PHBS WORKING PAPER SERIES

The Effect of Institutional Investor Portfolio Diversification on Corporate Diversification

Audra L. Boone
Texas Christian University

Husit S. Celil
Peking University

Seungjoon Oh
Peking University

Srinivasan Selvam
Peking University

May 2021

Working Paper 20210506

Abstract

Do institutional investors' portfolio diversification strategies reveal their preferences for a constituent's corporate diversification policies. Estimating investor portfolio diversification using their holdings' return characteristics, we find a negative relationship between portfolio and corporate diversification, robust to a quasi-natural experiment. Our findings are more pronounced when there are more diversified blockholders, managers are highly incentivized, quasi-indexer ownership is higher, and during less volatile and non-crisis periods. Further, diversified owners are associated with highly distinct firms from the perspectives of diversifying acquisitions, non-core asset sales, idiosyncratic risk, and product market similarities. Our findings illustrate how evolving ownership structures reshape the corporate landscape.

Keywords: Institutional ownership, indexing, portfolio diversification, corporate diversification, product similarity
JEL Classification: G23, G34, L25

Peking University HSBC Business School
University Town, Nanshan District
Shenzhen 518055, China

The Effect of Institutional Investor Portfolio Diversification on Corporate Diversification*

Audra L. Boone Hursit S. Celil Seungjoon Oh Srinivasan Selvam†

March 5, 2021

Abstract

Do institutional investors' portfolio diversification strategies reveal their preferences for a constituent's corporate diversification policies. Estimating investor portfolio diversification using their holdings' return characteristics, we find a negative relationship between portfolio and corporate diversification, robust to a quasi-natural experiment. Our findings are more pronounced when there are more diversified blockholders, managers are highly incentivized, quasi-indexer ownership is higher, and during less volatile and non-crisis periods. Further, diversified owners are associated with highly distinct firms from the perspectives of diversifying acquisitions, non-core asset sales, idiosyncratic risk, and product market similarities. Our findings illustrate how evolving ownership structures reshape the corporate landscape.

JEL classification: G23, G34, L25

Keywords: Institutional Ownership, Indexing, Portfolio Diversification, Corporate Diversification, Product Similarity

*For helpful comments and suggestions, we thank Alex Edmans, Vladimir Gatchev, Peter Illiev, Christo Pirinsky, Timothy Simin, and seminar participants at the Pennsylvania State University, the University of Central Florida, and Peking University HSBC Business School. We are also grateful to Gerard Hoberg and Gordon Phillips for sharing the text based network industry classification data.

†Boone, audra.boone@tcu.edu, (+1) 817-2574267; Celil, hscelil@phbs.pku.edu.cn, (+86) 755-26033696; Oh, sjoonoh@phbs.pku.edu.cn, (+86) 755-26032740; Selvam, sselvam@phbs.pku.edu.cn, (+86) 755-26039236; Boone is from the Neeley School of Business at Texas Christian University. Celil, Oh, & Selvam are from Peking University HSBC Business School. Send correspondence to Boone.

In this paper, we examine how institutional owners' portfolio composition relates to their constituent firms' own diversification practices. While prior work has explored how controlling shareholders (e.g., Faccio, Marchica, and Mura, 2011; Lyandres, Marchica, Michaely, and Mura, 2019) or large blockholders (e.g., Kang, Luo, and Na, 2018) affect corporate policies like risk-taking, we focus on diversified investors who hold smaller, non-controlling stakes. Despite their individually smaller ownership stakes, when considered as a group, diversified investors constitute a large and growing proportion of institutions, affording them more power to potentially sway corporate policies.[1]

Further, diversified institutions likely exhibit similar preferences for corporate policies. Specifically, We expect diversified investors to prefer their portfolio firms to have lower firm-specific diversification because it would reduce the return correlation across holdings and minimize their overall portfolio variance. Even with these straightforward preferences, having a diversified portfolio can come at the expense of more specialized knowledge of a particular set of assets (Van Nieuwerburgh and Veldkamp, 2010), thus limiting their ability to influence such policies. To explore these notions we propose two competing hypotheses.

The *preference imposition* hypothesis suggests that diversified investors are particularly effective in translating their preferences to observable corporate diversification policies at their investee firms through 'voice' and 'exit' strategies. Recently, Edmans, Levit, and Reilly (2019) argue that diversified investors can be more effective in voice, which involves shareholders expressing their views and policy preferences directly to management, than relatively under-diversified investors because of the higher recoverability of their monitoring costs. Having more securities in their portfolio allows 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 be more effective for a diversified shareholder who ex-ante has greater choice in which security to sell. Hence, even when selling is induced by a liquidity shock, their selling choices prove to be a stronger negative signal about firm quality than selling by an under-diversified investor. The ability to study the exit is an advantage of our setting as controlling shareholders' exits

[1]Recent trends have spurred diversified investor holdings, 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 a reduction in the number of public firms (Doidge, Karolyi, and Stulz, 2017). The concatenate effect of higher fund inflows and the decline in the number of public firms increases portfolio managers' incentives to diversify their portfolio holdings to mitigate the effect of sudden redemption shocks.

happen either through negotiated sales or succession, where the corporate manager is an important stakeholder and, therefore, non-disciplinary in nature.

Alternatively, the *preference rejection* hypothesis suggests that diversified investors face constraints in governing, thus mitigating their influence on corporate diversification policies. 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 want to keep costs and overhead low. 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).

A key feature of our study is the segmentation of investors into diversified and under-diversified using a continuous measure of their portfolio diversification, which is computed based on the idiosyncratic volatility of their portfolio returns. Our classification does not overlap with other commonly used measures of institutional type and we contend that it captures institutional preferences better than those that rely on trading behavior.[2] Furthermore, our time-varying and institution-specific measure allows it to reflect the effect on corporate policies better compared to firm-side measures used in prior literature that treat institutions homogeneously, such as ownership concentration or count-based measures.

To explore the relation between investor diversification and corporate policies, we first focus on corporate diversification. Our main measures are 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 measures of diversified institutional ownership are negatively related to corporate diversification. Beyond statistical significance, these results are also economically meaningful. For example, a one-standard-deviation increase in diversified institutional ownership measured by

[2]For example, our classification splits both *Quasi-indexers* and *Transient* investors in Bushee (1998)'s classification almost in half, suggesting that investors belonging to these categories could pursue either a diversified or under-diversified strategy.

Idio_vol reduces corporate diversification by 11.8 percent relative to the unconditional mean. However, under-diversified institutional ownership is not related in a statistically significant manner with corporate diversification. These results are also robust to alternative measures of investor portfolio diversification and corporate diversification, lending support to *preference imposition* hypothesis.

To help draw a causal inference on the effect of investors' portfolio diversification on firm policies, we use 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 including alternative time windows, bandwidths of firms near the index thresholds, and specifications to address potential flaws in the Russell index reconstitution techniques.

We also extend the results beyond sales weighted measures of corporate diversification of Duchin (2010) to other firm characteristics in which investors' preferences matter. Specifically, we find that higher diversified investor ownership is associated with a lower propensity to engage in diversifying M&A, higher propensity to engage in divestiture of non-core assets, higher level of idiosyncratic risk, and a reduction in product market similarity with peers. These results provide additional support to our main finding and suggests that diversified owners influence the firm to become particularly unique, thus further supporting the *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 cross-sectional variation in firm level characteristics based on the number of diversified blockholdings, managerial incentive schemes, and *Quasi-indexer* ownership, we find that the negative effect on corporate diversification prevails in firms with a high number of diversified blockholdings, highly incentivized managers, and in high *Quasi-indexers* subsamples.

Overall these results suggest that, diversified owners when holding large blocks, could be more effective in exit due to the signaling effects of their sales.[3] Further, firm managers might be more inclined to reflect diversified owners' preferences when they are highly incentivized, which increases

[3]Generally, exit strategies are more effective in firms with a higher number of blockholdings because the blockholders then have stronger incentives to trade aggressively and move prices close to true firm value and reflective of managerial choices (Edmans, Fang, and Zur, 2013). Additionally, when the blockholders themselves are diversified, they have greater flexibility in choosing which asset to sell (Edmans and Manso, 2011), magnifying the traditional exit influence.

exit effectiveness. Moreover, the results on high *Quasi-indexers* suggest that diversified owners could also rely on voice strategies to achieve their intended outcomes.[4] 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.

As the benefit and the effectiveness of portfolio diversification can vary across time and market states due to the mechanical nature of stock return volatility and asset co-movements (Ang and Chen, 2002; Ang, Hodrick, Xing, and Zhang, 2006), we conjecture that the effect of diversified investors on corporate diversification could vary accordingly. For example, the uniqueness of a firm might be less valuable to investors and conversely corporate diversification could be more valuable to the firm in distressed financial markets. Re-estimating our regressions using low and high periods of volatility, and crisis and non-crisis periods, we find that the diversified investors' influences on corporate diversification is statistically indistinguishable from zero during periods of market turmoil.

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 et al., 2011; Kang et al., 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 also has implications for the debate on common ownership. Many studies investigating the increasing trend in common ownership by large institutions suggest that such

[4] *Quasi-indexers* benchmarked to indices face more incentives to govern through voice to minimize tracking errors (Schmidt and Fahlenbrach, 2017).

increases might be welfare decreasing or anti-competitive while some studies highlight their benefits such as in relieving contracting frictions.[5]. By showing that diversified owners influence governance to achieve their preferred industry exposures, our study shows 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' index assignments 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.

[5]For example, institutional common owners might vote in favor of overpriced M&A transactions (Hansen and Lott Jr, 1996; Matvos and Ostrovsky, 2008; Brooks, Chen, and Zeng, 2018), reduce competition (Schmalz et al., 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. However, studies also find that common ownership relieves contracting frictions between customers and suppliers (Fee, Hadlock, and Thomas, 2006; Cici, Gibson, and Rosenfeld, 2015; Freeman, 2019), borrowers and lenders (Ojeda, 2018), and facilitates technological spillovers (Kostovetsky and Manconi, 2016; Anton, Ederer, Gine, and Schmalz, 2018) For an overview of theoretical and empirical studies on common ownership refer to the survey by Schmalz (2018).

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, obtained from Thomson Reuters Institutional Holdings database.[6] 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 them on the contemporaneous three Fama-French factors to obtain the residuals.[7,8] 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 makes measures such as idiosyncratic volatility insufficient in capturing 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 et al., 2014). Our third and fourth measures of portfolio diversification are raw measures based on the institution's concentration of holdings (*HHI_conc*) measured as the Herfindahl index of fractional holdings and the number of securities (*Hold_count*) reported in the 13F filing.

[6]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. Moreover, the preferences of other Bushee investor types for corporate diversification is unclear. For example, transient investors, who hold stocks for short periods, might still not prefer highly correlated assets whereas dedicated investors might prefer highly correlated assets where they can monitor to increase effectiveness.

[7]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.

[8]Our findings are not sensitive to return factor model choices. We reconstruct our measures using other models including the Carhart (1997)'s four-factor model and Fama and French (2015)'s five-factor model and obtain similar findings. We present these results in Table A.8 of the Online Appendix and discuss the findings in Section 6.

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.

[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.[9] 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 examining the overlap in the two classification schemes. The results are reported in Table 2.

[Insert Table 2 about here]

The ex-ante expectation for diversification preferences of the Bushee classification is that *Dedicated* and *Transient* are more likely to be under diversified, 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 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).

In additional tests, we also examine the time series persistence of each type of classification and find that the diversified classification remains highly persistent and there is a large fixed component to each institutions' portfolio diversification which is unexplained by time fixed effects or other observable characteristics. We report these additional results in Table A.1 of the Online Appendix.

[9] *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.

[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 period, with the difference widening gradually. 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 a forward-looking measure because it 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.[10]

We compute *Corp. Div. Q*, as follows: First, using only the stand-alone firms in each three-digit North American Industry Classification System (NAICS) 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 three-digit NAICS 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

[10]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 and divestiture activities, stock returns, and positioning in the product markets.

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*.[11]

Within the scope of Duchin (2010)'s measures, managers can change their corporate diversification by altering each segment sales weight in the overall firm sales. In reality, however, managers have a wider array of corporate actions that they can embark on to alter the trajectory of corporate diversification. Furthermore, Duchin (2010)'s measures ignore the corporate policies of single-segment firms, which can still vary from a spectrum of being highly generic relative to its industry to very unique. Therefore, we rely on other potential corporate policies that managers can engage in, including the following.

First, we examine corporate events that significantly alter the nature of a firm's assets, such as mergers and acquisitions, and divestitures. Specifically, we explore the frequency of these events where the bought/sold entity or assets belong to a different industry than the focal firm's primary industry. Second, the primary criterion for investors to assess corporate diversification activity is through the lens of returns. And also, at times, when a firm alters its product market strategy, sales and assets may respond slowly to such changes than returns. Furthermore, returns being forward looking in nature, incorporate even strategic shifts of the manager that are yet to be captured by sales or assets. Hence, we look at the idiosyncratic risk of firms, i.e., the component of firm-specific returns after accounting for standard return predicting factors. Firms that operate in multiple industries or generic product markets experience lower variation in their cash flows or

[11] Duchin (2010) argues that firms with high cash flows and high investment opportunities and 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.

similar variation in their cash flows as their rivals, respectively, and, therefore, are likely to have lower idiosyncratic risk and vice versa. Third, managers can also alter their corporate diversification by altering their products and product market positioning. To that extent, we explore the product market similarities with its rivals (Hoberg and Phillips, 2010, 2016), measured based on a firm's business descriptions in the annual reports.

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, described in Section 2, 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 et al. (2016). Index reconstitutions create differences in index weights around the index thresholds, leading to a significant discontinuity in institutional ownership.[12] 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 et al., 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.

[12] 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.

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 et al., 2016).[13] We estimate Eq. (1) using a sample restricted to firms included in the Russell 1000 or 2000 indices within a narrow ($\pm$500 or $\pm$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.[14]

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.[15] 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.

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

[14] 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.5 of the Online Appendix and discuss the findings in Section 6.

[15] 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.

[Insert Table 5 about here]

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 under diversified investors is unsurprising due to the ambiguity in their preferences. To the extent that under diversified 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 to 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.[16]

[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

[16] 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 3-digit NAICS code). Our interpretation does 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.*$_{Idio\_vol}$.[17]

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.

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 3-digit NAICS code. We present the findings 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

[17]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.

the coefficient being negative. Using alternate measures of investor portfolio diversification yields similar conclusions.

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, definitions of diversified ownership, and other robustness tests, presented in the Online Appendix and discussed in Section 6.

4 Variation in Findings

In the following subsections, we examine cross-sectional and time-series variation in the baseline findings in order to throw light on the potential mechanisms through which diversified institutional owners reduce corporate diversification. Specifically, by relying on measures that proxy for voice and exit strategies, we examine whether our results vary cross-sectionally across these measures. Furthermore, we also examine whether our findings systematically vary according to the variation in preferences of diversified investors across the business cycle.

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.

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 et al. (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 diversified 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 of diversified investors may be more effective.

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).[18]

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 and report the findings presented in Table 7. Results using a subsample that consists of a low number of diversified 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 diversified blockholdings. We find that the negative effect of *Diversified Ins. Own.* on *Corp. Div. Q* and *Corp. Div. CF*, is significant only among a subsample of firms with high diversified blockholdings in four of the six specifications (columns (5), (6), (7), and (11)). 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,

[18] 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 et al. (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 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 Time-varying Preferences

Generally, corporate diversification strategies can impede firm value because of leading to inefficient investment (Rajan, Servaes, and Zingales, 2000) or reflecting agency problems (Denis, Denis, and Sarin, 1997). However, when external capital markets are stressed, the benefits of having an internal capital market can outweigh its costs and help a diversified firm withstand turbulent times better (Kuppuswamy and Villalonga, 2016), relieving financing and investment bottlenecks. Furthermore, the increased correlation among stock returns during a market downturn (e.g., Ang and Bekaert, 2002) reduces the benefits of holding a stock with high ex-ante idiosyncratic risk. Therefore, the greater benefits from corporate diversification and the overall increase in stock return correlations may weaken diversified investors' incentives in encouraging their holding firms to focus. To estimate whether our results are weaker during periods of market turmoil, we use two proxies. First, we use the VIX index created by the Cboe Global Markets, a market index representing the market's expectation of 30-day forward-looking volatility derived from the prices of S&P 500 index options. Higher levels of the VIX index correspond to a period of high market risk, fear, and stress. Second, our sample period also coincides with the "dot-com bubble". Thus, we split our sample into the years from 2000 to 2002 as crisis period and the rest of the years as non-crisis period.

[Insert Table 8 about here]

We estimate Eq. (1) and (2) using subsamples according to the two measures described above and report the findings in Table 8. Results using a subperiod when the annual average of the monthly VIX index closing prices is above the sample median are presented in columns (1)–(4) and columns (9) and (10) in Panel A, while the other columns use the subperiod when the average is below the median. We find that the negative effect of *Diversified Ins. Own.* on *Corp. Div. Q* and

Corp. Div. CF, especially in the narrow bandwidth, is significant only during the low VIX period in five of the six specifications (columns (5), (6), (8), (9) and (10)). Similarly, in Panel B, using crisis and non-crisis periods, we find that the negative effect, especially in the narrow bandwidth, is significant only during non-crisis periods. In sum, the results in Table 8 show that the preferences of diversified owners for corporate policies are time-varying and that the diversified investors are indifferent to corporate diversification, when the benefits of such corporate policies for the firm increase and when the usefulness of corporate focusing in a diversified portfolio is lower.

5 Alternative Corporate Diversification Strategies

In the following subsections, we examine how diversified institutional owners influence other corporate policies that have implications for corporate diversification without considering the business segments of its operation. For example, pursuit of M&A and divestitures can shape the boundaries of a firm and determine the extent to which the assets of a firm are diversified. Similarly, the component of return that is driven by firm-specific information can explain how unique a firm is. Finally, the product market positioning of a firm and its similarities with its rivals can illustrate further how focused a firm is.

5.1 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 et al., 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 9 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 9. 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 $\pm$500 and $\pm$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 9 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.

5.2 Diversified Institutional Ownership and Divestitures

In this subsection, we investigate what role diversified institutional owners play in corporate downsizing strategies. Institutional owners, especially blockholders, have been documented to be vocal in encouraging firms to pursue divestitures (e.g., Bethel and Liebeskind, 1993). Furthermore, divestitures may offer a less costly option to reduce corporate diversification, which is available to all the firms instead of only active acquirers. Thus, we predict that diversified owners will encourage firms to engage in divestitures, especially if the assets being sold are not core to their operations. Divestitures can increase firm efficiency and focus, both of which are valuable traits of any constituent firm in a diversified portfolio.

[Insert Table 10 about here]

With the same specification as in Eq. (1) and (2) described in Section 3, we replace the second stage dependent variable with an indicator for whether a firm reduces the number of operational segments it reports in. A reduction in reported segments provides tentative evidence of firms pursuing divestitures or spin-offs (Dittmar and Shivdasani, 2003; Çolak and Whited, 2007). The results are presented in Panel A of Table 10. Estimating probit models based on instrumental variables and using diversified ownership computed based on *Idio_vol* (*Inv_sync*) as the measure of investor portfolio diversification in columns (1) and (2) (columns (3) and (4)), we find that diversified ownership is associated with a reduction in the number of reported operating segments, indicating a potential association between diversified ownership and divestiture activity.

In Panel B of Table 10, we investigate whether diversified ownership is associated with firm propensities to engage in asset sales, specifically asset sales when the selling subsidiary is in a different industry than the parent's primary industry (i.e., non-core asset sales). The findings are presented in Panel B of Table 10, similar to the format of Table 9. We identify asset sales and the industries of the selling entity and its parent entity 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 any asset sales with non-missing transaction value 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 asset sales where the Fama-French 48 industry code (Fama-French 12

industry code) of the selling subsidiary is different from that of the parent firm, and zero otherwise.

In the first two columns with total divestiture activity, Divestiture (indicator), as the dependent variable, we find that the coefficients on *Diversified Ins. Own.*$_{Idio\_vol}$ is significantly positive in the narrow bandwidth, suggesting that firms with highly diversified owners may exhibit a greater tendency to engage in asset sales. Moreover, in columns (3)–(6), where the dependent variables are based on non-core asset sales, Divestiture FF 48 (indicator) and Divestiture FF 12 (indicator), we find that the propensity to sell assets is significantly higher when diversified institutional ownership is high. In columns (7)–(12), we find similar results using the alternate computation of diversified ownership. In sum, the results in Tables 9 and 10 show that diversified owners achieve their preferred corporate policies in constituent firms by influencing both additions and deductions of assets.

5.3 Diversified Institutional Ownership and Idiosyncratic Volatility

In this subsection, we investigate whether diversified institutional owners influence firms to take a higher level of idiosyncratic risk. The fundamental principle of modern finance relies on the notion that idiosyncratic risk can be diversified away. Prior literature debates heatedly on whether idiosyncratic risk is priced. For example, Merton (1987) theory predicts a positive relationship between idiosyncratic volatility and returns as under diversified investors demand a premium for bearing idiosyncratic risk. The theory is also supported empirically by Fu (2009) who models volatilities using an exponential GARCH model due to their time-varying nature and finds a positive relationship between estimated volatilities and expected returns. However, earlier work by Ang et al. (2006) shows that firms with high lagged idiosyncratic volatility earn poorer future returns. Therefore, if idiosyncratic risk is priced, diversified investors can outperform other investors by influencing their constituent firms to take on higher levels of firm-specific risks, which is nullified in their aggregate portfolio. Alternatively, even when idiosyncratic risk is not priced, stocks with high idiosyncratic volatility will have a lower correlation with other stocks and hence be a valuable diversifier in an investor's portfolio, helping reduce overall portfolio variance. Thus, diversified investors unambiguously prefer their portfolio firms to take on higher levels of idiosyncratic risk.

To examine such predictions in the data, we compute the stock level idiosyncratic volatility based on the Fama-French three factor model. Specifically, we compute the standard deviation of

the residuals obtained from regressing the monthly stock returns on the Fama-French three factors for a rolling past five-year window.

The firm's idiosyncratic risk measured as above can change even when managers, especially at multi-segment firms, choose to enter new industries, divest from certain industries, or alter the weights across different industries. To overcome such noise in the measure of idiosyncratic volatility, we compute imputed idiosyncratic volatility that captures such choices, following Armstrong and Vashishtha (2012). First, we identify all Compustat firms in each 3-digit NAICS code and compute the value-weighted average monthly returns of all single-segment firms in each industry, restricting to those industries with at least ten single-segment firms. For single segment firms, we assign this industry average as the imputed return. For multi-segment firms, we compute the sales-weighted average of the different segments to get a firm-level imputed return. Using the imputed return for each firm, we compute an excess return as the difference between the stock return and the imputed return. Finally, we compute the standard deviation of the residuals obtained from regressing the monthly excess returns on the Fama-French three factors for a rolling past five-year window to obtain excess idiosyncratic volatility. This measure is independent of manager choices of industries to operate in and captures managerial risk-taking better.

[Insert Table 11 about here]

Following the specification in Eq. (1) and (2), we replace the second stage dependent variable with idiosyncratic volatility (columns (1), (2), (5), and (6)) and excess idiosyncratic volatility (columns (3), (4), (7), and (8)). The findings are presented in Table 11. In columns (1)–(4) and columns (5)–(8), we use diversified ownership computed based on *Idio_vol* and *Inv_sync* as the measure of investor portfolio diversification, respectively. We find that in the narrow bandwidths, diversified ownership is associated with a higher level of both idiosyncratic risk and excess idiosyncratic risk in columns (2), (4), (6), and (8), with the relationship being significant at the 1% level. However, we find that the coefficients on diversified ownership are insignificant in the broader bandwidths. Overall, the results in Table 11 show that an increase in diversified institutional ownership is associated with higher levels of firm-level risk-taking.

5.4 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.[19] 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

[19] 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.

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 peers (Boone, Grieser, Li, and Venkat, 2020).[20] 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 12 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 12. Like in Table 9, 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.*$_{Inv\_sync}$,

[20] 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.

we find similar results. In sum, the results in Table 12 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 12 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 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 12, 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 12 results.

6 Additional Tests

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

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. 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 et al., 2018; Harford, Jenter, and Li, 2011; He and Huang, 2017). Furthermore, our setting suffers from the concern that our findings on diversified institutional ownership could be driven by common ownership.

To mitigate this concern and understand the role of common ownership in our setting, we perform two kinds of analysis. First, we examine whether the trends in diversified ownership and common ownership correlate. Second, we examine the variation in our baseline findings, i.e., the negative relationship between diversified ownership and corporate diversification according to levels of common ownership. We present the results of these estimations in Table A.3 in the Online Appendix and find that exogenous changes in diversified ownership is not associated with common

ownership. Also, we find no systematic variation in our results according to common ownership.

Recent studies raise concerns about the suitability of Russell index reconstitutions as an identification strategy for institutional ownership. For example, Appel et al. (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 et al., 2016). To address whether there is still a mechanical difference in market capitalization, we follow the remedial approach prescribed by Appel et al. (2020) and present the findings in the Table A.4 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.5 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.6 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).[21]

[21]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 et al. (2020), we include three additional control variables to the specification used in Table A.4 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.7 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.

Next, we examine the sensitivity of our findings to alternate definitions of diversified ownership. First, Fichtner et al. (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, raising concerns if our results are a manifestation of this trend. Therefore, we exclude these three managers in our computation of diversified ownership. Second, to mitigate concerns about our choice of asset pricing model, that is the Fama-French three-factor model, in computing portfolio idiosyncratic volatilities, we use alternative factor models including the Carhart (1997) four-factor model and the Fama and French (2015) five-factor model and follow the exact same procedure as before to compute *Idio_vol* and *Inv_sync*. We present the results of these estimations in Table A.8 in the Online Appendix and find that our results remain robust when we exclude large diversified investors, using smaller institutions alone, and to different factor model choices.

Prior literature has vastly examined various corporate activity around the Russell reconstitu-

unnecessary turnover for institutional investors.

tion setting such as information environment, payout policies, tax avoidance, etc., raising a concern whether our findings are due to one of those documented effects instead of directly through diversified ownership. Boone and White (2015) document a positive effect of institutional ownership on firm information environment, and it is possible that our findings are a result of the changes in the information environment rather than diversified ownership preferences. To overcome this concern, we examine the variation in our findings based on different measures of a firm's information environment including frequency of 8K filings, stock liquidity, and analyst coverage. The results are reported in Table A.9 in the Online Appendix and we find that our results are either stronger or at least equal in the sample of firms with poor information environment compared to firms with better information environment.

Finally, we also examine whether institutional characteristics drive our findings. Specifically, we recompute our diversification measures exclusively using institutions based on certain characteristics, like big or small, young or old, high versus low netflows,[22] and profitable versus unprofitable market timers, and repeat our analyses. We present the results of these estimations in Table A.10 in the Online Appendix and find that our results remain robust in both groups split on these institutional characteristics.

7 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. 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

[22]Institutional trading may be influenced by fund flows that react to past returns, and hence our diversification measures might vary according to flows. For example, winning funds that selectively buy holdings to deploy fresh inflows will be viewed as being more under-diversified using our measures. This view is supported by our findings in Panel B of Table A.1, where we regress *Idio_vol* on fund characteristics and find a positive and significant coefficient on netflows. However, if the institution deploys new funds in the same weight as the original portfolio, our measures will remain unchanged. Therefore, our measures capture institution preferences for diversification well, and when there is a persistent strategy shift in deploying netflows, our measure captures the shift in preferences (i.e., heterogeneity in time) as intended. Moreover, in Table A.10, we examine the variation in our main findings according to fund flows. If higher fund inflows dilute institutions' diversified strategies, we should see a muted effect on corporate diversification among institutions with high netflows. But we find institutions with higher and lower fund flows having a similar negative influence on corporate diversification.

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 measured as Duchin (2010)'s Q by 11.8 percent. We establish causality using the Russell index 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 more diversified 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, higher propensity to engage in non-core asset sales, higher idiosyncratic risk, and increased differentiation from rivals. 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.

References

Acharya, V. V., H. Almeida, and M. Campello. 2007. Is cash negative debt? A hedging perspective on corporate financial policies. *Journal of Financial Intermediation* 16:515–554.

Admati, A. R., and P. Pfleiderer. 1997. Does it all add up? Benchmarks and the compensation of active portfolio managers. *Journal of Business* 70:323–350.

Alien, L., and A. S. Cebenoyan. 1991. Bank acquisitions and ownership structure: Theory and evidence. *Journal of Banking & Finance* 15:425–448.

Amihud, Y., and B. Lev. 1981. Risk reduction as a managerial motive for conglomerate mergers. *Bell Journal of Economics* pp. 605–617.

Anadu, K., M. Kruttli, P. McCabe, and E. Osambela. 2020. The Shift from Active to Passive Investing: Risks to Financial Stability? *Financial Analysts Journal* 76:23–39.

Andriosopoulos, D., and S. Yang. 2015. The impact of institutional investors on mergers and acquisitions in the United Kingdom. *Journal of Banking & Finance* 50:547–561.

Ang, A., and G. Bekaert. 2002. International asset allocation with regime shifts. *Review of Financial Studies* 15:1137–1187.

Ang, A., and J. Chen. 2002. Asymmetric correlations of equity portfolios. *Journal of financial Economics* 63:443–494.

Ang, A., R. J. Hodrick, Y. Xing, and X. Zhang. 2006. The cross-section of volatility and expected returns. *Journal of Finance* 61:259–299.

Anton, M., F. Ederer, M. Gine, and M. C. Schmalz. 2018. Innovation: The Bright Side of Common Ownership? *Available at SSRN 3099578*.

Appel, I., T. A. Gormley, and D. B. Keim. 2020. Identification using Russell 1000/2000 index assignments: A discussion of methodologies. *Critical Finance Review, Forthcoming* .

Appel, I. R., T. A. Gormley, and D. B. Keim. 2016. Passive investors, not passive owners. *Journal of Financial Economics* 121:111–141.

Appel, I. R., T. A. Gormley, and D. B. Keim. 2019. Standing on the shoulders of giants: The effect of passive investors on activism. *Review of Financial Studies* 32:2720–2774.

Armstrong, C. S., and R. Vashishtha. 2012. Executive stock options, differential risk-taking incentives, and firm value. *Journal of Financial Economics* 104:70–88.

Ben-David, I., F. Franzoni, and R. Moussawi. 2018. Do ETFs increase volatility? *Journal of Finance* 73:2471–2535.

Bethel, J. E., and J. Liebeskind. 1993. The effects of ownership structure on corporate restructuring. *Strategic Management Journal* 14:15–31.

Boone, A. L., W. Grieser, R. Li, and P. Venkat. 2020. Does Economic Comparability Discipline Financial Reporting? In *Sixth Annual Conference on Financial Market Regulation*.

Boone, A. L., and J. T. White. 2015. The effect of institutional ownership on firm transparency and information production. *Journal of Financial Economics* 117:508–533.

Brooks, C., Z. Chen, and Y. Zeng. 2018. Institutional cross-ownership and corporate strategy: The case of mergers and acquisitions. *Journal of Corporate Finance* 48:187–216.

Bushee, B. J. 1998. The influence of institutional investors on myopic R&D investment behavior. *The Accounting Review* pp. 305–333.

Bushee, B. J., and C. F. Noe. 2000. Corporate disclosure practices, institutional investors, and stock return volatility. *Journal of Accounting Research* pp. 171–202.

Calonico, S., M. D. Cattaneo, and M. H. Farrell. 2018. On the effect of bias estimation on coverage accuracy in nonparametric inference. *Journal of the American Statistical Association* 113:767–779.

Campa, J. M., and S. Kedia. 2002. Explaining the diversification discount. *Journal of Finance* 57:1731–1762.

Carhart, M. M. 1997. On persistence in mutual fund performance. *Journal of Finance* 52:57–82.

Cestone, G., and C. Fumagalli. 2001. Internal capital markets, cross-subsidization and product market competition. *CEPR Discussion Paper.*

Choi, N., M. Fedenia, H. Skiba, and T. Sokolyk. 2017. Portfolio concentration and performance of institutional investors worldwide. *Journal of Financial Economics* 123:189–208.

Cici, G., S. Gibson, and C. M. Rosenfeld. 2015. Cross-company effects of common ownership: Dealings between borrowers and lenders with a common blockholder. *Available at SSRN 2705856.*

Çolak, G., and T. M. Whited. 2007. Spin-offs, divestitures, and conglomerate investment. *Review of Financial Studies* 20:557–595.

Crane, A. D., S. Michenaud, and J. P. Weston. 2016. The effect of institutional ownership on payout policy: Evidence from index thresholds. *Review of Financial Studies* 29:1377–1408.

Denis, D. J., D. K. Denis, and A. Sarin. 1997. Agency problems, equity ownership, and corporate diversification. *Journal of Finance* 52:135–160.

Dittmar, A., and A. Shivdasani. 2003. Divestitures and divisional investment policies. *Journal of Finance* 58:2711–2744.

Doidge, C., G. A. Karolyi, and R. M. Stulz. 2017. The US listing gap. *Journal of Financial Economics* 123:464–487.

Duchin, R. 2010. Cash holdings and corporate diversification. *Journal of Finance* 65:955–992.

Edmans, A. 2009. Blockholder trading, market efficiency, and managerial myopia. *Journal of Finance* 64:2481–2513.

Edmans, A., V. W. Fang, and E. Zur. 2013. The effect of liquidity on governance. *Review of Financial Studies* 26:1443–1482.

Edmans, A., X. Gabaix, and A. Landier. 2009. A multiplicative model of optimal CEO incentives in market equilibrium. *Review of Financial Studies* 22:4881–4917.

Edmans, A., D. Levit, and D. Reilly. 2019. Governance under common ownership. *Review of Financial Studies* 32:2673–2719.

Edmans, A., and G. Manso. 2011. Governance through trading and intervention: A theory of multiple blockholders. *Review of Financial Studies* 24:2395–2428.

Faccio, M., M.-T. Marchica, and R. Mura. 2011. Large shareholder diversification and corporate risk-taking. *Review of Financial Studies* 24:3601–3641.

Fama, E. F., and K. R. French. 2015. A five-factor asset pricing model. *Journal of Financial Economics* 116:1–22.

Faure-Grimaud, A., and D. Gromb. 2004. Public trading and private incentives. *Review of Financial Studies* 17:985–1014.

Fee, C. E., C. J. Hadlock, and S. Thomas. 2006. Corporate equity ownership and the governance of product market relationships. *Journal of Finance* 61:1217–1251.

Fich, E. M., J. Harford, and A. L. Tran. 2015. Motivated monitors: The importance of institutional investors portfolio weights. *Journal of Financial Economics* 118:21–48.

Fichtner, J., E. M. Heemskerk, and J. Garcia-Bernardo. 2017. Hidden power of the Big Three? Passive index funds, re-concentration of corporate ownership, and new financial risk. *Business and Politics* 19:298–326.

Foucault, T., and L. Fresard. 2014. Learning from peers' stock prices and corporate investment. *Journal of Financial Economics* 111:554–577.

Freeman, K. 2019. The effects of common ownership on customer-supplier relationships. *Kelley School of Business Research Paper* .

Fu, F. 2009. Idiosyncratic risk and the cross-section of expected stock returns. *Journal of Financial Economics* 91:24–37.

Gertner, R. H., D. S. Scharfstein, and J. C. Stein. 1994. Internal versus external capital markets. *Quarterly Journal of Economics* 109:1211–1230.

Goldstein, I., and L. Yang. 2015. Information diversity and complementarities in trading and information acquisition. *Journal of Finance* 70:1723–1765.

Hansen, R. G., and J. R. Lott Jr. 1996. Externalities and corporate objectives in a world with diversified shareholder/consumers. *Journal of Financial and Quantitative Analysis* pp. 43–68.

Harford, J., D. Jenter, and K. Li. 2011. Institutional cross-holdings and their effect on acquisition decisions. *Journal of Financial Economics* 99:27–39.

He, J. J., and J. Huang. 2017. Product market competition in a world of cross-ownership: Evidence from institutional blockholdings. *Review of Financial Studies* 30:2674–2718.

He, Z., and W. Xiong. 2013. Delegated asset management, investment mandates, and capital immobility. *Journal of Financial Economics* 107:239–258.

Heath, D., D. Macciocchi, R. Michaely, and M. Ringgenberg. 2020. Do index funds monitor? *Forthcoming, Review of Financial Studies* .

Hoberg, G., and G. Phillips. 2010. Product market synergies and competition in mergers and acquisitions: A text-based analysis. *Review of Financial Studies* 23:3773–3811.

Hoberg, G., and G. Phillips. 2016. Text-based network industries and endogenous product differentiation. *Journal of Political Economy* 124:1423–1465.

Imbens, G., and K. Kalyanaraman. 2012. Optimal bandwidth choice for the regression discontinuity estimator. *Review of Economic Studies* 79:933–959.

Kang, J.-K., J. Luo, and H. S. Na. 2018. Are institutional investors with multiple blockholdings effective monitors? *Journal of Financial Economics* 128:576–602.

Kostovetsky, L., and A. Manconi. 2016. On the Role of Human Capital in Investment Management. Tech. rep., Working Paper. 17.

Kuppuswamy, V., and B. Villalonga. 2016. Does diversification create value in the presence of external financing constraints? Evidence from the 2007–2009 financial crisis. *Management Science* 62:905–923.

Lang, L. H., and R. M. Stulz. 1994. Tobin's q, corporate diversification, and firm performance. *Journal of Political Economy* 102:1248–1280.

Larcker, D. F., A. L. McCall, and G. Ormazabal. 2015. Outsourcing shareholder voting to proxy advisory firms. *Journal of Law and Economics* 58:173–204.

Lee, D. S., and T. Lemieux. 2010. Regression discontinuity designs in economics. *Journal of Economic Literature* 48:281–355.

Li, B., S. Rajgopal, and M. Venkatachalam. 2014. R2 and idiosyncratic risk are not interchangeable. *The Accounting Review* 89:2261–2295.

Lundin, E. 2016. Market power and joint ownership: Evidence from nuclear plants in Sweden. *Available at SSRN 2743221.*

Lyandres, E., M.-T. Marchica, R. Michaely, and R. Mura. 2019. Owners' portfolio diversification and firm investment. *Review of Financial Studies* 32:4855–4904.

Matvos, G., and M. Ostrovsky. 2008. Cross-ownership, returns, and voting in mergers. *Journal of Financial Economics* 89:391–403.

Matvos, G., A. Seru, and R. C. Silva. 2018. Financial market frictions and diversification. *Journal of Financial Economics* 127:21–50.

Maug, E. 1998. Large shareholders as monitors: Is there a trade-off between liquidity and control? *Journal of Finance* 53:65–98.

Mazzeo, M. J. 2002. Product choice and oligopoly market structure. *RAND Journal of Economics* pp. 221–242.

Merton, R. C. 1987. A simple model of capital market equilibrium with incomplete information. *Journal of Finance* 42:483–510.

Ojeda, W. 2018. Common ownership in the loan market. *University of California, Berkeley.*

Prabhala, N. R., V. Maksimovic, and G. Phillips. 2008. *Post-merger restructuring and the boundaries of the firm.* National Bureau of Economic Research.

Rajan, R., H. Servaes, and L. Zingales. 2000. The cost of diversity: The diversification discount and inefficient investment. *Journal of Finance* 55:35–80.

Rhodes-Kropf, M., and D. T. Robinson. 2008. The market for mergers and the boundaries of the firm. *Journal of Finance* 63:1169–1211.

Schmalz, M. C. 2018. Common-ownership concentration and corporate conduct. *Annual Review of Financial Economics* 10:413–448.

Schmalz, M. C., J. Azar, and I. Tecu. 2018. Anticompetitive effects of common ownership. *Journal of Finance* 73:1513–1565.

Schmidt, C., and R. Fahlenbrach. 2017. Do exogenous changes in passive institutional ownership affect corporate governance and firm value? *Journal of Financial Economics* 124:285–306.

Seim, K. 2006. An empirical model of firm entry with endogenous product-type choices. *RAND Journal of Economics* 37:619–640.

Semov, S. 2017. Common ownership, competition and firm financial policy. *Available at SSRN 2956062.*

Shleifer, A., and R. W. Vishny. 1986. Large shareholders and corporate control. *Journal of Political Economy* 94:461–488.

Van Nieuwerburgh, S., and L. Veldkamp. 2010. Information acquisition and under-diversification. *Review of Economic Studies* 77:779–805.

Villalonga, B. 2004. Does diversification cause the "diversification discount"? *Financial Management* pp. 5–27.

Williamson, O. E. 1975. Markets and hierarchies. *New York* 2630.

Appendix A1
Variable Definition

Variable	Description
Cash	Ratio of cash and cash equivalents to total assets
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
Dedicated Ins. Own.	Ratio of dedicated institutional holdings (Bushee, 1998; Bushee and Noe, 2000) to total shares outstanding
Diversified Ins. $\text{Own.}_{\text{HHI\_conc}}$	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. $\text{Own.}_{\text{Hold\_count}}$	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. $\text{Own.}_{\text{Idio\_vol}}$	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. $\text{Own.}_{\text{Inv\_sync}}$	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
Ins. Own.	Ratio of shares held by institutional investors to total shares outstanding
Leverage	Sum of short-term and long-term debt divided by total assets
Profitability	Ratio of earnings before interest, taxes, depreciation, and amortization (EBITDA) to total assets
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
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 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. The sample consists of 206,138 institutional-quarter observations during the period between 1995 and 2016. The 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. All the variables are defined in the Appendix A1.

	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 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
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. $\text{Own.}_{\text{Idio\_vol}}$	0.502	0.514	0.377	0.359	0.125***	0.155***
Diversified Ins. $\text{Own.}_{\text{Inv\_sync}}$	0.516	0.529	0.400	0.385	0.116***	0.144***
Diversified Ins. $\text{Own.}_{\text{HHI\_conc}}$	0.564	0.580	0.457	0.446	0.107***	0.134***
Diversified Ins. $\text{Own.}_{\text{Hold\_count}}$	0.581	0.599	0.466	0.459	0.115***	0.140***
Under-diversified Ins. $\text{Own.}_{\text{Idio\_vol}}$	0.122	0.099	0.130	0.109	-0.008***	-0.010***
Under-diversified Ins. $\text{Own.}_{\text{Inv\_sync}}$	0.109	0.088	0.107	0.086	0.002***	0.002***
Under-diversified Ins. $\text{Own.}_{\text{HHI\_conc}}$	0.074	0.054	0.066	0.040	0.008***	0.014***
Under-diversified Ins. $\text{Own.}_{\text{Hold\_count}}$	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***

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. $Own._{Idio\_vol}$					-0.901***	-1.417***	-0.729***	-1.197***
					(-4.580)	(-3.307)	(-3.685)	(-2.696)
Under-diversified Ins. $Own._{Idio\_vol}$					-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. $Own._{Inv\_sync}$	-0.569***	-0.056***				
	(-3.606)	(-3.667)				
Under-diversified Ins. $Own._{Inv\_sync}$	-0.585**	-0.038*				
	(-2.149)	(-1.687)				
Diversified Ins. $Own._{HHI\_conc}$			-0.793***	-0.053***		
			(-4.528)	(-3.725)		
Under-diversified Ins. $Own._{HHI\_conc}$			-0.566*	-0.045*		
			(-1.744)	(-1.673)		
Diversified Ins. $Own._{Hold\_count}$					-0.740***	-0.045***
					(-4.286)	(-3.236)
Under-diversified Ins. $Own._{Hold\_count}$					-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
	(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)
Second-stage:	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF	
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 Adjustment	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
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
underlineFirst-stage:	0.090***	0.077***	0.090***	0.077***	0.102***	0.090***	0.102***	0.090***	0.097***	0.085***	0.097***	0.085***
τ	(11.402)	(5.864)	(11.402)	(5.864)	(11.192)	(6.071)	(11.192)	(6.071)	(10.695)	(5.771)	(10.695)	(5.771)
Second-stage:	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF	
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 Adjustment	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
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
First-stage:	0.107***	0.103***	0.107***	0.103***	0.109***	0.105***	0.109***	0.105***	0.119***	0.108***	0.115***	0.104***
τ	(6.715)	(3.471)	(6.715)	(3.471)	(6.616)	(3.516)	(6.616)	(3.516)	(6.161)	(3.085)	(5.930)	(3.066)
Second-stage:	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF		Corp. Div. Q			
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 Adjustment	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 *Diversified Blocks*, *WPS* (wealth performance sensitivity), and *Quasi Indexers Ins. Own.*, in Panels A–C, respectively. *Diversified Blocks* or blockholders are defined as diversified institutions based on $Idio\_vol$ classification and 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 et al., 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 diversified blockholdings

	Low D.Blocks				High D.Blocks				Low D.Blocks	High D.Blocks		
	±500	±200	±500	±200	±500	±200	±500	±200	±200			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Second-stage:	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF		Corp. Div. Q	Corp. Div. CF	Corp. Div. Q	Corp. Div. CF
Diversified Ins. Own.$_{Idio\_vol}$	-3.036	-5.130	-4.479	-16.370	-24.078***	-36.012***	-18.647***	-21.565				
	(-1.492)	(-0.716)	(-0.899)	(-1.500)	(-3.639)	(-2.678)	(-2.849)	(-1.039)				
Diversified Ins. Own.$_{Inv\_sync}$									-4.879	-15.570	-32.620**	-19.533
									(-0.717)	(-1.505)	(-2.339)	(-1.013)
Rank	-0.002**	-0.002	-0.003*	-0.003	-0.002*	0.009**	-0.001	0.005	-0.002	-0.002	0.008*	0.005
	(-2.464)	(-0.880)	(-1.816)	(-0.438)	(-1.672)	(2.312)	(-1.077)	(0.632)	(-0.743)	(-0.340)	(1.956)	(0.582)
Ru2000 × Rank	0.002	0.003	0.003	0.009	0.001	-0.008***	0.001	-0.008	0.003	0.008	-0.008***	-0.008
	(1.528)	(1.132)	(1.251)	(1.122)	(1.401)	(-3.223)	(0.457)	(-1.365)	(1.059)	(1.052)	(-18.809)	(-1.271)
Float Adjustment	0.002**	0.002	0.003	0.006*	0.008***	0.016***	0.007***	0.011	0.002	0.005*	0.015***	0.010
	(2.124)	(1.112)	(1.479)	(1.762)	(3.539)	(3.148)	(3.111)	(1.257)	(1.123)	(1.788)	(2.849)	(1.262)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,096	2,452	6,096	2,452	3,344	1,350	3,344	1,350	2,452	2,452	1,350	1,350

Table 7
Continued

Panel B: Incentive structure

	Low WPS				High WPS				Low WPS		High WPS	
	±500	±200	±500	±200	±500	±200	±500	±200	±200			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Second-stage:	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF		Corp. Div. Q	Corp. Div. CF	Corp. Div. Q	Corp. Div. CF
Diversified Ins. $Own._{Idio\_vol}$	-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. $Own._{Inv\_sync}$									-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 Adjustment	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			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Second-stage:	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF		Corp. Div. Q	Corp. Div. CF	Corp. Div. Q	Corp. Div. CF
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 Adjustment	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 Corporate Diversification: Time-series 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 level of volatility and during crisis and non-crisis periods in Panels A and B, respectively. High *VIX Index* period is defined as the years during the sample period when the annualized average of monthly *VIX Index* closing prices is above the sample period median, and Low *VIX Index* years if otherwise. *Crisis Period* is defined as the period from 2000-2002 that experienced the dot-com bubble, and Non-crisis Period for the remainder years during the sample period. 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: Volatility in investor expectations

	High VIX Index				Low VIX Index				High VIX Index		Low VIX Index	
	±500	±200	±500	±200	±500	±200	±500	±200	±200			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Second-stage:	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF		Corp. Div. Q	Corp. Div. CF	Corp. Div. Q	Corp. Div. CF
Diversified Ins. Own.$_{\text{Idio\_vol}}$	-6.212**	-9.339	-7.584**	-9.937	-9.547***	-19.402***	-7.650	-30.283*				
	(-2.033)	(-0.962)	(-1.990)	(-0.950)	(-3.330)	(-2.634)	(-0.982)	(-1.803)				
Diversified Ins. Own.$_{\text{Inv\_sync}}$									-9.251	-9.844	-17.625***	-27.510*
									(-0.950)	(-0.925)	(-2.577)	(-1.938)
Rank	-0.002***	-0.001	-0.003**	-0.002	-0.002**	0.002	-0.004	0.002	-0.000	-0.002	0.002	0.003
	(-3.314)	(-0.218)	(-2.494)	(-0.725)	(-2.553)	(0.628)	(-1.530)	(0.262)	(-0.140)	(-0.622)	(0.690)	(0.316)
Ru2000 × Rank	0.002**	0.002	0.003	0.003	0.003*	0.001	0.003	0.006	0.002	0.003	0.000	0.005
	(2.078)	(0.608)	(1.421)	(1.315)	(1.802)	(0.314)	(1.132)	(0.536)	(0.545)	(1.312)	(0.148)	(0.445)
Float Adjustment	0.003***	0.004	0.003***	0.004	0.004***	0.007**	0.004	0.011*	0.004	0.004	0.007**	0.011*
	(4.134)	(1.558)	(2.739)	(1.632)	(2.600)	(2.459)	(1.386)	(1.703)	(1.510)	(1.546)	(2.437)	(1.837)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,498	1,826	4,498	1,826	4,803	1,925	4,803	1,925	1,826	1,826	1,925	1,925

Table 8
Continued

Panel B: Financial crises

	Crisis Period				Non-crisis Period				Crisis Period		Non-crisis Period	
	±500	±200	±500	±200	±500	±200	±500	±200	±200			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Second-stage:	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF		Corp. Div. Q	Corp. Div. CF	Corp. Div. Q	Corp. Div. CF
Diversified Ins. Own.$_{\text{Idio\_vol}}$	-5.532	-10.661	-7.915***	-7.288	-8.880***	-15.951**	-7.625	-25.196*				
	(-1.345)	(-0.716)	(-6.077)	(-0.455)	(-3.313)	(-2.314)	(-1.167)	(-1.891)				
Diversified Ins. Own.$_{\text{Inv\_sync}}$									-10.729	-7.334	-14.718**	-23.249*
									(-0.699)	(-0.447)	(-2.246)	(-1.932)
Rank	-0.001**	0.002	-0.003**	-0.003	-0.003***	0.000	-0.003*	0.001	0.003	-0.003	0.000	0.001
	(-2.421)	(0.447)	(-2.460)	(-0.901)	(-4.079)	(0.049)	(-1.814)	(0.148)	(0.451)	(-0.530)	(0.158)	(0.218)
Ru2000 × Rank	0.001	-0.003	0.005	0.001	0.003**	0.003	0.003	0.006	-0.004	0.001	0.003	0.006
	(1.087)	(-0.452)	(1.641)	(0.631)	(2.520)	(1.227)	(1.169)	(0.889)	(-0.512)	(0.281)	(1.056)	(0.781)
Float Adjustment	0.003***	0.005	0.004***	0.004	0.003***	0.006**	0.003	0.009*	0.005	0.004	0.006**	0.009**
	(3.020)	(1.189)	(5.160)	(0.948)	(3.061)	(2.538)	(1.539)	(1.925)	(1.110)	(0.808)	(2.504)	(2.008)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,261	907	2,261	907	7,040	2,844	7,040	2,844	907	907	2,844	2,844

Table 9

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
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Second-stage:	M&A		M&A FF 48		M&A FF 12		M&A		M&A FF 48		M&A FF 12	
Diversified Ins. Own.$_{\text{Idio\_vol}}$	1.199*	2.440**	-1.024	-2.026*	-1.596**	-2.983***						
	(1.838)	(2.504)	(-1.401)	(-1.835)	(-2.563)	(-3.247)						
Diversified Ins. Own.$_{\text{Inv\_sync}}$							1.157*	2.343**	-0.990	-1.943*	-1.535**	-2.854***
							(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 Adjustment	-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 10
Diversified Institutional Ownership and Divestitures

This table presents an instrumental variable probit estimation of propensity to report in reduced number of segments (Panel A) and propensities to engage in divestitures according to the industry of the subsidiary selling the asset (Panel B) 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. In Panel A, the dependent variable is an indicator for whether the number of segments the firm reports its results is lower than the previous year or otherwise. In Panel B, the dependent variables include indicators for whether a firm engages in any type of asset sales captured in the SDC database with non-missing transaction value (*Divestiture (indicator)*), whether the firm engages in any type of asset sales captured in the SDC database in which the subsidiary that is selling the asset operates in a primary Fama-French 48 industry that is different from the parent company's Fama-French 48 industry (*Divestiture FF 48 (indicator*)), and whether the firm engages in any type of asset sales captured in the SDC database in which the subsidiary that is selling the asset operates in a primary Fama-French 12 industry that is different from the parent company's Fama-French 12 industry (*Divestiture 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)–(2) in Panel A and columns (1)–(6) in Panel B) and inverse return synchronicity or Inv_sync (columns (3)–(4) in Panel A and columns (7)–(12) in Panel B). 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 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.

Panel A: Propensity to reduce reporting segments

	±500 firms	±200 firms	±500 firms	±200 firms
	(1)	(2)	(3)	(4)
Second-stage:	Reduction in reported segments (indicator)			
Diversified Ins. $\text{Own.}_{\text{Idio\_vol}}$	2.141*	4.084***		
	(1.835)	(2.993)		
Diversified Ins. $\text{Own.}_{\text{Idio\_vol}}$			2.012*	3.718***
			(1.825)	(2.856)
Rank	-0.000	-0.001	-0.000	-0.001
	(-1.011)	(-1.278)	(-1.218)	(-1.292)
Ru2000 × Rank	0.000	-0.000	0.000	-0.000
	(0.763)	(-0.188)	(0.858)	(-0.127)
Float Adjustment	-0.001*	-0.001***	-0.001*	-0.001***
	(-1.684)	(-3.256)	(-1.676)	(-3.100)
Year fixed effects	Yes	Yes	Yes	Yes
Observations	8,292	3,338	8,292	3,338

Table 10
Continued

Panel B: Propensity to engage in asset sales

	±500	±200	±500	±200	±500	±200	±500	±200	±500	±200	±500	±200
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Second-stage:	Divestitures		Divestitures FF 48		Divestitures FF 12		Divestitures		Divestitures FF 48		Divestitures FF 12	
Diversified Ins. Own.Idio_vol	1.413	3.981***	1.917*	4.557***	2.708**	5.307***						
	(1.453)	(4.057)	(1.814)	(6.421)	(2.564)	(13.004)						
Diversified Ins. Own.Inv_sync							1.352	3.739***	1.829*	4.271***	2.569***	4.952***
							(1.468)	(4.122)	(1.839)	(6.497)	(2.606)	(12.993)
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***
	(-1.800)	(-1.254)	(-0.697)	(-1.679)	(-0.763)	(-2.447)	(-2.008)	(-1.365)	(-0.894)	(-1.820)	(-1.005)	(-2.637)
Ru2000 × Rank	0.000	-0.001	-0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	-0.000	0.000	0.000
	(0.760)	(-0.510)	(-0.235)	(-0.304)	(0.048)	(0.188)	(0.834)	(-0.416)	(-0.158)	(-0.210)	(0.141)	(0.325)
Float Adjustment	0.000	-0.001***	-0.000	-0.001***	-0.000	-0.002***	0.000	-0.001***	-0.000	-0.001***	-0.000	-0.002***
	(0.093)	(-2.765)	(-0.374)	(-4.648)	(-0.912)	(-6.395)	(0.113)	(-2.794)	(-0.353)	(-4.701)	(-0.896)	(-6.351)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	9,293	3,747	9,293	3,747	9,293	3,747	9,293	3,747	9,293	3,747	9,293	3,747

Table 11

Diversified Institutional Ownership and Idiosyncratic Risk

This table presents an instrumental variable estimation of measures of idiosyncratic risk 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. *Idiosyncratic risk* is measured as the standard deviation of the residuals obtained from regressing monthly stock returns on Fama-French three factor model for a rolling past five-year window. *Excess idiosyncratic risk* is measured as the standard deviation of the residuals obtained from regressing a firm's excess return, measured as the difference between its monthly stock returns and the sales-weighted monthly imputed returns of its segments (Armstrong and Vashishtha, 2012) on Fama-French three factor model for a rolling past five-year window. 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 U*nder-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)–(4)) and inverse return synchronicity or Inv_sync (columns (5)–(8)). 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 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 firms	±200 firms	±500 firms	±200 firms	±500 firms	±200 firms	±500 firms	±200 firms
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Second-stage:	Idiosyncratic risk		Excess idiosyncratic risk		Idiosyncratic risk		Excess idiosyncratic risk	
Diversified Ins. $Own._{Idio\_vol}$	0.016	0.167***	-0.001	0.143***				
	(0.444)	(5.312)	(-0.047)	(5.141)				
Diversified Ins. $Own._{Inv\_sync}$					0.015	0.155***	-0.001	0.132***
					(0.443)	(4.264)	(-0.047)	(3.847)
Rank	0.000***	-0.000	0.000***	-0.000	0.000***	-0.000	0.000***	-0.000
	(3.762)	(-1.145)	(4.056)	(-0.828)	(3.799)	(-1.127)	(4.165)	(-0.802)
Ru2000 × Rank	0.000	0.000	-0.000	0.000	0.000	0.000	-0.000	0.000
	(0.018)	(0.640)	(-0.180)	(0.274)	(0.026)	(0.637)	(-0.182)	(0.266)
Float Adjustment	-0.000	-0.000***	-0.000	-0.000***	-0.000	-0.000***	-0.000	-0.000***
	(-1.325)	(-4.587)	(-0.937)	(-4.440)	(-1.301)	(-3.985)	(-0.912)	(-3.766)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,943	1,605	3,943	1,605	3,943	1,605	3,943	1,605

Table 12

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
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Second-stage:	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	
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 Adjustment	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

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.*

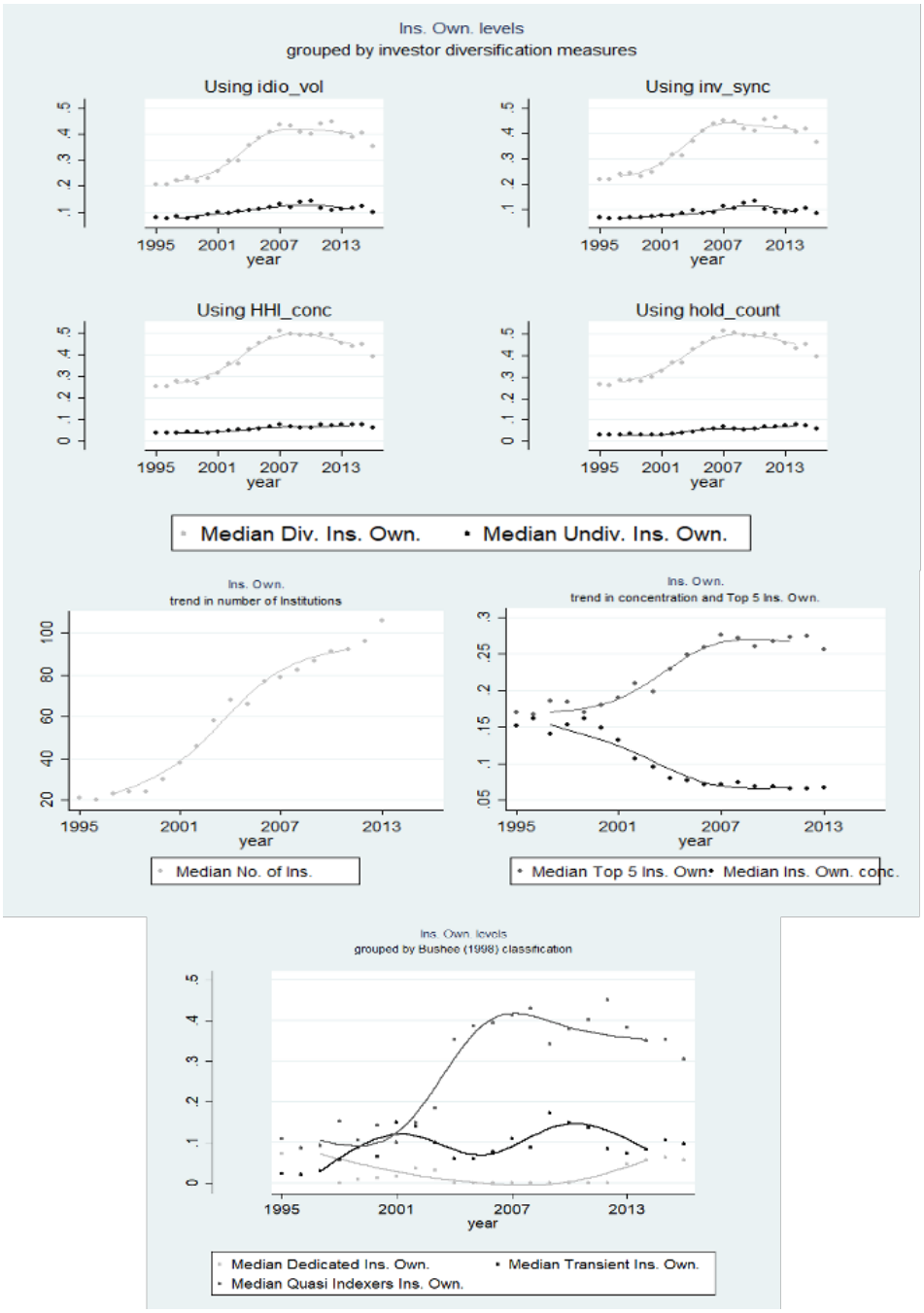
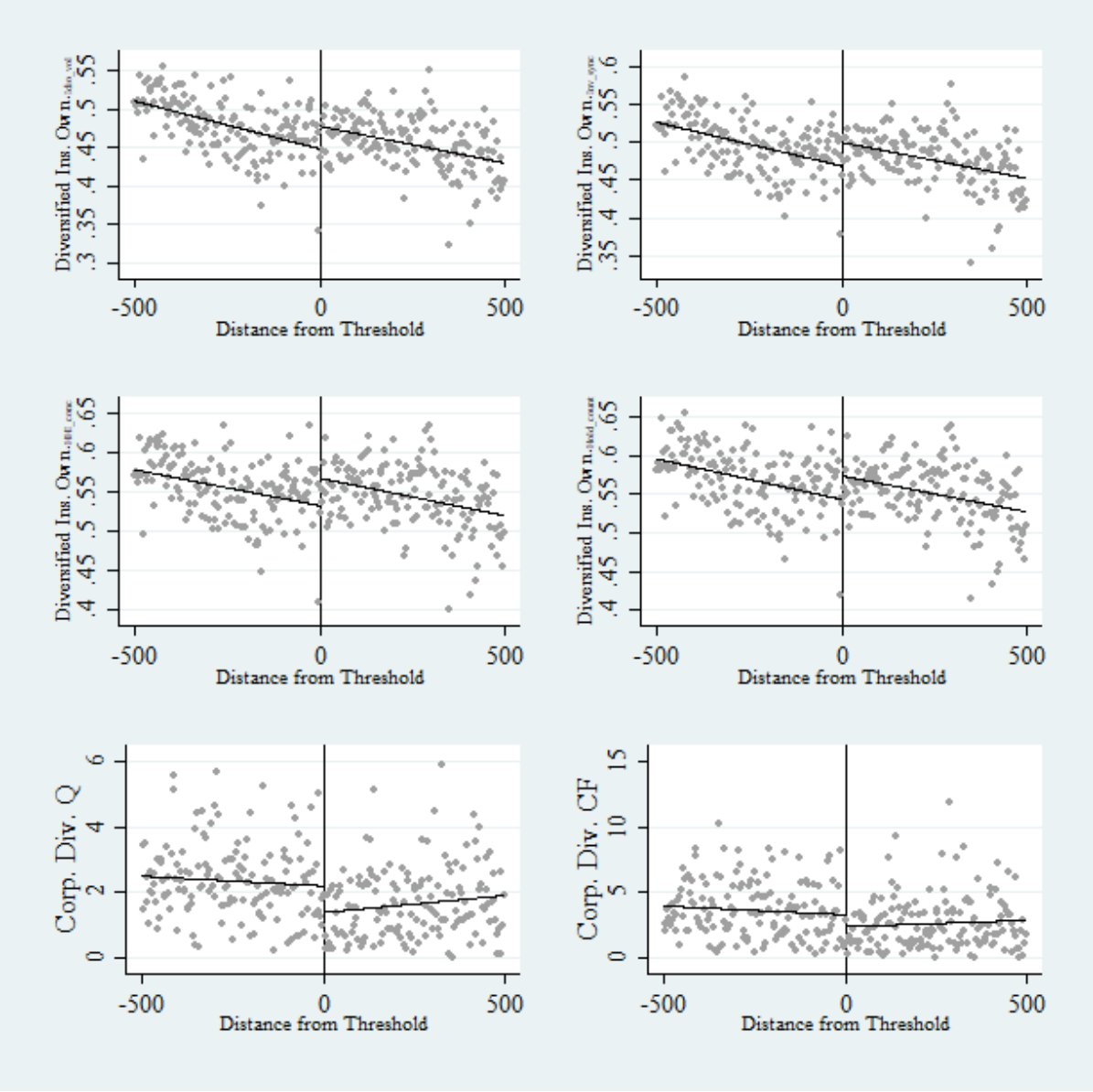


Figure 3

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.



Online Appendix for "The Effect of Institutional Investor Portfolio Diversification on Corporate Diversification"

This appendix presents tables for additional analyses that are discussed but not reported in the paper. Section 1 presents the persistence of diversified ownership measures used in the main manuscript and the correlation between these and those common in prior studies. Section 2 examines the role of common ownership in this study. Section 3 presents the graph for regression discontinuity of corporate diversification around the Russell index, focusing on multisegment firms. Section 4 presents the results for multiple robustness tests for the Russell identification strategy. Section 5 presents other robustness tests, including alternative measures of investor diversification and variation in results according to a firm's information environment and institutional characteristics.

Specifically, the appendix includes:

- Table A. 1: Persistence of Institutional Ownership classified by Diversification Based Measures and Bushee Classification
- Table A. 2: Pairwise Correlations between Firm Level Measures of Institutional Ownership
- Table A. 3: Diversified Institutional Ownership and Common Ownership
- Table A. 4: Robustness of Russell Method to Alternate Specification
- Table A. 5: Robustness to Inclusion of Corporate Diversification Controls
- Table A. 6: Robustness to Data-Driven Bandwidth Specifications
- Table A. 7: Extending Sample Period Accounting for Russell Banding Policy
- Table A. 8: Alternative Definitions of Diversified Ownership
- Table A. 9: Role of Information Environment
- Table A. 10: Effect of Institutional Characteristics
- Figure A. 1: Robustness to Multisegment Firms for Discontinuity around Russell 1000/2000

1 Persistence of Diversified Ownership & Correlation With Other Institutional Ownership Measures

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 A and B of Table A. 1, 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 A 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 B of Table A. 1 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.

[Insert Table A. 1 about here]

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 A. 1 suggest that there is high preference persistence in our portfolio diversification-based measures of institutional ownership, indicating that they could have significant implications for corporate policies.

In Table A. 2, we present the correlations between the key measures of institutional ownership at the firm level. We find that both the measures of diversified and under-diversified institutional ownership based on the four portfolio diversification measures of institutions are highly correlated with the Bushee classification categories, suggesting that aggregate institutional ownership might drive these correlations. We also present correlations of our measures based on other standard firm-level measures of institutional ownership, such as the number of institutions, institutional concentration, and top 5 holdings, all of which show the heterogeneity in overall firm-level institutional ownership. Again, we find that both diversified and under-diversified groupings are correlated in the same direction with these measures. For example, a high fraction of ownership by the top 5 institutions is positively correlated with both diversified and undiversified institutional ownership.

Thus, our institutional ownership measures based on portfolio diversification are related to these firm-level measures through the level of aggregate institutional ownership, but not in any other systematic manner.

[Insert Table A. 2 about here]

2 Common Ownership

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. 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, Ederer, Gine, and Schmalz, 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 could be driven by common ownership.

Using measures of common ownership based on Gilje, Gormley, and Levit (2020), we conduct two types of analyses.[1] 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 A. 3 about here]

We present the findings in Table A. 3. Using the same specification as in our earlier tests, we 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 $\pm$500 and $\pm$200 firms around index thresholds. Results are similar when using *Diversified Ins. Own.*$_{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.

[1] Gilje et al. (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.

Also, accounting for transaction costs, cost-effective diversification strategies will involve stock picking within industries instead of buying all firms in an industry.[2]

In Panel B of Table A. 3, we examine the variation in our baseline findings in the main manuscript 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.

3 Additional Results for Multisegment Firms

To examine whether the discontinuities in corporate diversification observed in the paper are primarily due to firms switching to a single segment or whether the discontinuities remain even among multisegment firms, we consider graphical evidence of the discontinuity in corporate diversification in the subsample of multisegment firms around the Russell 1000/2000 index thresholds. In Appendix Figure A. 1, we plot the mean corporate diversification measures around the Russell index thresholds, 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 financial information in more than one industry segment defined according to the 2-digit Standard Industrial Classification code). The discontinuity still remains to be observable.

[Insert Figure A. 1 about here]

4 Robustness Tests for Russell 1000/2000 Setting

Recent studies raise concerns about the suitability of Russell index reconstitutions as a suitable 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. Though index inclusion in the Russell

[2]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.

indices is based on total market capitalization rankings at the end of the calendar month May every year, the index weights assigned to each firm in June upon inclusion is based on the float-adjusted market capitalization of the firm. This weighting scheme suggests that firms with greater insider holdings (and hence lower institutional ownership) receive lower index weights. Thus, comparing firms around the index thresholds suggests that we are technically comparing firms with lower institutional ownership in the Russell 1000 against firms with higher institutional ownership in the Russell 2000, thereby violating the assumption of exogeneity in institutional ownership. 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 as in Crane, Michenaud, and Weston (2016), that is not subject to such adjustments. However, it could still lead to a mechanical difference in the market capitalization used in the estimation. To address such an issue, we follow the remedial approach prescribed by Appel et al. (2020) as executed in Appel, Gormley, and Keim (2016). Specifically, we instrument diversified institutional ownership on an indicator for inclusion in the Russell 2000 index, a polynomial of the logarithm of end of May market capitalization, and the float adjustment measure (see Eq. 1). Using the instrumented variable, then we estimate a second stage regression as specified in Eq. 2.

$$Div.\,Ins.\,Own._{i,t} = \alpha_t + \tau\, Ru2000_{i,t} + \sum_{n=1}^{N} \gamma_n\, Ln(Mktcap_{i,t})^n + \delta_1\, Float\,adjustment_{i,t} + Year_t + \epsilon_{i,t} \tag{1}$$

$$Corp.\,Div._{i,t} = \theta_t + \beta\, Div.\,Ins.\,Own._{i,t} + \sum_{n=1}^{N} \rho_n\, Ln(Mktcap_{i,t})^n + \sigma_1\, Float\,adjustment_{i,t} + Year_t + \eta_{i,t} \tag{2}$$

We estimate Eq. 1 and 2 using a polynomial of order 3 and a bandwidth of ±250 firms as employed in Appel et al. (2016), and report the findings in Table A. 4. Panel A consists of the entire sample, and Panel B includes a subsample of multisegment firms. In both the samples, we find that *Corp. Div. Q* is negatively and significantly associated with diversified institutional ownership. *Corp. Div. CF* is also negatively associated with diversified ownership, but the coefficients on *Diversified Ins. Own.* lose significance among a subsample of multisegment firms in Panel B. Overall, these findings are consistent with those in Table 6 in the main manuscript and demonstrate the robustness of our findings and also help overcome a key criticism of the Russell approach.

[Insert Table A. 4 about here]

In our main regressions, we avoided including baseline covariates for corporate diversification that may also be affected by Russell index reconstitutions. Lee and Lemieux (2010) suggest that it is not necessary to include baseline covariates to obtain consistent estimates of treatment effects in a regression discontinuity design (RDD) framework if assignment to treatment is independent of those covariates. Although we have no reason to believe the standard determinants of corporate

diversification influence Russell index membership, we include controls in our estimation and find that they do not alter our main results. Specifically, we perform our baseline regressions, including these additional control variables, and report the results in Appendix Table A. 5. Following Matvos, Seru, and Silva (2018), we include control variables for firm size, profitability, Tobin's q, and book leverage. Our results do not change.

[Insert Table A. 5 about here]

Second, we also consider the robustness of our findings to the choice of RDD bandwidths. Given the trade-off between sample size and comparability of firms around the thresholds, we conduct our main RDD analysis in the paper using a bandwidth of ± 500 and ± 200 firms around Russell 1000/2000 index thresholds. Finding similar results in both a small and a large bandwidth mitigates the concern that bandwidth choices may create some biases (Angrist and Pischke, 2008; Atanasov and Black, 2016). To further overcome any remaining concerns, we use an alternative nonparametric estimation approach to identify optimal bandwidths and conduct robustness tests in our setting (Lee and Lemieux, 2010). Table A. 6 displays the results based on two algorithms to select optimal bandwidths in our sample, including a mean squared error approach (MSE) and a coverage error rate (CER) approach (Imbens and Kalyanaraman, 2012; Calonico, Cattaneo, and Farrell, 2018). We implement these algorithms on the discontinuities in our first stage dependent variable, i.e., different measures of diversified institutional ownership to find out the appropriate optimal bandwidth and use them to conduct the instrumental variable regressions. Although the sample size is reduced in our estimations in Table A. 6 considerably, we still find that our main results are robust to the choice of data-driven RDD bandwidth choice approaches.

[Insert Table A. 6 about here]

Table A. 7 displays the robustness test results for extending our sample period beyond 2006. Starting from June of 2007, Russell instituted a change in its methodology to minimize portfolio turnover for institutions benchmarked to their indices. Specifically, stock's index assignment is determined based on not only stock's market capitalization in the end of May but also stock's index assignment in the previous reconstitution year as well as whether the stock's market capitalization falls within a certain range (i.e., 2.5% of the cumulative market capitalization of the Russell 3000 Index) between 1000^{th} and 1001^{st} firms. Such a banding policy introduces significant concerns on the validity of Russell index-based natural experiments after the assignment rule change in 2006 (Ben-David, Franzoni, and Moussawi, 2018; Appel, Gormley, and Keim, 2019). To minimize the concern from the implementation of the banding policy in 2007, in our main analysis, we focus on the pre-2007 sample. In this online appendix, for robustness, we modify our index assignment to incorporate the banding for the post-2007 sample. Specifically, following the Appel et al. (2020), we modify our RDD specification as below by adding three indicator variables and their interactions.

[Insert Table A. 7 about here]

$$
\begin{aligned}
Div.\,Ins.\,Own._{i,t} = {} & \alpha_t + \tau\, Ru2000_{i,t} + \delta_1\, Rank_{i,t} + \delta_2\, Ru2000_{i,t} \times Rank_{i,t} + \delta_3\, Float\,adjustment_{i,t} \\
& + \delta_4\, Banding_{i,t} \times Ru2000_{i,t-1} \times After2006_t + \delta_5\, Banding_{i,t} \times Ru2000_{i,t-1} \\
& + \delta_6\, Banding_{i,t} \times After2006_t + \delta_7\, Ru2000_{i,t-1} \times After2006_t \\
& + \delta_8\, Banding_{i,t} \times After2006_t + Year_t + \epsilon_{i,t}
\end{aligned}
\tag{3}
$$

$$
\begin{aligned}
Corp.\,Div._{i,t} = {} & \theta_t + \beta\, Div.\,Ins.\,Own._{i,t} + \gamma_1\, Rank_{i,t} + \gamma_2\, Ru2000_{i,t} \times Rank_{i,t} + \gamma_3\, Float\,adjustment_{i,t} \\
& + \gamma_4\, Banding_{i,t} \times Ru2000_{i,t-1} \times After2006_t + \gamma_5\, Banding_{i,t} \times Ru2000_{i,t-1} \\
& + \gamma_6\, Banding_{i,t} \times After2006_t + \gamma_7\, Ru2000_{i,t-1} \times After2006_t \\
& + \gamma_8\, Banding_{i,t} \times After2006_t + Year_t + \eta i, t
\end{aligned}
\tag{4}
$$

where *Banding* is defined as one for firms that are likely to be banded, i.e., retained in their original index instead of switching as their market capitalization is below the adjusted threshold (or market capitalization implied rank of 800 among all Russell firms) for the Russell 1000 constituent and their market capitalization is above the adjusted threshold (or market capitalization implied rank of 1200 among all Russell firms) for the Russell 2000 constituent, respectively. Thus, *Banding* denotes a firm that gets to be retained in the same index, although its market capitalization suggests that it needs to move to the other index. The second indicator *Lagged Ru2000* is the lagged index membership that takes a value of one if the firm was part of Russell 2000 in the previous year and zero if the firm was part of Russell 1000 in the previous year. The third indicator is an interaction of the first two indicators. Finally, we add one more indicator *After 2006*, defined as an indicator that takes the value of one for calendar years 2007 to 2016 and zero otherwise, and interact it with all three of the above indicators. This allows the effect of the banding policy captured by the first three indicators to be different in the pre- and post-periods of this Russell policy change. We find that our results do not change in Table A. 7.

5 Other Robustness Tests

The tectonic shift to passive investment in financial markets has resulted in the "Big 3" investors increasing ownership proportion of public corporations. Fichtner, Heemskerk, and Garcia-Bernardo (2017) estimate the combined holdings of the three including BlackRock, Vanguard, and State Street, to be the majority shareholder in up to 88% of S&P 500 firms, signifying their undue influence on public corporations and their policies. Such large holdings of the "Big 3" raise a concern in our findings as to whether our results are driven by the three investors or are due to diversified investors in general. If the former is true, then the true effect might result from a

concentration in shareholding among the three, rather than the mechanisms we propose where a marginal diversified investor imposes her preferences. To overcome the concern, we recompute our diversified ownership measures by excluding the ownership of these 3 institutions and examining whether our findings are robust. Following Fichtner et al. (2017), we exclude the "MGRNO" (i.e., the identifiers used in Thomson-Reuters) that have been associated with the three and all of their affiliates, and then apply the same method as in the main manuscript to compute the diversified ownership measures. We report the findings in Panel A of Table A. 8 excluding the big three investors. Our first stage measures remain significant, suggesting that other diversified investors are also equally responsive to the Russell reconstitution. The second stage results remain robust, showing a negative association between corporate diversification measured using *Corp. Div. Q* or *Corp. Div. CF* with instrumented diversified ownership.

[Insert Table A. 8 about here]

We also examine our findings' robustness to using alternative asset pricing models to compute institution-level idiosyncratic volatility and inverse return synchronicity, the inputs that go into classifying an institution as diversified or otherwise. Specifically, we use the Carhart (1997) four-factor model and the Fama and French (2015) five-factor model to compute *Idio_vol* and *Inv_sync*. Based on these new *Idio_vol* and *Inv_sync* measures, we recompute the diversified ownership and perform our analyses. The results using the four-factor and five-factor model are presented in Panels B and C of Table A. 8. We find that our results remain robust to these alternative asset pricing models.

Furthermore, we examine whether our findings are driven by changes in the corporate information environment brought about by the Russell reconstitution and the accompanying changes in institutional ownership (Boone and White, 2015). We choose three proxies for the information environment, including the total number of 8K filings the firm makes, the stock liquidity measured as the negative of the effective spread, and the number of analysts covering the firm. The SEC mandates that firms disclose certain material events, such as matters related to the business operation or corporate governance, within a pre-defined time on Form 8Ks. Thus, the firm's total number of 8K filings provides a proxy for firm transparency.

[Insert Table A. 9 about here]

Finally, we examine whether our findings are sensitive to any institutional characteristics. For example, the growth in the "Big 3" ownership also raises the concern of whether our findings are driven by large institutions that may have more clout with managers. Similarly, fund flows may influence the diversification preferences of institutions and hence drive the documented relationship. Therefore, we use key characteristics of institutions, including institution size (AUM or assets under management), age of the institution, netflows of the institution, and the market timing profits made by the institution, to split the sample of institutions into two groups based on the cross-sectional sample medians of these measures. We then reconstruct two diversified ownership measures, each

based on institutions with above sample median measure of each characteristic and below sample median measures, respectively.

[Insert Table A. 10 about here]

Using these new measures of diversified ownership based on subsamples of institutions, we reestimate our baseline regressions and report the results in Table A. 10 using the size in Panel A, age in Panel B, netflows in Panel C, and market timing profits in Panel D. We find that the results in all the four panels show that institutional characteristics have no effect on our findings with a significant negative effect on corporate diversification observable in both kinds of diversification measures. Furthermore, more specifications based on diversification computed using smaller, younger, lower netflows, and unprofitable market timing institutions are significant at conventional levels of significance than those based on large, older, higher netflows, and profitable market timing institutions, respectively. These findings mitigate the concerns about our results being driven by larger funds, older funds, funds with higher inflows, or funds that frequently trade on information.

References

Angrist, J. D., and J.-S. Pischke. 2008. *Mostly harmless econometrics: An empiricist's companion.* Princeton university press.

Anton, M., F. Ederer, M. Gine, and M. C. Schmalz. 2018. Innovation: The Bright Side of Common Ownership? *Available at SSRN 3099578.*

Appel, I., T. A. Gormley, and D. B. Keim. 2020. Identification using Russell 1000/2000 index assignments: A discussion of methodologies. *Critical Finance Review, Forthcoming* .

Appel, I. R., T. A. Gormley, and D. B. Keim. 2016. Passive investors, not passive owners. *Journal of Financial Economics* 121:111–141.

Appel, I. R., T. A. Gormley, and D. B. Keim. 2019. Standing on the shoulders of giants: The effect of passive investors on activism. *Review of Financial Studies* 32:2720–2774.

Atanasov, V. A., and B. S. Black. 2016. Shock-based causal inference in corporate finance and accounting research. *Critical Finance Review* 5:207–304.

Ben-David, I., F. Franzoni, and R. Moussawi. 2018. Do ETFs increase volatility? *Journal of Finance* 73:2471–2535.

Boone, A. L., and J. T. White. 2015. The effect of institutional ownership on firm transparency and information production. *Journal of Financial Economics* 117:508–533.

Bushee, B. J. 1998. The influence of institutional investors on myopic R&D investment behavior. *The Accounting Review* pp. 305–333.

Calonico, S., M. D. Cattaneo, and M. H. Farrell. 2018. On the effect of bias estimation on coverage accuracy in nonparametric inference. *Journal of the American Statistical Association* 113:767–779.

Carhart, M. M. 1997. On persistence in mutual fund performance. *Journal of Finance* 52:57–82.

Crane, A. D., S. Michenaud, and J. P. Weston. 2016. The effect of institutional ownership on payout policy: Evidence from index thresholds. *Review of Financial Studies* 29:1377–1408.

Fama, E. F., and K. R. French. 2015. A five-factor asset pricing model. *Journal of Financial Economics* 116:1–22.

Fichtner, J., E. M. Heemskerk, and J. Garcia-Bernardo. 2017. Hidden power of the Big Three? Passive index funds, re-concentration of corporate ownership, and new financial risk. *Business and Politics* 19:298–326.

Gilje, E. P., T. A. Gormley, and D. Levit. 2020. Who's paying attention? Measuring common ownership and its impact on managerial incentives. *Journal of Financial Economics* 137:152–178.

Harford, J., D. Jenter, and K. Li. 2011. Institutional cross-holdings and their effect on acquisition decisions. *Journal of Financial Economics* 99:27–39.

He, J. J., and J. Huang. 2017. Product market competition in a world of cross-ownership: Evidence from institutional blockholdings. *Review of Financial Studies* 30:2674–2718.

Imbens, G., and K. Kalyanaraman. 2012. Optimal bandwidth choice for the regression discontinuity estimator. *Review of Economic Studies* 79:933–959.

Lee, C. M., and M. J. Ready. 1991. Inferring trade direction from intraday data. *Journal of Finance* 46:733–746.

Lee, D. S., and T. Lemieux. 2010. Regression discontinuity designs in economics. *Journal of Economic Literature* 48:281–355.

Lewellen, K., and M. Lowry. 2020. Does common ownership really increase firm coordination? *Tuck School of Business Working Paper.*

Matvos, G., A. Seru, and R. C. Silva. 2018. Financial market frictions and diversification. *Journal of Financial Economics* 127:21–50.

Schmalz, M. C., J. Azar, and I. Tecu. 2018. Anticompetitive effects of common ownership. *Journal of Finance* 73:1513–1565.

Online Appendix Table 1

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

This table examines the persistence of institutional ownership according to their classification based on measures of portfolio diversification and Bushee (1998) classification. The sample consists of 206,138 institutional-quarter observations during the period between 1995 and 2016, further restricted to the final calendar quarter alone. The institutions are classified into diversified and under-diversified based on the annual sample median of idiosyncratic volatility or *Idio_vol*, inverse return synchronicity or *Inv_sync*, Herfindahl index of portfolio concentration or *HHI_conc*, and the number of holdings or *Hold_count*. 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 A 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 B, 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 of the main manuscript. In Panel B, ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Panel A: Persistence of individual institutional ownership classification

	Idio_vol	Inv_sync	HHI_conc	Hold_count	Dedicated Ins. Own.	Quasi Indexers Ins. Own.	Transient Ins. Own.
	% of Institutions having same classification in subsequent year						
Diversified Ins. Own.	77.60%	73.50%	82.30%	84.80%			
Under-diversified Ins. Own.	73.50%	67.10%	77.50%	80.10%			
Bushee (1998) Groups					64.70%	78.00%	68.20%

Panel B: 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$_{t\text{-}5 \text{ to } t\text{-}1}$			0.693***									
			(15.200)									
Mean Inv_sync$_{t\text{-}5 \text{ to } t\text{-}1}$						0.824***						
						(94.804)						
Mean HHI_conc$_{t\text{-}5 \text{ to } t\text{-}1}$									0.950***			
									(61.098)			
Mean Hold_count$_{t\text{-}5 \text{ to } t\text{-}1}$												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

Online Appendix Table 2

Pairwise Correlations between Firm Level Measures of Institutional Ownership

This table provides pairwise correlations between various types of firm level institutional ownership measures. 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. The variables presented along with their labels include: (1): *Diversified Ins. Own.*$_{Idio\_vol}$, (2): *Diversified Ins. Own.*$_{Inv\_sync}$, (3): *Diversified Ins. Own.*$_{HHI\_conc}$, (4): *Diversified Ins. Own.*$_{Hold\_conc}$, (5): *Under-diversified Ins. Own.*$_{Idio\_vol}$, (6): *Under-diversified Ins. Own.*$_{Inv\_sync}$, (7): *Under-diversified Ins. Own.*$_{HHI\_conc}$, (8): *Under-diversified Ins. Own.*$_{Hold\_conc}$, (9): *Dedicated Ins. Own.*, (10): *Quasi Indexer Ins. Own.*, (11): *Transient Ins. Own.*, (12): *Ins. Own. Concentration*, (13): *Number of institutions*, and (14): *Top 5 Ins. Own.* α, β, and γ denote significance at the 1%, 5%, and 10% levels, respectively.

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1)	1.000													
(2)	0.984$^{\alpha}$	1.000												
(3)	0.967$^{\alpha}$	0.974$^{\alpha}$	1.000											
(4)	0.964$^{\alpha}$	0.971$^{\alpha}$	0.988$^{\alpha}$	1.000										
(5)	0.353$^{\alpha}$	0.418$^{\alpha}$	0.491$^{\alpha}$	0.505$^{\alpha}$	1.000									
(6)	0.356$^{\alpha}$	0.345$^{\alpha}$	0.452$^{\alpha}$	0.467$^{\alpha}$	0.889$^{\alpha}$	1.000								
(7)	0.235$^{\alpha}$	0.248$^{\alpha}$	0.227$^{\alpha}$	0.268$^{\alpha}$	0.682$^{\alpha}$	0.704$^{\alpha}$	1.000							
(8)	0.253$^{\alpha}$	0.270$^{\alpha}$	0.266$^{\alpha}$	0.242$^{\alpha}$	0.682$^{\alpha}$	0.693$^{\alpha}$	0.821$^{\alpha}$	1.000						
(9)	0.169$^{\alpha}$	0.188$^{\alpha}$	0.207$^{\alpha}$	0.217$^{\alpha}$	0.379$^{\alpha}$	0.351$^{\alpha}$	0.281$^{\alpha}$	0.286$^{\alpha}$	1.000					
(10)	0.902$^{\alpha}$	0.891$^{\alpha}$	0.884$^{\alpha}$	0.882$^{\alpha}$	0.404$^{\alpha}$	0.408$^{\alpha}$	0.296$^{\alpha}$	0.317$^{\alpha}$	-0.0280$^{\alpha}$	1.000				
(11)	0.594$^{\alpha}$	0.625$^{\alpha}$	0.662$^{\alpha}$	0.667$^{\alpha}$	0.562$^{\alpha}$	0.489$^{\alpha}$	0.311$^{\alpha}$	0.296$^{\alpha}$	0.110$^{\alpha}$	0.381$^{\alpha}$	1.000			
(12)	-0.614$^{\alpha}$	-0.619$^{\alpha}$	-0.629$^{\alpha}$	-0.626$^{\alpha}$	-0.347$^{\alpha}$	-0.327$^{\alpha}$	-0.230$^{\alpha}$	-0.228$^{\alpha}$	-0.136$^{\alpha}$	-0.552$^{\alpha}$	-0.459$^{\alpha}$	1.000		
(13)	0.589$^{\alpha}$	0.567$^{\alpha}$	0.549$^{\alpha}$	0.552$^{\alpha}$	0.146$^{\alpha}$	0.182$^{\alpha}$	0.142$^{\alpha}$	0.134$^{\alpha}$	0.0763$^{\alpha}$	0.542$^{\alpha}$	0.293$^{\alpha}$	-0.435$^{\alpha}$	1.000	
(14)	0.679$^{\alpha}$	0.697$^{\alpha}$	0.712$^{\alpha}$	0.725$^{\alpha}$	0.646$^{\alpha}$	0.609$^{\alpha}$	0.503$^{\alpha}$	0.515$^{\alpha}$	0.419$^{\alpha}$	0.650$^{\alpha}$	0.484$^{\alpha}$	-0.445$^{\alpha}$	0.214$^{\alpha}$	1.000

Online Appendix Table 3

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 et al. (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	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Second-stage:	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
Diversified Ins. Own.$_{Idio\_vol}$	-8.375	-6.080	2.583	11.131				
	(-0.376)	(-0.174)	(0.226)	(1.584)				
Diversified Ins. Own.$_{Inv\_sync}$					-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

Online Appendix Table 3
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	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Second-stage:	Corp. Div. Q							
Diversified Ins. Own.$_{\text{Idio\_vol}}$	-12.839**	-18.378	-13.508	-27.816**	-14.224**	-37.483	-30.020	-17.364
	(-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.$_{\text{Inv\_sync}}$							
	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	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Second-stage:	Corp. Div. Q							
Diversified Ins. Own.$_{\text{Inv\_sync}}$	-11.822**	-15.843*	-12.518	-15.512*	-13.474**	-33.122	-24.830	-21.746
	(-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

Online Appendix Table 4

Robustness of Russell Method to Alternate Specification

This table presents an instrumental variable estimation of corporate diversification on measures of diversified institutional ownership, following the identification technique proposed by Appel et al. (2020), using a sample of firms near the Russell 1000/2000 index inclusion thresholds during the period between 1995 and 2006. In the first stage, 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. Controls used in the estimation include a polynomial of order three of CRSP market capitalization at the end of month May and the float Adjustment factor. The sample is restricted to firms within a bandwidth of ± 250 firms 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) and (5)), inverse return synchronicity or Inv_sync (columns (2) and (6)), Herfindahl index of portfolio concentration or HHI_conc (columns (3) and (7)), and the number of holdings or $Hold\_count$ (columns (4) and (8)). 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 B 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- and second-stages for the control variables and constants 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: Full sample

	Diversified Ins. Own.$_{\text{Idio\_vol}}$	Diversified Ins. Own.$_{\text{Inv\_sync}}$	Diversified Ins. Own.$_{\text{HHI\_conc}}$	Diversified Ins. Own.$_{\text{Hold\_count}}$	Diversified Ins. Own.$_{\text{Idio\_vol}}$	Diversified Ins. Own.$_{\text{Inv\_sync}}$	Diversified Ins. Own.$_{\text{HHI\_conc}}$	Diversified Ins. Own.$_{\text{Hold\_count}}$
	± 250 firms							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
First stage:								
τ	0.247***	0.256***	0.287***	0.266***	0.247***	0.256***	0.287***	0.266***
	(8.209)	(8.143)	(8.499)	(7.963)	(8.209)	(8.143)	(8.499)	(7.963)
Second-stage:	Corp. Div. Q				Corp. Div. CF			
Diversified Ins. Own.$_{\text{Idio\_vol}}$	-2.737***				-3.147*			
	(-2.817)				(-1.912)			
Diversified Ins. Own.$_{\text{Inv\_sync}}$		-2.628***				-3.022**		
		(-2.798)				(-1.998)		
Diversified Ins. Own.$_{\text{HHI\_conc}}$			-2.355***				-2.707**	
			(-3.062)				(-2.154)	
Diversified Ins. Own.$_{\text{Hold\_count}}$				-2.532***				-2.912**
				(-2.861)				(-2.060)
Polynomial order, N	3	3	3	3	3	3	3	3
Float Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4668	4668	4668	4668	4668	4668	4668	4668

Online Appendix Table 4
Continued

Panel B: Subsample of multisegment firms

	Diversified Ins. Own.$_{\text{Idio\_vol}}$	Diversified Ins. Own.$_{\text{Inv\_sync}}$	Diversified Ins. Own.$_{\text{HHI\_conc}}$	Diversified Ins. Own.$_{\text{Hold\_count}}$	Diversified Ins. Own.$_{\text{Idio\_vol}}$	Diversified Ins. Own.$_{\text{Inv\_sync}}$	Diversified Ins. Own.$_{\text{HHI\_conc}}$	Diversified Ins. Own.$_{\text{Hold\_count}}$
	± 250 firms							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
First stage:								
τ	0.362***	0.364***	0.372***	0.352***	0.362***	0.364***	0.372***	0.352***
	(4.745)	(4.929)	(4.799)	(4.711)	(4.745)	(4.929)	(4.799)	(4.711)
Second-stage:	Corp. Div. Q				Corp. Div. CF			
Diversified Ins. Own.$_{\text{Idio\_vol}}$	-7.369***				-5.437			
	(-2.305)				(-0.816)			
Diversified Ins. Own.$_{\text{Inv\_sync}}$		-7.312***				-5.395		
		(-2.318)				(-0.814)		
Diversified Ins. Own.$_{\text{HHI\_conc}}$			-7.346***				-5.420	
			(-2.276)				(-0.790)	
Diversified Ins. Own.$_{\text{Hold\_count}}$				-7.683***				-5.668
				(-2.411)				(-0.826)
Polynomial order, N	3	3	3	3	3	3	3	3
Float Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	788	788	788	788	788	788	788	788

Online Appendix Table 5

Robustness to Inclusion of Corporate Diversification Controls

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.* is 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)–(4) and columns (9)–(10)) and inverse return synchronicity or *Inv_sync* (columns (5)–(8) and columns (11)–(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 regressions in columns (9)–(12) 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 control variables and the constants 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.

								Subsample of multisegment firms			
	Diversified Ins. Own.$_{\text{Idio\_vol}}$				Diversified Ins. Own.$_{\text{Inv\_sync}}$				Diversified Ins. Own.$_{\text{Idio\_vol}}$		Diversified Ins. Own.$_{\text{Inv\_sync}}$	
	± 500	± 200	± 500	± 200	± 500	± 200	± 500	± 200	± 500	± 200	± 500	± 200
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
First stage:												
τ	0.084***	0.073***	0.084***	0.073***	0.088***	0.079***	0.088***	0.079***	0.098***	0.076***	0.099***	0.079***
	(12.232)	(6.326)	(12.232)	(6.326)	(12.035)	(6.268)	(12.035)	(6.268)	(6.179)	(2.629)	(6.018)	(2.697)
Second-stage:	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF		Corp. Div. Q			
Diversified Ins. Own.$_{\text{Idio\_vol}}$	-6.996**	-14.385**	-6.056	-19.432**					-31.928**	-56.794*		
	(-2.360)	(-2.560)	(-1.105)	(-2.050)					(-2.489)	(-1.897)		
Diversified Ins. Own.$_{\text{Inv\_sync}}$					-6.669**	-13.222**	-5.774	-17.862**			-31.283**	-53.925**
					(-2.353)	(-2.396)	(-1.119)	(-2.032)			(-2.385)	(-2.079)
Rank	-0.003***	0.001	-0.004**	0.000	-0.003***	0.001	-0.004**	0.000	-0.008***	0.024	-0.008***	0.026*
	(-3.587)	(0.474)	(-2.336)	(0.029)	(-3.501)	(0.434)	(-2.296)	(0.024)	(-3.019)	(1.508)	(-3.000)	(1.701)
Ru2000×Rank	0.003***	0.001	0.003	0.003	0.002***	0.000	0.003	0.003	0.007**	-0.027	0.007**	-0.030
	(2.819)	(0.181)	(1.604)	(0.425)	(2.672)	(0.118)	(1.562)	(0.371)	(2.281)	(-1.145)	(2.400)	(-1.305)
Float Adjustment	0.003***	0.006***	0.003*	0.008**	0.003***	0.006***	0.003*	0.007**	0.012***	0.021*	0.011***	0.021**
	(2.795)	(2.980)	(1.677)	(2.278)	(2.802)	(2.760)	(1.702)	(2.273)	(2.739)	(1.848)	(2.672)	(1.983)

Online Appendix Table 5
Continued

									Subsample of multisegment firms			
	Diversified Ins. Own.$_{\text{Idio\_vol}}$				Diversified Ins. Own.$_{\text{Inv\_sync}}$				Diversified Ins. Own.$_{\text{Idio\_vol}}$		Diversified Ins. Own.$_{\text{Inv\_sync}}$	
	± 500	± 200	± 500	± 200	± 500	± 200	± 500	± 200	± 500	± 200	± 500	± 200
	(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			
Firm size	-0.678	-0.690	-1.177*	-1.366*	-0.713	-0.737	-1.208**	-1.430*	-1.952**	-1.031	-2.092**	-1.025
	(-1.493)	(-1.211)	(-1.945)	(-1.820)	(-1.570)	(-1.298)	(-1.980)	(-1.906)	(-2.401)	(-0.781)	(-2.497)	(-0.829)
Leverage	1.584	2.828*	1.144	3.697	1.666	3.003*	1.216	3.933*	6.295	7.413	6.809*	8.779
	(1.299)	(1.762)	(0.614)	(1.612)	(1.363)	(1.812)	(0.647)	(1.666)	(1.620)	(1.124)	(1.724)	(1.291)
ROA	2.118	5.046*	1.531	7.904*	1.990	4.687*	1.420	7.418*	11.273	18.923	9.786	17.434
	(1.304)	(1.921)	(0.533)	(1.867)	(1.302)	(1.926)	(0.511)	(1.929)	(1.271)	(1.450)	(1.140)	(1.532)
Tobin's q	-0.423***	-0.370**	-0.489**	-0.554**	-0.406***	-0.332*	-0.474**	-0.503**	-1.132***	-0.479	-0.986***	-0.120
	(-2.674)	(-2.028)	(-2.071)	(-2.284)	(-2.660)	(-1.958)	(-2.058)	(-2.226)	(-3.403)	(-0.573)	(-2.813)	(-0.131)
Cash	-3.736***	-3.784***	-6.029***	-5.512***	-3.477***	-3.216***	-5.805***	-4.744**	-9.519**	-15.052**	-8.681**	-12.523**
	(-4.969)	(-4.099)	(-3.455)	(-2.947)	(-4.496)	(-3.533)	(-3.201)	(-2.517)	(-2.435)	(-2.545)	(-2.231)	(-2.036)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,550	3,434	8,550	3,434	8,550	3,434	8,550	3,434	1,616	618	1,616	618

Online Appendix Table 6

Robustness to Data Driven Bandwidth Specifications

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 estimated using coverage error rate (CER BW) and mean square error (MSE BW) of firms, respectively, around Russell 1000/2000 index thresholds. *Diversified Ins. Own.* is 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)–(4) and columns (9)–(10)) and inverse return synchronicity or *Inv_sync* (columns (5)–(8) and columns (11)–(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 regressions in columns (9)–(12) 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 control variables and the constants 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.

									Subsample of multisegment firms			
	Diversified Ins. Own.$_{\text{Idio\_vol}}$				Diversified Ins. Own.$_{\text{Inv\_sync}}$				Diversified Ins. Own.$_{\text{Idio\_vol}}$		Diversified Ins. Own.$_{\text{Inv\_sync}}$	
	CER BW	MSE BW	CER BW	MSE BW	CER BW	MSE BW	CER BW	MSE BW	CER BW	MSE BW	CER BW	MSE BW
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
First stage:	0.063***	0.074***	0.063***	0.074***	0.066***	0.078***	0.066***	0.078***	0.079***	0.091***	0.073***	0.086***
τ	(4.141)	(6.460)	(4.141)	(6.460)	(3.997)	(6.384)	(3.997)	(6.384)	(4.317)	(6.391)	(3.986)	(6.107)
Second-stage:	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF		Corp. Div. Q			
Diversified Ins. Own.$_{\text{Idio\_vol}}$	-19.394*	-11.885**	-27.026*	-12.084	-23.335*				-19.381*	-32.285*		
	(-1.937)	(-2.174)	(-1.677)	(-1.285)	(-1.959)				(-1.937)	(-1.685)		
Diversified Ins. Own.$_{\text{Inv\_sync}}$						-10.265*	-33.055*	-12.707			-23.325*	-24.865
						(-1.877)	(-1.761)	(-1.510)			(-1.959)	(-1.592)
Rank	-0.004	-0.001	-0.010	-0.005	-0.000	-0.001	-0.005	-0.002	-0.004	0.006	-0.000	0.006
	(-0.784)	(-0.660)	(-0.998)	(-0.964)	(-0.038)	(-0.431)	(-0.536)	(-0.577)	(-0.784)	(0.624)	(-0.038)	(0.676)
Ru2000×Rank	0.016*	0.003	0.030**	0.007	0.016*	0.002	0.033**	0.004	0.016*	-0.003	0.016*	-0.008
	(1.877)	(1.251)	(2.175)	(1.306)	(1.873)	(0.751)	(2.257)	(0.740)	(1.878)	(-0.196)	(1.874)	(-0.593)
Float Adjustment	0.007**	0.005***	0.009*	0.004*	0.009**	0.004**	0.012**	0.005**	0.007**	0.014*	0.009**	0.011*
	(2.245)	(2.943)	(1.869)	(1.688)	(2.273)	(2.466)	(1.973)	(2.035)	(2.246)	(1.879)	(2.274)	(1.797)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,439	4,067	2,439	4,067	2,553	4,251	2,553	4,251	2,439	693	2,553	720

Online Appendix Table 7

Extending Sample Period Accounting for Russell Banding Policy

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 2016. To accommodate for the banding of index constituents (i.e., retaining index constituents in their original index unless there is a large change in market capitalization), we adopt the methodology of Appel et al. (2019) by adopting three additional indicator variables and their interactions with an indicator for years post the banding policy change. The first indicator *Banding* is defined as one for firms that are likely to be banded, i.e., retained in their original index instead of switching as their market capitalization is below the adjusted threshold (or market capitalization implied rank of 800 among all Russell firms) for the Russell 1000 constituent and their market capitalization is above the adjusted threshold (or market capitalization implied rank of 1200 among all Russell firms) for the Russell 2000 constituent, respectively. The second indicator Lagged *Ru2000* is the lagged index membership that takes value of one if the firm was part of Russell 2000 in previous year and zero if firm was part of Russell 1000 in previous year. The third indicator is an interaction of the first two indicators. *After 2006* is defined as an indicator that takes the value of one for calendar years 2007 to 2016 and zero otherwise. In the first stage, 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 2016. Additional control variables used in the estimation include a polynomial of order three of CRSP market capitalization at the end of month May and the float Adjustment factor. The sample is restricted to firms within a bandwidth of ±250 firms around Russell 1000/2000 index thresholds. *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 regressions in columns (5)–(8) 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- and second-stages for the additional control variables and constants 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.

					Subsample of multisegment firms			
	Diversified Ins. Own.$_{\text{Idio\_vol}}$		Diversified Ins. Own.$_{\text{Inv\_sync}}$		Diversified Ins. Own.$_{\text{Idio\_vol}}$		Diversified Ins. Own.$_{\text{Inv\_sync}}$	
	± 250 firms							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
First stage:								
τ	0.256***	0.249***	0.256***	0.249***	0.300***	0.284***	0.300***	0.284***
	(8.548)	(8.000)	(8.548)	(8.000)	(4.430)	(4.173)	(4.430)	(4.173)
Second-stage:	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF	
Diversified Ins. Own.$_{\text{Idio\_vol}}$	-3.470***		-5.501*		-7.118*		-12.019	
	(-2.919)		(-1.800)		(-1.897)		(-1.264)	
Diversified Ins. Own.$_{\text{Inv\_sync}}$		-3.564***		-5.650*		-7.512*		-12.685
		(-2.879)		(-1.797)		(-1.867)		(-1.242)
Banding	-3.216**	-3.525**	-3.697**	-4.187**	-4.039	-5.901	-1.812	-4.955
	(-2.210)	(-2.426)	(-2.299)	(-2.400)	(-0.837)	(-1.066)	(-0.262)	(-0.628)

Online Appendix Table 7
Continued

					Subsample of multisegment firms			
	Diversified Ins. Own.$_{\text{Idio\_vol}}$		Diversified Ins. Own.$_{\text{Inv\_sync}}$		Diversified Ins. Own.$_{\text{Idio\_vol}}$		Diversified Ins. Own.$_{\text{Inv\_sync}}$	
	± 250 firms							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Second-stage:	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF	
Lagged Ru2000: a	-0.440*	-0.252	-0.254	0.045	-1.322	-0.807	-0.118	0.751
	(-1.911)	(-1.413)	(-0.454)	(0.092)	(-1.267)	(-0.793)	(-0.049)	(0.328)
Banding×a: b	3.303**	3.520**	4.196**	4.540**	3.307	5.017	3.381	6.269
	(2.397)	(2.542)	(2.316)	(2.241)	(0.726)	(0.950)	(0.448)	(0.691)
Banding×After 2006	1.006	1.650	-3.463	-2.441	8.749	9.259	-15.562	-14.702
	(0.424)	(0.637)	(-1.209)	(-0.876)	(0.880)	(0.895)	(-1.045)	(-0.999)
a×After 2006	0.675	0.538	1.154	0.938	2.335	1.855	6.200	5.389
	(1.324)	(1.107)	(1.088)	(0.906)	(1.078)	(0.901)	(1.446)	(1.218)
b×After 2006	-0.956	-1.516	3.298	2.411	-7.231	-7.676	14.998	14.246
	(-0.385)	(-0.554)	(1.232)	(0.847)	(-0.699)	(-0.705)	(1.320)	(1.240)
Polynomial order, N	3	3	3	3	3	3	3	3
Float Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,368	7,368	7,368	7,368	1,269	1,269	1,269	1,269

Online Appendix Table 8

Alternative Definitions of Diversified Ownership

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. In Panel A, we exclude the largest 3 institutions including BlackRock, StateStreet, and Vanguard, when measuring diversified ownership. These three institutions are identified using multiple '*mgrno*' assigned by Thomson Reuters for all of their 13F filings. In Panels B and C, we use alternative factor models including Carhart (1997) four-factor model and Fama and French (2015) five-factor model, respectively, to compute diversified ownership. 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)–(4) in all the panels) and inverse return synchronicity or *Inv_sync* (columns (5)–(8) 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 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: Excluding the Big 3 Diversified Institutions (BlackRock, Vanguard, and StateStreet)

	Diversified Ins. $\text{Own.}_{\text{Idio\_vol}}$				Diversified Ins. $\text{Own.}_{\text{Inv\_sync}}$			
	± 500	± 200	± 500	± 200	± 500	± 200	± 500	± 200
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
First stage:								
τ	0.086***	0.073***	0.086***	0.073***	0.090***	0.077***	0.090***	0.077***
	(11.949)	(6.042)	(11.949)	(6.042)	(11.403)	(5.865)	(11.403)	(5.865)
Second-stage:	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF	
Diversified Ins. Own.Idio_vol	-8.125***	-14.573**	-8.729*	-20.283*				
	(-3.207)	(-2.219)	(-1.878)	(-1.870)				
Diversified Ins. Own.Inv_sync					-7.664***	-13.784**	-7.399	-19.186*
					(-2.892)	(-2.149)	(-1.569)	(-1.877)
Rank	-0.002***	0.001	-0.003**	0.000	-0.002***	0.001	-0.003*	0.000
	(-3.558)	(0.299)	(-2.053)	(0.024)	(-3.447)	(0.393)	(-1.926)	(0.097)
Ru2000×Rank	0.002***	0.002	0.003	0.005	0.002**	0.001	0.003	0.004
	(2.748)	(0.629)	(1.549)	(0.742)	(2.442)	(0.457)	(1.482)	(0.638)
Float Adjustment	0.003***	0.006***	0.004**	0.007**	0.003***	0.006***	0.004**	0.007**
	(3.313)	(2.770)	(2.279)	(2.229)	(3.360)	(2.669)	(2.189)	(2.278)
Year fixed effects	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

Online Appendix Table 8
Continued

Panel B: Using the Carhart 4 Factor Model in Diversified Ownership Measure Construction

	Diversified Ins. Own.$_{\text{Idio\_vol}}$				Diversified Ins. Own.$_{\text{Inv\_sync}}$			
	± 500	± 200	± 500	± 200	± 500	± 200	± 500	± 200
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
First stage:								
τ	0.086***	0.075***	0.086***	0.075***	0.091***	0.081***	0.091***	0.081***
	(11.701)	(6.365)	(11.701)	(6.365)	(11.437)	(6.304)	(11.437)	(6.304)
Second stage:	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF	
Diversified Ins. Own.$_{\text{Idio\_vol}}$	-8.137***	-14.131**	-8.741*	-19.668*				
	(-3.272)	(-2.200)	(-1.903)	(-1.909)				
Diversified Ins. Own.$_{\text{Inv\_sync}}$					-7.537***	-12.980**	-7.277	-18.066*
					(-2.891)	(-2.115)	(-1.571)	(-1.830)
Rank	-0.002***	0.000	-0.003**	-0.000	-0.002***	0.001	-0.003*	0.000
	(-3.607)	(0.137)	(-2.064)	(-0.091)	(-3.431)	(0.320)	(-1.918)	(0.038)
Ru2000×Rank	0.002***	0.002	0.003	0.005	0.002**	0.001	0.003	0.004
	(2.727)	(0.753)	(1.537)	(0.813)	(2.446)	(0.524)	(1.488)	(0.667)
Float Adjustment	0.003***	0.005***	0.004**	0.007**	0.003***	0.005***	0.004**	0.007**
	(3.387)	(2.774)	(2.318)	(2.336)	(3.369)	(2.644)	(2.201)	(2.226)
Year fixed effects	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

Panel C: Using the Fama-French 5 Factor Model in Diversified Ownership Measure Construction

	± 500	± 200	± 500	± 200	± 500	± 200	± 500	± 200
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
First stage:								
τ	0.034***	0.033***	0.034***	0.033***	0.033***	0.031***	0.033***	0.031***
	(5.453)	(2.695)	(5.453)	(2.695)	(6.878)	(4.163)	(6.878)	(4.163)
Second stage:	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF	
Diversified Ins. Own.$_{\text{Idio\_vol}}$	-20.449***	-31.977**	-21.967	-44.502*				
	(-2.783)	(-2.261)	(-1.575)	(-1.711)				
Diversified Ins. Own.$_{\text{Inv\_sync}}$					-20.309***	-32.771**	-19.606	-45.608*
					(-2.964)	(-2.066)	(-1.534)	(-1.666)
Rank	-0.003***	0.000	-0.004**	-0.001	-0.002***	0.001	-0.003*	0.001
	(-3.845)	(0.182)	(-2.152)	(-0.149)	(-3.049)	(0.493)	(-1.730)	(0.183)
Ru2000×Rank	0.003***	0.001	0.003*	0.004	0.002**	0.001	0.003	0.003
	(2.803)	(0.677)	(1.686)	(0.626)	(2.347)	(0.192)	(1.459)	(0.462)
Float Adjustment	0.004***	0.007***	0.005*	0.010**	0.004***	0.006**	0.004**	0.008**
	(2.907)	(3.041)	(1.900)	(2.038)	(3.388)	(2.463)	(2.135)	(1.965)
Year fixed effects	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

Online Appendix Table 9

Role of Information Environment

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 based on different measures of information environment including firms with a high and low Number of *8K Filings*, *Stock Liquidity*, and *Analyst Coverage* in Panels A–C, respectively. *Number of 8K filings* is computed as the total number of filings made with a year. *Stock Liquidity* is measured as the negative value of effective spread, where effective spread is measured as the annual mean of the daily trade-wise average of twice the difference between price and mid-price divided by the mid-price and multiplied by an indicator that takes the value of +1 (-1) for a buy (sell) order classified according to the Lee-Ready algorithm (Lee and Ready, 1991).*Analyst Coverage* is measured as the total number of analysts covering a stock who have provided at least one forecast during the year. 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: Total number of 8K filings

	Frequent 8K filers				Infrequent 8K filer				Frequent 8K filer		Infrequent 8K filer	
	±500	±200	±500	±200	±500	±200	±500	±200	±200			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Second-stage:	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF		Corp. Div. Q	Corp. Div. CF	Corp. Div. Q	Corp. Div. CF
Diversified Ins. Own.$_{Idio\_vol}$	-4.747***	-13.563	-6.324*	-25.600	-9.429**	-13.570*	-7.408	-16.194				
	(-7.600)	(-1.546)	(-1.733)	(-1.253)	(-2.126)	(-1.896)	(-1.154)	(-1.287)				
Diversified Ins. Own.$_{Inv\_sync}$									-13.909	-26.252	-12.438*	-14.842
									(-1.494)	(-1.247)	(-1.841)	(-1.272)
Rank	-0.002**	-0.001	-0.004*	-0.004	-0.003***	0.001	-0.003*	0.002	-0.001	-0.003	0.001	0.002
	(-2.159)	(-0.452)	(-1.931)	(-0.461)	(-4.628)	(0.450)	(-1.945)	(0.293)	(-0.217)	(-0.326)	(0.488)	(0.317)
Ru2000×Rank	0.003***	0.007***	0.005***	0.016	0.002**	-0.001	0.002	-0.001	0.007**	0.015	-0.001	-0.001
	(5.646)	(2.926)	(5.528)	(1.359)	(2.050)	(-0.325)	(0.839)	(-0.092)	(2.304)	(1.190)	(-0.360)	(-0.114)
Float Adjustment	0.002***	0.005**	0.004**	0.009	0.003***	0.006**	0.003*	0.006	0.005*	0.010	0.005**	0.006
	(3.640)	(2.054)	(2.519)	(1.635)	(2.641)	(2.372)	(1.669)	(1.519)	(1.872)	(1.590)	(2.295)	(1.509)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,548	1,434	3,548	1,434	5,753	2,317	5,753	2,317	1,434	1,434	2,317	2,317

Online Appendix Table 9
Continued

Panel B: Stock liquidity

	High liquidity				Low liquidity				High liquidity		Low liquidity	
	±500	±200	±500	±200	±500	±200	±500	±200	±200			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Second-stage:	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF		Corp. Div. Q	Corp. Div. CF	Corp. Div. Q	Corp. Div. CF
Diversified	-1.600	-11.754	0.451	-13.160	-11.497***	-16.650**	-10.768	-23.506*				
Ins. Own.$_{\text{Idio\_vol}}$	(-0.643)	(-1.175)	(0.108)	(-0.756)	(-2.634)	(-2.483)	(-1.641)	(-1.958)				
Diversified									-11.377	-12.738	-15.122**	-21.349*
Ins. Own.$_{\text{Inv\_sync}}$									(-1.155)	(-0.769)	(-2.389)	(-1.925)
Rank	-0.002**	0.001	-0.004**	-0.004	-0.002***	0.001	-0.002	0.005	0.001	-0.003	0.001	0.005
	(-2.052)	(0.233)	(-2.061)	(-0.390)	(-3.177)	(0.443)	(-1.551)	(0.910)	(0.287)	(-0.346)	(0.469)	(0.956)
Ru2000×Rank	0.003**	0.005	0.006**	0.014	0.002	-0.001	0.001	-0.004	0.005	0.014	-0.002	-0.005
	(2.301)	(1.618)	(2.540)	(1.398)	(1.634)	(-0.290)	(0.299)	(-0.633)	(1.479)	(1.285)	(-0.329)	(-0.669)
Float Adjusted	0.003***	0.007*	0.005***	0.009	0.003***	0.005***	0.003*	0.007**	0.007*	0.009	0.005***	0.007**
	(3.939)	(1.922)	(3.096)	(1.378)	(2.832)	(2.980)	(1.836)	(2.286)	(1.861)	(1.411)	(2.809)	(2.233)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,114	1,671	4,114	1,671	5,187	2,080	5,187	2,080	1,671	1,671	2,080	2,080

Online Appendix Table 9
Continued

Panel C: Analyst coverage

	High analyst coverage				Low analyst coverage				High analyst coverage	Low analyst coverage		
	±500	±200	±500	±200	±500	±200	±500	±200	±200			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Second-stage:	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF		Corp. Div. Q	Corp. Div. CF	Corp. Div. Q	Corp. Div. CF
Diversified Ins. Own.$_{Idio\_vol}$	-1.818	-5.457	-2.293	-9.780	-11.148**	-20.979*	-10.164	-27.131				
	(-0.472)	(-1.336)	(-0.458)	(-1.454)	(-1.973)	(-1.769)	(-1.053)	(-1.163)				
Diversified Ins. Own.$_{Inv\_sync}$									-5.613	-10.060	-18.950*	-24.507
									(-1.313)	(-1.367)	(-1.879)	(-1.247)
Rank	-0.001	-0.002	-0.002	-0.001	-0.004***	0.003	-0.004***	0.002	-0.002	-0.001	0.003	0.002
	(-1.039)	(-0.782)	(-1.233)	(-0.253)	(-4.924)	(0.713)	(-2.778)	(0.205)	(-0.628)	(-0.144)	(0.746)	(0.214)
Ru2000×Rank	0.000	0.008*	0.002	0.007	0.004***	-0.003	0.004**	0.002	0.007*	0.006	-0.003	0.003
	(0.365)	(1.882)	(0.927)	(1.062)	(3.779)	(-0.616)	(2.332)	(0.198)	(1.662)	(0.852)	(-0.529)	(0.254)
Float Adjustment	0.002	0.004*	0.002	0.006***	0.004**	0.007*	0.004	0.009	0.004*	0.006***	0.007**	0.008
	(1.447)	(1.921)	(1.501)	(2.988)	(2.383)	(1.943)	(1.435)	(1.207)	(1.860)	(2.753)	(2.098)	(1.316)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,925	1,552	3,925	1,552	5,376	2,199	5,376	2,199	1,552	1,552	2,199	2,199

Online Appendix Table 10

Effect of Institutional Characteristics

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. *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). When computing diverisfied ownership, instead of using all the institutions, we use subsamples of institutions based on different institutional characteristics including institutions size based on assets under management, institutions' age, fund netflows, and market timing profits. Specifically, based on the sample medians of size, age, netflows, and market timing profits, we split them into large and small, old and young, having higher and lower fund inflows, and those that make more profitable trading decisions and less profitable, in Panels A–D, respectively. 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. 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: Asset Size of Institutions

	Large institutions				Small institutions				Large institutions		Small institutions	
	±500	±200	±500	±200	±500	±200	±500	±200	±200			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Second-stage:	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF		Corp. Div. Q	Corp. Div. CF	Corp. Div. Q	Corp. Div. CF
Diversified Ins. Own.$_{Idio\_vol}$	-12.100***	-19.516**	-11.685	-27.174*	-23.277***	-57.770*	-22.479*	-80.438*				
	(-2.669)	(-2.043)	(-1.528)	(-1.862)	(-3.386)	(-1.848)	(-1.930)	(-1.692)				
Diversified Ins. Own.$_{Inv\_sync}$									-19.946**	-27.773*	-45.361**	-63.159**
									(-2.024)	(-1.844)	(-2.070)	(-1.998)
Rank	-0.003***	-0.001	-0.004**	-0.002	-0.001**	0.005	-0.002***	0.006	-0.001	-0.002	0.005	0.006
	(-4.179)	(-0.345)	(-2.134)	(-0.382)	(-2.234)	(1.154)	(-2.693)	(0.882)	(-0.348)	(-0.382)	(1.241)	(0.980)
Ru2000 Rank	0.003***	0.002	0.004*	0.005	0.001*	0.000	0.002	0.003	0.002	0.005	-0.001	0.001
	(2.903)	(0.829)	(1.651)	(0.854)	(1.851)	(0.108)	(1.491)	(0.484)	(0.798)	(0.835)	(-0.177)	(0.262)
Float Adjustment	0.003***	0.004***	0.003**	0.005**	0.004***	0.011*	0.005**	0.014*	0.004***	0.005**	0.009**	0.012*
	(3.194)	(2.633)	(2.207)	(2.322)	(3.760)	(1.937)	(2.327)	(1.667)	(2.578)	(2.291)	(2.189)	(1.956)
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	3,751	3,751	3,751	3,751

Online Appendix Table 10
Continued

Panel B: Age of institution

	Old institutions				Young institutions				Old institutions		Young institutions	
	±500	±200	±500	±200	±500	±200	±500	±200	±200			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Second-stage:	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF		Corp. Div. Q	Corp. Div. CF	Corp. Div. Q	Corp. Div. CF
Diversified Ins. Own.$_{\text{Idio\_vol}}$	-9.220***	-17.081**	-8.904	-23.783*	-58.388**	-98.567*	-56.386*	-137.243*				
	(-2.992)	(-2.318)	(-1.551)	(-1.908)	(-2.559)	(-1.802)	(-1.729)	(-1.714)				
Diversified Ins. Own.$_{\text{Inv\_sync}}$									-16.583**	-23.090*	-81.643**	-113.677*
									(-2.186)	(-1.892)	(-1.990)	(-1.863)
Rank	-0.002***	0.001	-0.003**	-0.000	-0.002***	0.001	-0.003***	0.001	0.001	0.001	0.001	0.000
	(-3.689)	(0.254)	(-2.022)	(-0.006)	(-4.713)	(0.545)	(-2.941)	(0.221)	(0.413)	(0.112)	(0.399)	(0.113)
Ru2000 Rank	0.002**	0.002	0.003	0.005	0.002***	0.001	0.003*	0.004	0.001	0.004	0.002	0.005
	(2.550)	(0.633)	(1.530)	(0.750)	(3.306)	(0.536)	(1.851)	(0.798)	(0.381)	(0.585)	(0.734)	(0.976)
Float Adjustment	0.003***	0.006***	0.004**	0.007**	0.003***	0.005**	0.004**	0.007*	0.006***	0.007**	0.005**	0.006**
	(3.424)	(2.939)	(2.153)	(2.293)	(3.209)	(2.208)	(2.273)	(1.876)	(2.727)	(2.307)	(2.485)	(2.038)
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	3,751	3,751	3,751	3,751

Online Appendix Table 10
Continued

Panel C: Netflows

	High netflows				Low netflows				High netflows		Low netflows	
	±500	±200	±500	±200	±500	±200	±500	±200	±200			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Second-stage:	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF		Corp. Div. Q	Corp. Div. CF	Corp. Div. Q	Corp. Div. CF
Diversified Ins. Own.$_{\text{Idio\_vol}}$	-16.104***	-34.823*	-15.551	-48.487	-16.495***	-25.098***	-15.929	-34.946**				
	(-2.619)	(-1.744)	(-1.457)	(-1.621)	(-3.055)	(-2.671)	(-1.631)	(-2.044)				
Diversified Ins. Own.$_{\text{Inv\_sync}}$									-33.409*	-46.518	-23.796**	-33.133**
									(-1.706)	(-1.603)	(-2.511)	(-2.006)
Rank	-0.002***	0.001	-0.003**	0.001	-0.002***	-0.000	-0.003*	-0.001	0.002	0.002	0.000	-0.001
	(-3.368)	(0.463)	(-1.977)	(0.193)	(-3.589)	(-0.040)	(-1.960)	(-0.193)	(0.566)	(0.318)	(0.092)	(-0.120)
Ru2000 Rank	0.002**	0.002	0.003	0.005	0.002***	0.002	0.003	0.005	0.001	0.004	0.002	0.005
	(2.380)	(0.552)	(1.523)	(0.730)	(2.748)	(0.783)	(1.545)	(0.820)	(0.354)	(0.603)	(0.619)	(0.707)
Float adjustment	0.003***	0.007**	0.004**	0.009*	0.003***	0.005***	0.003**	0.006**	0.007**	0.009*	0.004***	0.006**
	(3.084)	(2.203)	(2.045)	(1.948)	(3.708)	(3.128)	(2.247)	(2.396)	(2.148)	(1.949)	(2.907)	(2.364)
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	3,751	3,751	3,751	3,751

Online Appendix Table 10
Continued

Panel D: Market timing profits

	High market timing profits				Low market timing profits				High market timing profits		Low market timing profits	
	±500	±200	±500	±200	±500	±200	±500	±200	±200			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Second-stage:	Corp. Div. Q		Corp. Div. CF		Corp. Div. Q		Corp. Div. CF		Corp. Div. Q	Corp. Div. CF	Corp. Div. Q	Corp. Div. CF
Diversified Ins. Own.$_{\text{Idio\_vol}}$	-14.026**	-28.683*	-13.545	-39.937	-21.439***	-37.734**	-20.703*	-52.540**				
	(-2.235)	(-1.812)	(-1.352)	(-1.500)	(-3.661)	(-2.413)	(-1.684)	(-2.054)				
Diversified Ins. Own.$_{\text{Inv\_sync}}$									-25.908*	-36.073	-37.124**	-51.690**
									(-1.791)	(-1.540)	(-2.298)	(-2.011)
Rank	-0.002***	0.001	-0.003**	0.001	-0.002***	0.002	-0.003**	0.002	0.001	0.001	0.003	0.003
	(-3.395)	(0.504)	(-1.978)	(0.121)	(-3.818)	(0.600)	(-2.017)	(0.288)	(0.509)	(0.134)	(0.838)	(0.487)
Ru2000 Rank	0.002**	0.002	0.003	0.005	0.002***	0.000	0.003	0.002	0.002	0.005	-0.002	-0.000
	(2.415)	(0.752)	(1.523)	(0.925)	(2.732)	(0.030)	(1.544)	(0.339)	(0.714)	(0.937)	(-0.446)	(-0.013)
Float Adjustment	0.004***	0.007**	0.004*	0.009*	0.003***	0.005***	0.003**	0.007**	0.006**	0.008*	0.006***	0.007**
	(2.762)	(2.209)	(1.878)	(1.711)	(3.777)	(2.964)	(2.301)	(2.533)	(2.209)	(1.806)	(2.746)	(2.461)
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	3,751	3,751	3,751	3,751

Online Appendix Figure 1

Distance from Threshold

These figures 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 financial information in more than one industry segment defined according to the 3-digit Standard Industrial Classification code). 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.