$					-7.999	-5.703	2.423	10.466
					(-0.375)	(-0.173)	(0.228)	(1.626)
Other controls in Table 6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,992	3,613	3,613	3,608	8,992	3,613	3,613	3,608

Table 10
Continued

Panel B: Variation in main findings on Corp. Div. Q according to common ownership index with FF 48 industry peers								
	Diversified Ins. Own.$_{\text{Idio\_vol}}$							
	High common ownership index				Low common ownership index			
	With all firms		Within FF 48 peers	Within TNIC 3 peers	With all firms		Within FF 48 peers	Within TNIC 3 peers
	±500	±200			±500	±200		
Indep. var.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
First-stage:								
τ	0.071***	0.071***	0.070***	0.069***	0.066***	0.033*	0.051**	0.057***
	(6.324)	(4.197)	(3.763)	(3.338)	(6.066)	(1.727)	(2.432)	(2.691)
	Corp. Div. Q							
Second-stage:								
Diversified	-12.839**	-18.378	-13.508	-27.816**	-14.224**	-37.483	-30.020	-17.364
Ins. Own.$_{\text{Idio\_vol}}$	(-2.006)	(-1.629)	(-1.117)	(-2.201)	(-2.437)	(-1.299)	(-1.440)	(-1.289)
Other controls in Table 6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,569	1,428	1,442	1,442	3,624	1,462	1,448	1,443
	Diversified Ins. Own.$_{\text{Inv\_sync}}$							
First-stage:								
τ	0.077***	0.082***	0.075***	0.073***	0.070***	0.037*	0.062***	0.066***
	(6.980)	(5.030)	(3.921)	(3.381)	(5.764)	(1.771)	(2.742)	(2.877)
	Corp. Div. Q							
Second-stage:								
Diversified	-11.822**	-15.843*	-12.518	-15.512*	-13.474**	-33.122	-24.830	-21.746
Ins. Own.$_{\text{Inv\_sync}}$	(-2.036)	(-1.825)	(-1.190)	(-1.885)	(-2.425)	(-1.236)	(-1.388)	(-1.388)
Other controls in Table 6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,569	1,428	1,442	1,442	3,624	1,462	1,448	1,443

Figure 1

Time-Series Variation in Institutional AUM and Netflows

These figures present time series trends in the Assets Under Management (AUM) and netflows into different categories of institutional ownership between 1995 and 2016. The graphs on the top in the first three rows are based on classification of an institutional owner into diversified (above median) or under-diversified (below median) based on the annual median of idiosyncratic volatility ($Idio\_vol$), inverse synchronicity (Inv_sync), the Herfindahl index of institutional portfolio concentration (HHI_conc), and the inverse of the count of securities in the institutional portfolio ($Hold\_count$) as disclosed in their 13F filing, respectively. For example, *Diversified Ins. Own.*$_{Idio\_vol}$ is the ratio of shares held by diversified institutional investors to total shares outstanding, where diversified institutional investors are those with above sample median measure of institutional investors' portfolio $Idio\_vol$, which is computed as the residuals obtained from regressing the quarterly returns of the 13F portfolio of the institution on Fama-French three factor model for a rolling three-year window. Inv_sync is computed as $ln[(1-R^2)/R^2]$, where R^2 is obtained from regressing the quarterly returns of the 13F portfolio of the institution on Fama-French three factor model for a rolling three-year window. HHI_conc is measured as the Herfindahl index as the sum of the squares of the value weights of each holding in the 13F portfolio of the institution. $Hold\_count$ is measured as the raw number of holdings reported in the 13F portfolio of the institution. The bottom three graphs are based on classification of an institutional owner based on Bushee (1998) classification. All the variables are defined in the Appendix A1.

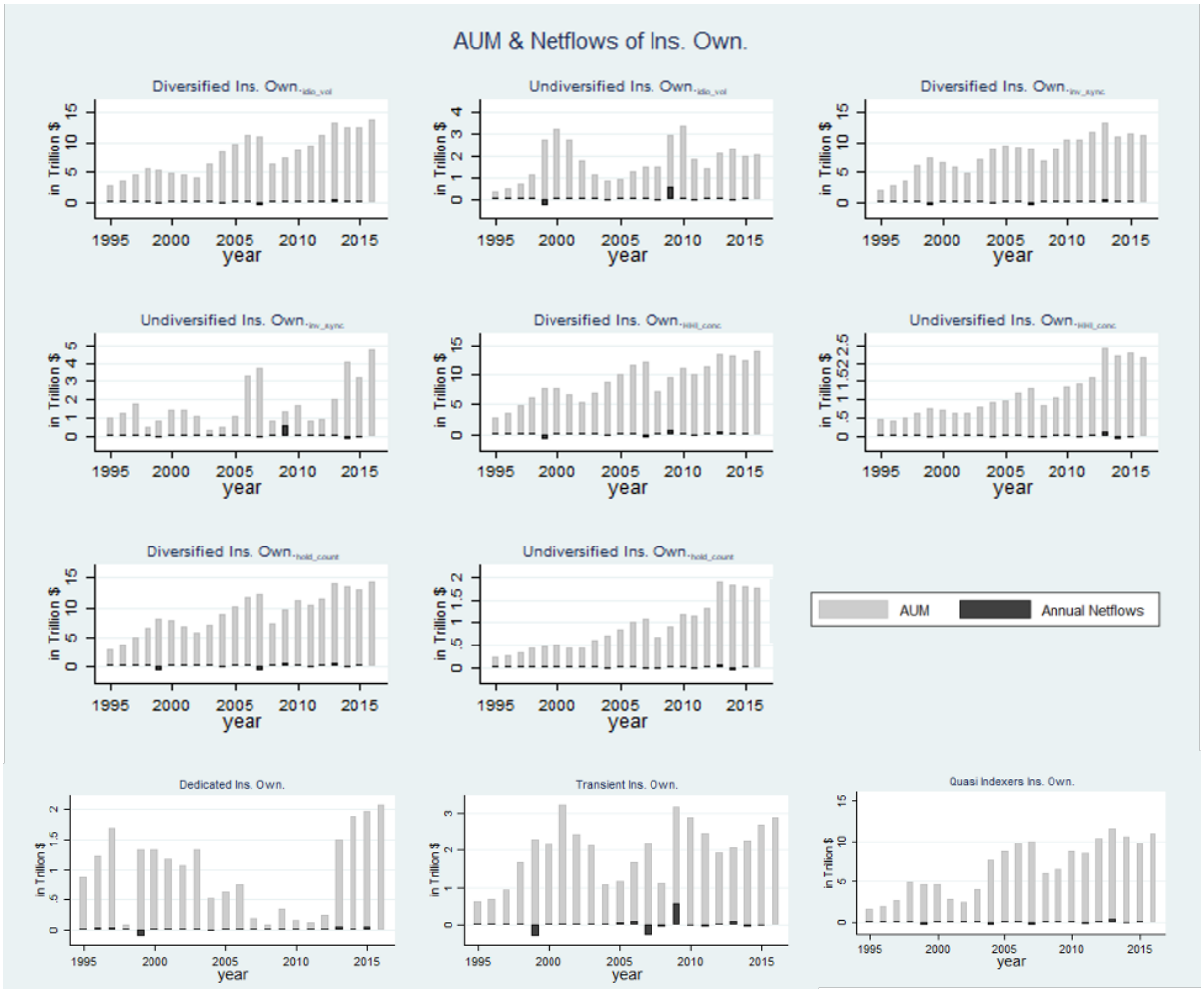
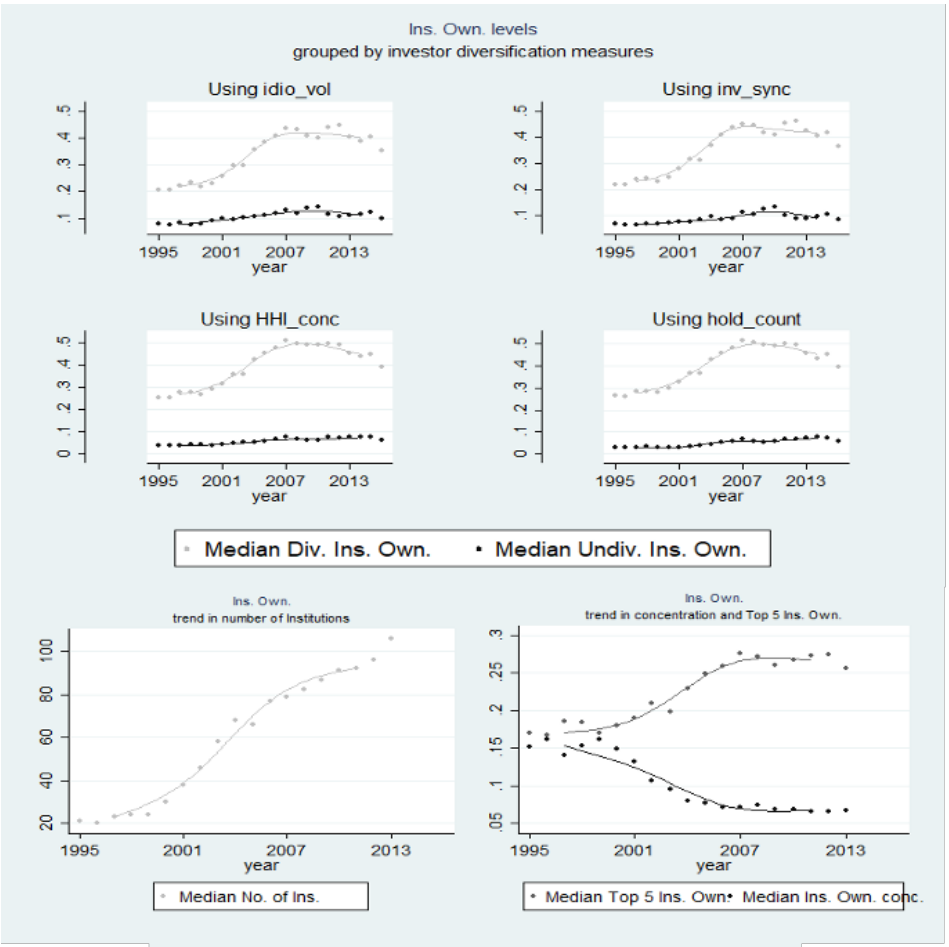


Figure 2

Time-Series Variation in Level of Institutional Ownership

These figures present time series variation in level of institutional ownership between 1995 and 2016 according to various type of institutional ownership classifications based on investor portfolio diversification measures (top four graphs), firm side alternate measures of institutional ownership (middle two graphs), and Bushee (1998) (bottom graph). The four graphs on the top are based on various measures of *Diversified Ins. Own.* and *Under-diversified Ins. Own.* computed on the basis of corresponding classification of an institutional owner into diversified (above median) or under-diversified (below median) based on the annual median of idiosyncratic volatility (*Idio_vol*), inverse synchronicity (*Inv_sync*), the Herfindahl index of institutional portfolio concentration (*HHI_conc*), and the inverse of the count of securities in the institutional portfolio (*Hold_count*) as disclosed in their 13F filing, respectively. The bottom graph is based on Bushee (1998) classification of institutional owners into *Transient Ins. Own.*, *Quasi Indexer Ins. Own.*, and *Dedicated Ins. Own.*



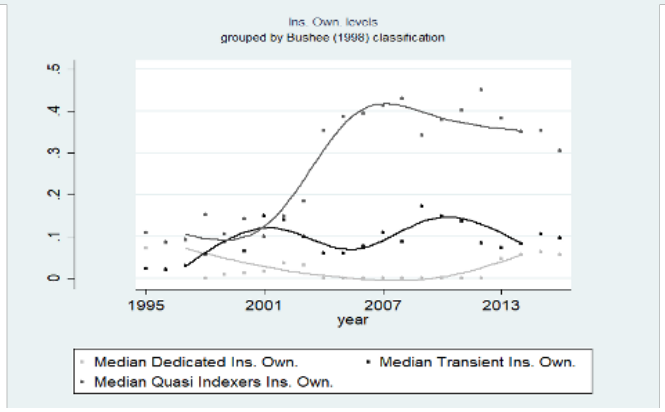


Figure 3

Discontinuity of Diversified Institutional Ownership around Russell 1000/2000 Threshold

These figures plot the mean diversified institutional ownership (top four panels) and corporate diversification (bottom two panels) measures around the Russell 2000 index thresholds, along with the fitted lines on either side of the thresholds during the period 1995-2006. The x-axis (*Rank*) represents the market capitalization ranking of firms in the Russell 1000 and Russell 2000 indices computed as actual rank minus 1000 as of index assignment date (i.e., end of May). The sample is restricted to ranks within narrow bands of 500 on both sides of the thresholds.