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Institutional investors as monitors of corporate diversification decisions: Evidence from real estate investment trusts ☆

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ABSTRACT

Determining whether diversification adds or destroys value is notoriously difficult, leaving open the question of the degree to which any diversification discount can be affected by management quality and oversight. This study uses the unique setting of real estate investment trusts (REITs), which can diversify over property types as well as locations, to examine this issue. We find that REITs that diversify by investing in more locations tend to be valued lower than REITs with a tighter geographical focus. More importantly, our results suggest that the diversification discount is lower for firms with more institutional ownership, especially institutional types that tend to be more active monitors.

1. Introduction

The impact of diversification on firm value has been widely studied and debated. As early research emphasized, there are a number of reasons why diversification can enhance value, including coinsurance effects that can lead to greater debt capacity, as well as an increase in the liquidity of the diversified firm's equity.[1] In addition, as we stress in this study, diversification can provide managers with potentially valuable timing options, allowing them to move factors of production (e.g., capital and labor) to more productive uses in response to external shocks. The timing option, however, adds value only when the firm is effectively managed in the interests of their shareholders. Poorly managed firms may have a tendency to move resources in perverse ways, such as using resources from their best performing business units to subsidize their weak performers.[2] Hence, the benefit of diversification is likely to be affected by both the ability and incentives of managers to exploit timing options in ways that benefit shareholders.

This study examines diversification within the context of Real Estate Investment Trusts (REITs), a setting that is advantageous for several reasons. In particular, as we discuss below, it is relatively straightforward to measure the diversification of REITs. In contrast, it is notoriously difficult to accurately measure the extent to which most firms are diversified (Villalonga, 2004a)) and it is equally difficult to control for other differences across firms, such as growth opportunities, and other aspects of firm quality

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[1] Lewellen (1971) discusses the coinsurance effect and Hadlock et al. (2001) document benefits to diversification due to a reduction in adverse selection problems around equity offerings.

[2] See Stein (2003) for a review of theoretical and empirical work on internal capital allocation. Berger and Ofek (1995), Lang and Stulz (1994), Comment and Jarrell (1995) and many others find evidence of a diversification discount for a broad set of firms, while Laeven and Levine (2007) find evidence of a diversification discount for financial institutions.

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(e.g., Campa and Kedia (2002), Graham et al. (2002), Villalonga (2004b)). These difficulties have led to a long-standing debate over whether a diversification discount exists (on average), with results dependent upon the specific time period studied and the econometric approach taken. More importantly, these difficulties also imply that it is difficult to test hypotheses about cross-sectional variation in the value of diversification using a broad cross-section of very different firms. One can argue (as in Stein (2003)) that this is where the more interesting questions regarding the value of diversification lie – in the variation of such effects across firms or over time, rather than simply measuring the average effect.

REITs present significant advantages for testing the influence of managerial quality and incentives on the costs and benefits of diversification. REIT investments are observable – i.e., ownership of income-producing commercial real estate – and one can easily ascertain the degree to which they are diversified across property types (e.g., retail versus apartments) and/or geography (e.g., Dallas versus Detroit). This is in stark contrast to the standard corporate case, where segment data can be suspect (Villalonga (2004a)). In addition, holding property type and location constant, REITs enjoy similar if not identical growth opportunities. This implies that observed differences in valuation are likely to stem from differences in managerial quality and their investment and operating decisions. Thus, REITs provide more precise measures of diversification as well as more accurate measures of relative value.[3]

We also exploit the fact that the investments made by REIT managers are likely to be subject to varying degrees of scrutiny. Because REITs must distribute at least 90% of their income to maintain their favored tax status, they are heavily dependent upon the capital markets.[4] Specifically, to finance growth they must return to the capital markets, providing investors with frequent opportunities to scrutinize management's plans – including their plans to move resources into new markets or to reallocate resources across markets. As a result, REITs may be more influenced by external monitoring than typical corporations.

We begin our analysis by examining whether diversification influences REIT values over our sample period, from 1995 through 2008. Using measures of diversification across both property types and locations, and controlling for a wide range of firm characteristics, we find that REIT value is negatively related to the degree of geographic diversification. In contrast, we do not find a reliable relation between diversification across property types and firm values, but it is likely that this non-result is due to the fact that very few REITs are diversified across property types.

Having documented the presence of a geographical diversification discount, we then turn to our primary question – whether the ability and incentives of managers determine whether the timing options associated with diversification create or destroy value for shareholders. To test this hypothesis, we use institutional ownership as a proxy for the quality of managerial choices. Specifically, we assume that REITs with greater institutional ownership tend to be better managed, and are thus better positioned to exploit the benefits of the timing options.

Institutional ownership can be related to managerial quality for two reasons. The first, our selection hypothesis, is that the best-managed REITs attract more institutional investors, who have a comparative advantage relative to individual investors in evaluating management quality. The second, our monitoring hypothesis, is that REITs owned by more institutional investors tend to be more carefully scrutinized by their shareholders, and are thus likely to make better allocations of capital.[5]

Our second set of regressions includes interactions between the degree of diversification and institutional holdings. Here, we find that the geographical diversification discount is mitigated when institutions have a greater equity stake. Moreover, the relation between institutional ownership and the diversification discount tends to be driven by the holdings of the more active institutions, i.e., investment advisers and investment companies, which are likely to have a comparative advantage in the evaluation and monitoring of REIT managers.

To further explore the relation between active investors and the diversification discount, we examine whether the diversification discount is more closely related to the number of active institutions versus the percentage owned by active institutions. Evidence that the diversification discount is substantially mitigated for REITs with a large number of active institutions supports the idea that institutions are better able to identify higher quality managers. However, if the diversification discount is more closely related to the presence of a smaller number of highly-concentrated active institutions, then we would conclude that it is active monitoring that contributes to a reduction in the diversification discount. Our evidence tends to support the monitoring rather than the selection hypothesis. Specifically, the diversification discount is only present for the subsamples with low institutional ownership and less concentrated ownership and we find no significant difference in the discount across the two subsamples based on the number of active institutions.

Having established an association between value, diversification, and institutional ownership, we next ask whether we can predict which REITs will increase or decrease their degree of geographic diversification. We find a significant positive relation between a REIT's relative valuation and the probability that it diversifies in subsequent years. This is consistent with either highly-valued REITs capitalizing on their valuations and expanding into new territories, or high-quality REITs leveraging their managerial skills across markets. To examine this further, we include the interaction of institutional ownership and relative value as a determinant of diversification and find negative point estimates for the coefficient on that interaction term across

[3] Gentry and Mayer (2006) and Hartzell et al. (2006) make similar arguments for the advantages of studying REITs in related contexts.

[4] REITs are essentially able to shield the income that they distribute to shareholders from corporate-level taxes, as long as they meet several additional requirements: 1. 75% or more of a REIT's total assets must be real estate, mortgages, cash or U.S. government securities, 2. At least 75% of the REIT's annual gross income must be derived directly or indirectly from real property ownership, 3. Five or fewer shareholders cannot hold more than 50% of a REIT's stock, and it must have at least 100 shareholders, and 4. A REIT must not be classified as a property dealer (i.e., it cannot "flip" properties too frequently). For a detailed discussion of the tax rules faced by REITs and the effects these rules have on dividend policy, see Boudry (2011).

[5] The incentive for large investors to monitor has been discussed by many – see Huddart (1993) or Shleifer and Vishny (1986), for example. Hartzell and Starks (2003) present an example of monitoring by institutional investors, while Greenwood and Schor (2009) provide evidence of activism by hedge funds.

specifications. This suggests that the expansion of REITs with higher relative valuations into new markets is less likely for REITs with greater following by institutional investors.

We then examine whether changes in institutional ownership are associated with changes in diversification and relative valuations. We find no significant relation between changes in institutional ownership and lagged changes in diversification, including specifications with interactions between changes in diversification and measures of firm value. Combined with the previous results, this suggests that REITs with higher relative valuations and greater institutional ownership are less likely to diversify, and if they do diversify, we find no significant effect on subsequent institutional ownership. This pattern is consistent with our earlier results, suggesting that institutional investors monitor decisions to diversify rather than select firms based on their observed diversification decisions.

While we believe ours is the first paper to link the diversification discount to institutional ownership, there is a substantial literature on corporate diversification and REITs that we draw upon. In addition to the broad corporate finance studies mentioned earlier, our results are related to Denis et al. (1997), who find a negative relation between the level of diversification and ownership by insiders and blockholders. However, they fail to find an association between the degree of the diversification discount and ownership.[6] Our research is also closely related to some of the more recent literature that examines variation in the effects of diversification on value. Two recent studies, Hund et al. (2010) and Kuppuswamy and Villalonga (2012) utilize time-series variation in order to assess the effects of diversification. In contrast, we use cross-sectional variation, but limit ourselves to one particular industry.

For REITs, the most closely related study to ours is Capozza and Seguin (1999), who present evidence that REITs that are more diversified across property types (but not across geography) are penalized by investors because of the less transparent structure (or higher illiquidity costs) than their focused peers over their 1985 to 1992 sample period.[7] A more recent paper by Campbell et al. (2003) finds that announcements of portfolio acquisitions by REITs are greeted more favorably if they reconfirm the buyers' geographic focus. Finally, a study of Swedish real estate firms by Cronqvist et al. (2001) shows that firms expected to follow diversifying strategies are discounted compared to focused firms.[8]

The remainder of the paper is organized as follows. The next section discusses the sample data and our variables. Section 3 presents the empirical results on valuation and the degree of diversification. Section 4 presents the results on relations between firm value, diversification, and institutional ownership, as well as results on changes in the degree of diversification and institutional ownership. Section 5 concludes.

2. Sample data and variable construction

Our sample includes equity REITs over the 1995 to 2008 period and is constructed from the following sources: data at the property level and firm accounting data are from the SNL REIT database, information on share price and shares outstanding comes from the Center for Research in Securities Prices (CRSP) database, and institutional ownership data is from Thompson Financial. The final sample includes 195 REITs and 1,599 firm-year observations.

We consider diversification in two dimensions: property types and locations. We regroup all SNL property types into five categories: office, multi-family, industrial, retail, and all other, and take two approaches to measure geographic diversification. First, we use eight geographic regions, as classified by SNL: Northeast, Mideast, Southeast, East North Central, West North Central, Southwest, Mountain and Pacific.[9] Second, we classify properties based on their Metropolitan Statistical Areas (MSAs), using the list of MSAs from the National Council of Real Estate Investment Fiduciaries (NCREIF).[10] These regional and MSA-based measures have relative pros and cons. We think that MSAs may be too specific. For example, it may be relatively efficient for a REIT to invest in both New York and Boston office buildings, so we do not expect to see much of a diversification penalty associated with being in both of these markets. This argument suggests that the regional definition may be a better, given that New York and Boston are in the same region. But, the regional measure groups some very different markets together, like New York and Pittsburgh, even though managing real estate in New York may be more similar to managing real estate in San Francisco or Chicago, which are in different regions.[11]

[6] Berry et al. (2006) examine CEO turnover and present evidence of differences in internal monitoring for diversified firms compared to their focused counterparts. Our paper also fits within the broader literature on corporate governance; see Gillan (2006) for a review.

[7] Differences between the Capozza and Seguin (1999) and our results are due to very different sample periods. The Capozza and Seguin sample period is prior to legal changes that "modernized" the REIT structure and facilitated institutional investment in REITs (e.g., see Downs (1998)).

[8] In addition, Gyourko and Nelling (1996) examine whether diversification by either property type or geographic region is associated with a stock-market based measure of diversification (the R-squared from a market model) and find no clear pattern.

[9] States are mapped into the eight regions as follows: (1) NE (Northeast): ME, VT, NH, NY, CT, RI, MA, PA, NJ, DE (2) ME (Mideast): MD, WV, VA, KY, NC, SC, DC, (3) SE (Southeast): TN, GA, FL, AL, MS, (4) EN (East North Central): MI, IL, OH, IN, WI, (5) WN (West North Central): MN, IA, MO, KS, NE,S D, ND, (6) SW (Southwest): TX, OK, AR, LA, (7) MT (Mountain): MT, ID, WY, UT, CO, NM, AZ, NV, ad (8) PC (Pacific): WA, OR, CA, AK, HI, NA (Not Available).

[10] We use the top 55 MSAs in NCREIF. For properties outside those 55 cities, we place properties in the eight regions. Hence, we have a total of 63 geographic locations for our MSA-based approach.

[11] We examined many firms' corporate disclosures in order to ascertain whether there was another way to classify REITs' investments, beyond geography and property type. This could be based on their own geographical definitions, or by finer partitions of product types. For example, a REIT that focuses on multifamily properties may consider garden apartments as a distinct segment from its high-rise properties. Unfortunately, while we found examples of REITs defining their own segments, this practice was neither widespread nor uniform enough to use in our tests.

Within each dimension and for both geographic measures, we use Herfindahl Indexes as a measure of concentration, where Herfindahl Indexes are defined as,

$$\text{Herfindahl Index (HI)} = \sum_{i=1}^{I} P_i^2, \tag{1}$$

where P_i is the proportion of a REIT's assets invested in property type or geographic location i, based on book values.[12] In our regressions, we use the negative of the Herfindahl Index so that the diversification measures increase as the degree of diversification increases. Thus, our measures of regional and property type diversification are labeled *Geographic Diversification* (based on region or MSA), and *Property Type Diversification*.

To examine the wealth effect of diversification, it is important to have a good measure of relative firm value. Unlike the standard corporate finance literature, we do not have a full enough set of "pure plays" in terms of property types or geography that we could use to estimate stand-alone values. Instead, we rely upon regressions to disentangle the impacts of geography and property type on value, as well as the presence of diversification discounts or premiums.

Our first tests use *Tobin's q* (the ratio of the market value of equity plus the book value of debt to the book value of assets) as the dependent variable, along with our variables of interest and controls. Importantly, our controls include the weight within the REIT's portfolio placed on each property type and each region, where each weight is interacted with year indicator variables. Thus, the coefficients on these weight/year interactions represent the marginal impact of changing the weight placed on a particular location or property type, for a given year (holding the degree of diversification constant). Similarly, the estimated coefficients on the degree of diversification (for example) can be interpreted as the marginal impact on value, holding the REIT's exposure to property-type and regional effects constant (for each year). As a result, unlike the standard corporate finance literature (e.g., Berger and Ofek (1995)), we are using our sample of diversified REITs to control for variation in growth opportunities or values across markets as well as to estimate the effect of diversification on value.

For our later tests, we need a REIT-specific measure of relative value that we construct from a regression of *Tobin's q* on our property-type and regional weights, where each are again interacted with year indicator variables. The fitted values from this regression allow us to estimate a *Synthetic q*, which is the summation of the product of property weights and regression-estimated coefficients. The final step is to calculate the *Ln*(*Relative q Ratio*), which is the natural logarithm of the ratio of a REIT's *Tobin's q* to *Synthetic q* for REIT *i* in year *t*.[13, 14]

To measure the ownership of investors that are more likely to monitor management quality, we calculate the percentage of the REIT's shares owned by all institutions, as reported on Thomson Financial's database of 13-f filings, which we label *Instl Ownership*. We also break this ownership into the fraction owned by independent investment advisors and investment companies, labeled *Active Instl Ownership*, and the fraction owned by other institutions (largely banks and insurance companies), labeled *Passive Instl Ownership*. Following the earlier literature, we expect banks and insurance companies to less actively monitor firms' behavior, perhaps due to the desire to solicit return business from those firms (e.g., Brickley et al. (1988), Almazan et al. (2005), Chen et al. (2007)).

To measure profitability and cash flow we calculate *EBITDA/Assets* as earnings before interest and taxes, plus depreciation and amortization, scaled by total assets as of the previous year-end.[15] *Size* is our control for differences in valuation or diversification across REITs of different size, calculated as the natural logarithm of total market capitalization in millions of dollars. Ambrose et al. (2005) find that larger REITs tend to have better growth prospects and lower costs, resulting in higher firm profitability. *Leverage* is defined as the ratio of the book value of debt to total assets. *Turnover* is a proxy for each REIT's stock-market liquidity, calculated as the ratio of stock trading volume to the shares outstanding in December. Capozza and Seguin (1999) find that liquidity is related to property-type focus, and can also affect firm value. We also construct an indicator variable, *OP Unit Indicator*, for REITs with Umbrella Partnership REIT (UPREIT) or DownREIT status to capture any effects resulting from the structural differences between these REITs and other REITs.[16]

The summary statistics in Table 1 indicate the average Tobin's *q* in our sample is 1.347, with a median of 0.977. The mean and median *Relative q ratio* – i.e., the ratio of Tobin's *q* to *Synthetic q* – is about one by construction, but we do observe reasonable variation. The typical firm has a market capitalization of about $1 billion (with corresponding *Size* equal to 6.9), *EBITDA* is about 11% of lagged assets, *Yearly Turnover* is about .9 times, and the leverage ratio is about 65%.

[12] We find similar results if we use alternative Herfindahl Indexes based on historical costs or property size measured by square feet. We also obtain similar results if we use the natural log of the number of markets (i.e., property types, regions, or MSAs).

[13] One can think of these *Synthetic q*'s as being the *Tobin's q* for a firm with an average degree of diversification, because they are estimated using diversified firms. While the degree of diversification is an omitted variable when we construct a *Synthetic q* in this way, we do not believe that this is a serious estimation problem, as we obtain similar estimates of relative value in our one-stage approach, where property weights and the degree of diversification enter the regression simultaneously.

[14] This is similar to Berger and Ofek (1995)'s excess-value measure, but we use *Tobin's q* to replace their market value or sale value, and regression estimates to replace industry-median value mapping. Lang and Stulz (1994) argue that Tobin's *q* ratio has already adjusted for risk, facilitating comparisons across industries. Similarly, its use helps by taking into consideration the difference in risks across property sectors. In addition, the Berger and Ofek's excess-value approach requires a relative large sample of data on stand-alone firms; this is too difficult to implement when we consider REIT diversification.

[15] We obtain similar results if we use *Net Operating Income* or *Funds From Operations* as alternative controls for profitability.

[16] The properties of UPREITs are held by an operating partnership, while the UPREIT's shareholders indirectly or directly own shares in the partnership, rather than directly owning the properties. DownREITs essentially allow for joint ventures between the REIT and property owners. These structures provide REITs with more flexibility in acquiring properties on a tax-advantaged basis.

Table 1
Summary statistics. This table reports the summary statistics for a sample of equity REITs from 1995 to 2008. *Tobin's q* is defined as the market value of common equity plus the total assets minus the book value of common equity, divided by the firm's total assets, as of the end of the fiscal year. *Relative q Ratio* is the ratio of *Tobin's q* ratio to a *Synthetic q*, which is the fitted value from a regression of *Tobin's q* on property type and region weights interacted with year indicators. *Number of Property Types* is the number of property type sub-markets where properties of a REIT firm are located and *Property Type Diversification* is the negative of a Herfindahl Index of the REIT's portfolio weights in each property type. *Number of Regions* and *Number of MSAs* are the number of regional and MSA sub-markets where properties of a REIT firm are located, respectively. *Geographic Diversification (Region)* and *Geographic Diversification (MSA)* are the negative of Herfindahl Indexes of each REIT's property weights across regions and MSAs, respectively. *Instl Ownership* is the fraction of the firm owned by all institutional investors. *Active Instl Ownership* is the fraction of the firm owned by investment companies and independent investment advisors. *Passive Instl Ownership* is the fraction of the firm owned by banks, insurance companies, endowment and other types of institutional investors. *Instl Number* is the number of firm's institutional investors. *Active (Passive) Inst Number* is the number of firm's active (passive) institutional investors. *Instl Ownership Herf* is the Herfindahl Index calculated based the fraction of the firm owned by all institutional investors. *OP Unit Indicator* is an indicator variable that takes the value of one if a REIT is an UPREIT or DownREIT per SNL. *Size* is the natural logarithm of total assets. *Leverage* is defined as the ratio of book value of debt to the prior year's total assets. *EBITDA/Assets* is the ratio of earnings before interest, tax, depreciation and amortization to the prior year's total assets. *Turnover* is the ratio of the stock volume to the shares outstanding as of December.

Variable	No. of observations	Mean	Median	Std dev	25th Pctile	75th Pctile
Tobin's q	1599	1.347	0.977	0.222	0.868	1.096
Relative q Ratio	1599	1.002	1.277	0.370	1.118	1.495
Property Type Diversification	1599	−0.837	−0.965	0.220	−1.000	−0.691
Number of Property Types	1599	2.987	3.000	1.808	2.000	4.000
Number of Regions	1599	5.326	6.000	2.472	3.000	8.000
Geographic Diversification (Region)	1599	−0.451	−0.357	0.284	−0.628	−0.210
Number of MSAs	1599	18.111	14.000	13.858	8.000	26.000
Geographic Diversification (MSA)	1599	−0.271	−0.171	0.262	−0.336	−0.089
Instl Ownership	1599	0.489	0.506	0.280	0.258	0.728
Active Instl Ownership	1599	0.330	0.338	0.204	0.153	0.497
Passive Instl Ownership	1599	0.160	0.145	0.111	0.075	0.235
Instl Number	1599	85.882	71.000	69.288	35.000	118.000
Active Instl Number	1599	49.619	42.000	40.613	20.000	70.000
Passive Instl Number	1599	36.263	30.000	29.392	15.000	50.000
Instl Ownership Herf	1599	0.021	0.018	0.018	0.006	0.030
OP Unit Indicator	1599	0.747	1.000	0.435	0.000	1.000
Size	1599	6.929	6.940	1.339	6.183	7.876
Leverage	1599	0.669	0.642	0.267	0.519	0.774
Turnover	1599	0.934	0.745	0.817	0.478	1.076
EBITDA/Assets	1599	0.111	0.107	0.040	0.090	0.128

Institutional ownership is approximately the same as what is found for C corporations of similar size. The mean (median) total institutional ownership is 0.489 (0.506), which indicates that roughly half of the equity of a typical REIT is owned by institutional investors. There is substantial variation, as well, with an inner quartile range of 0.258 to 0.728. The ratio of *Active* institutional ownership to *Passive* is roughly two-to-one, with respective means of 0.330 and 0.160. Both of these exhibit similar variation, with levels at the 75th percentiles that are about three times the levels at their respective 25th percentiles.

Turning to our diversification measures, we see that the median firm invests in three property types, but their holdings are highly concentrated in a single property type. The median Herfindahl Index is 0.965 (and the mean is 0.837). To put this in perspective, a firm with 95% of its properties in retail and 2.5% in both office and industrial would have a Herfindahl Index of 0.904, still less than our median. Across regions, we see more variation, with the mean (median) number of regions equal to 5.326 (6.000), and REITs at the 25th percentile invest in three regions. The Herfindahl Indexes for geographical diversification also exhibit less concentration, with a mean (median) of 0.451 (0.357). This suggests that while a typical REIT invests in six regions, they are not close to equally weighted across all six – that would predict a Herfindahl Index of 0.167. Holding 50% of the firm's properties in one region, 30% in a second, and spreading the remaining 20% equally among four other regions would generate a Herfindahl Index much closer to the median (0.35 for this hypothetical portfolio versus the sample median of 0.357).

3. Is there a diversification discount or premium for REITs?

We begin by examining the relation between value and diversification. For this and subsequent tests, we standardize all variables so that they have zero mean and unit variance. These standardized variables are perfectly correlated with their raw counterparts, but the interpretation of the coefficient estimates is now the predicted number of changes in the standard deviation of the dependent variable per standard deviation change in the explanatory variable, facilitating straightforward comparisons across variables.[17]

We regress *Tobin's q* on measures of property-type diversification and geographic diversification, plus our controls – *OP Unit Indicator*, *Size*, *Leverage*, *Turnover*, *EBITDA/TA*, and the weight of each REIT's portfolio in each property type and region, where

[17] When we later examine the effects of interaction terms on firm value, this standardization gives both the relevant diversification measure and each ownership variable equal variation to contribute to the interaction term, so that neither variable dominates the variation in the interaction.

Table 2
The relation between diversification and firm value. This table reports pooled OLS regressions of *Tobin's q* on diversification measures and control variables. All variables are as defined in Table 1 and have been standardized to have mean of zero and unit variance. t-statistics for each coefficient are in parentheses, where standard errors have been corrected for clustering within firms over time. F-tests (p-values) of the test that the coefficients of *Geographic Diversification* and *Property Type Diversification* are jointly equal to zero are reported. Both diversification measures use the negative of the respective Herfindahl index. In column (1), Regions are used to measure *Geographic Diversification* and in column (2), MSAs are used to measure *Geographic Diversification*. Weights for each property type and region, interacted with indicator variables for the year of the observation are also included, as well as the year indicator by itself (except for one property type, region, and year), but these coefficients and the constant are not reported. One, two, and three asterisks denote statistical significance at the 0.10, 0.05, and 0.01 levels, respectively. The table also presents the number of observations and the R-squared for each regression.

Dependent variable: Tobin's q		
	(1)	(2)
	Regions	MSAs
Geographic Diversification	−0.159	−0.158
	(*2.35*)**	(*2.68*)***
Prop Type Diversification	−0.032	−0.029
	(*0.72*)	(*0.66*)
OP Unit Indicator	0.050	0.067
	(*0.89*)	(*1.19*)
Size	0.148	0.128
	(*2.63*)***	(*2.70*)***
Leverage	−0.084	−0.085
	(*1.53*)	(*1.52*)
EBITDA/Assets	0.387	0.393
	(*5.99*)***	(*6.06*)***
Turnover	−0.085	−0.086
	(*1.65*)	(*1.66*)*
Observations	1599	1599
R-squared	0.49	0.49
F-test of coefficients of Region DIV and Type DIV = 0 (p-value)	0.04	0.02

these weights are interacted with the year of the observation. Given the large number of coefficients on these weights (five property types and eight regions, each interacted with 14 year indicators), we do not present these estimated coefficients.[18] Each regression also includes fixed effects for the year of the observation, and we cluster the standard errors by REIT to account for a lack of independence within firms over time.

Table 2 presents the results of these pooled ordinary least squares (OLS) regressions. As the table shows, we do not find a significant relation between relative REIT value and the degree of property type diversification. This is not particularly surprising given that most REITs are primarily focused on only one property type, as evidenced by the lack of variation in property-type diversification in the summary statistics. However, the coefficients on the geographic diversification measures are negative and significant at the 5% level, whether diversification is measured using regions or MSAs. The negative relation between diversification and value is economically as well as statistically significant. Specifically, a one-standard-deviation increase in the degree of diversification is associated with a decrease of about 16% of a standard deviation in *Tobin's q*, all else equal. The coefficients on our control variables suggest that relative REIT values are increasing in size and profitability, and weakly decreasing in share turnover.[19]

4. Institutional investors as monitors of firm diversification decisions

4.1. Does institutional ownership mitigate the diversification discount?

Next, we examine whether the level of institutional ownership is associated with differences in the impact of diversification on REIT value. Given the previous finding of a negative relation between REIT value and geographical diversification, if institutional investors monitor and influence management, one might expect that REITs with greater institutional ownership will have a smaller diversification discount. For a given degree of diversification, pressure from institutional owners may help ensure that REIT managers do not use stronger regions to suboptimally cross-subsidize their investments in weaker regions (a monitoring effect). In addition, institutional investors may be able to identify the better-managed REITs, which may be better able to exploit the benefits associated with diversification (a selection effect).

[18] In order to estimate the coefficients on the weights interacted with the year indicators, we omit one property type indicator, one region indicator, and one year indicator, and estimate the models with intercepts. A more general specification would allow for interactions between each location and property type rather than assuming that the effects are additive, but we do not have enough degrees of freedom to estimate such a model while allowing prices to change each year.

[19] Our results are qualitatively similar for several alternative specifications. First, we also use book leverage and total book assets, as replacements for market leverage and log of market capitalization in the regressions. Second, we check whether the relation varies across the time period by repeating the analysis for the first and second halves of the sample. Third, we obtain similar results if we also include fixed effects for each REIT's primary property type.

To estimate the effect of greater institutional ownership on the diversification discount we augment the regressions in Table 2 with the fraction of the REIT owned by institutional investors, *Instl Ownership*, and interactions between institutional ownership and the degree of geographic diversification. (We ignore property type diversification, given that it does not appear to influence values.) If REITs with more institutional ownership exhibit a weaker diversification discount, then we should find a positive coefficient on the interaction terms. As before, we include various controls, including interactions between location and property type weights and year indicators, plus fixed effects for the year of the observation. Standard errors are again clustered by REIT.

The results of these tests are summarized in columns (1) and (3) of Table 3, where column (1) uses the regional variation in diversification and column (3) uses variation based on MSAs. As the results indicate, we continue to find a negative relation between REIT value and the degree of geographic diversification, and the coefficients have similar economic magnitude and statistical significance to those in Table 2. The coefficient on the interaction between geographic diversification and *Instl Ownership* is positive and significant in both columns. In other words, geographic diversification has less of an effect on REIT values when institutional investors have larger equity stakes, suggesting that REITs with more institutional ownership have either better managers or are better monitored. To understand the magnitude of the economic significance, a one standard deviation change in the Herfindahl Index of geographic regions (about 0.284), is associated with a 0.158 decrease in *Tobin's q* for REITs with institutional ownership that is at the mean (remembering that the variables are standardized to have zero mean and unit variance), but only a 0.054 decrease in *Tobin's q* for REITs with institutional ownership that is one standard deviation above the mean (all else equal).

One concern is that these results could be driven by the tendency of institutional investors to hold shares of larger, more liquid REITs, or REITs with low leverage ratios. To address this, we separately include interaction terms of geographic diversification with size, liquidity or leverage in the above regressions. In those regressions, the additional interaction terms are statistically significant, and the institutional ownership interaction remains significant. For brevity, these results are not reported.

To further examine the link between institutional ownership and the diversification discount, we test for differences in these effects across categories of institutions. We follow Brickley et al. (1988) and Almazan et al. (2005), and divide all Thomson Financial institutions into two groups: potentially active monitors and potentially passive monitors. The former include Thomson types three and four: investment companies (mutual funds and closed-end funds) and independent investment advisors (principally pension fund advisers), while the latter include types one, two and five: banks, insurance and pension funds and

Table 3
Relative valuation as a function of diversification and institutional ownership. This table reports pooled OLS regressions of *Tobin's q* on diversification measures, institutional ownership, and interactions between diversification and institutional ownership, plus control variables. All variables are as defined in Table 1 and have been standardized to have mean of zero and unit variance. t-statistics for each coefficient are in parentheses, where standard errors have been corrected for clustering within firms over time. The diversification measure uses the negative of the Herfindahl index. In columns (1) and (2), Regions are used to measure *Geographic Diversification* and in columns (3) and (4), MSAs are used to measure Geographic Diversification. Weights for each property type and region, interacted with indicator variables for the year of the observation are also included, as well as the year indicator by itself (except for one property type, region, and year), but these coefficients and the constant are not reported. One, two, and three asterisks denote statistical significance at the 0.10, 0.05, and 0.01 levels, respectively. The table also presents the number of observations and the R-squared for each regression.

Dependent variable: Tobin's q				
	(1)	(2)	(3)	(4)
	Regions		MSAs	
Geographic Diversification	−0.158	−0.168	−0.153	−0.18
	(*2.34*)**	(*2.49*)**	(*2.59*)**	(*2.90*)***
InstlOwn	0.125		0.119	
	(*1.43*)		(*1.38*)	
*Geo Div * Instl Ownership*	0.104		0.083	
	(*2.39*)**		(*1.90*)*	
Passive Instl Ownership		0.146		0.152
		(*2.17*)**		(*2.26*)**
Active Instl Ownership		0.031		0.024
		(*0.53*)		(*0.41*)
*Geo Div * Passive Instl Ownership*		0.023		−0.039
		(*0.52*)		(*0.96*)
*Geo Div * Active Instl Ownership*		0.09		0.113
		(*2.33*)**		(*2.55*)**
OP Unit Indicator	0.036	0.035	0.057	0.058
	(*0.60*)	(*0.60*)	(*0.97*)	(*0.99*)
Size	0.092	0.085	0.076	0.069
	(*1.25*)	(*1.13*)	(*1.17*)	(*1.05*)
Leverage	−0.086	−0.077	−0.08	−0.072
	(*1.61*)	(*1.49*)	(*1.50*)	(*1.38*)
EBITDA/Assets	0.381	0.376	0.388	0.382
	(*5.78*)***	(*5.74*)***	(*5.80*)***	(*5.74*)***
Turnover	−0.115	−0.127	−0.12	−0.133
	(*1.94*)*	(*2.17*)**	(*2.01*)**	(*2.23*)**
Observations	1599	1599	1599	1599
R-squared	0.50	0.51	0.50	0.51

other types of institutions such as endowment funds or public pension funds. As argued by Brickley et al., Almazan et al. and others, banks and insurance companies may be less likely to actively monitor management due to potential conflicts of interest over the prospects of receiving future business from the firm.

Columns (2) and (4) of Table 3 present regressions that include institutional ownership variables that distinguish between active and passive institutions. We find that the passive institutions own a greater fraction of REITs with higher relative values, and more importantly, it is the active investors that drive the positive coefficients on the interaction between diversification and institutional ownership (relations that are significant at the 5% level in both specifications). This is consistent with the notion that active institutional investors have a comparative advantage in evaluating and monitoring managers, so that greater ownership by investment companies and independent investment advisors is associated with a reduction in the diversification discount. Furthermore, the magnitudes of these coefficients are roughly 60% of the size of those for the degree of diversification (i.e., the coefficient on the first variable shown, without the interaction). This suggests that a one standard deviation increase in ownership by active institutional owners offsets approximately 60% of the valuation discount arising from a one standard deviation increase in the degree of diversification.

To further distinguish between the monitoring and selection explanations for the relation between institutional ownership on the diversification discount, we estimate a series of regressions where we test for the presence of a diversification discount across subsamples that are created using various facets of institutional ownership. Specifically, we divide our sample into observations with *Active Instl Ownership* above and below the median, and test whether the diversification discount is more or less prevalent across these two subsamples. We then conduct similar tests using the median number of active institutional owners (*Active Instl Number*) and the median concentration of institutional ownership (the Herfindahl Index of fractional ownership by institutions, labeled *Instl Ownership Herf*).

If the selection effect is driving the relation between institutional ownership and the diversification discount, then we would expect to find a larger diversification discount for the observations where fewer institutions are present (because institutions' tendencies to select better-managed diversified firms implies that the discount will be mitigated for firms that are selected by more institutions). If the monitoring effect is driving the institutional ownership/diversification discount relation, then we would expect to see more variation in the discount based on the concentration of institutional ownership. The ability of institutional investors to monitor and influence management (and their incentives to do so) should be greater when they have more concentrated ownership positions (e.g., see Hartzell and Starks, 2003).

The results of these tests are presented in Table 4 (which are otherwise specified as in Table 2). As Panel A shows, the diversification discount documented for the overall sample in Table 2 is driven by the observations where the active institutional investors own a smaller fraction of the firm. The coefficient on geographic diversification is only significant in the low-active-ownership subsamples and we can reject the null that the discount is equal across the two subsamples at the 5% level.

In Panel B, the sorting is done based on the median number of active institutional investors who own the particular REIT. As the results indicate, the point estimates of the diversification discount are very similar across these subsamples, especially when diversification is measured across regions. Furthermore, we cannot reject the null that the coefficients on geographic diversification are equal across the two groups (using either regions or MSAs). This evidence does not support the selection effect explanation, which predicts that the diversification discount is weaker for REITs selected by more active institutional investors.

Finally, in Panel C, we present regressions where the sample is divided at the median concentration of institutional investor ownership. Here, we find that the diversification discount is only significant in the subsamples with less concentrated institutional ownership (and the difference in the discount coefficients is significant using either regions or MSAs). This is consistent with the monitoring explanation – in the REITs with institutional owners that are more likely to have the incentives to monitor and the power to influence management, we find no significant diversification discount.

4.2. Diversification decisions, valuation, and institutional investor ownership

To better understand the effects of monitoring by institutional investors on REITs' decisions to diversify, and subsequently, on REIT value, we turn to an examination of the factors that contribute to REITs' decision to increase geographic diversification, and the degree to which changes in institutional ownership are related to changes in diversification.

One possible driver of REITs' diversification decisions is the opportunities they face in their current markets. For example, managers may try to move assets from existing areas with weak investment opportunities to new areas with better prospects. Alternatively, managers may have more confidence to enter new markets when their current markets are strong. For similar reasons, the decision to enter new markets may be related to the REITs' valuations relative to their respective peers.

These alternatives suggest that changes in diversification should be associated with proxies for REITs' investment opportunities in their current markets and their relative valuations. To test these hypotheses, we regress changes in diversification on a proxy for REITs' investment opportunities in their current markets, which is the firm's *Synthetic* q_{t-1}, and a measure of their lagged relative valuation ($Ln(Relative\ q\ Ratio_{t-1})$). The dependent variable is the change in geographical diversification, measured by either the change in the regional or MSA-based Herfindahl Index. *Synthetic* q_{t-1} is the firm's lagged predicted *Tobin's q* ratio from our synthetic *q* regression. By using all of the REITs in the sample, this measure captures market-level growth opportunities that a particular REIT faces, implying that REITs operating in markets with greater growth opportunities will have higher synthetic *q*s.

To investigate the role that institutional investors might play in the decision to diversify, we also include as explanatory variables the lagged change in institutional ownership and an interaction between changes in institutional ownership and our

Table 4
The relation between relative value and diversification across institutional ownership subgroups. This table reports pooled OLS regressions as in Table 2 over various institutional ownership subgroups. The subgroups are defined by cross-sectional medians of *Active Instl Ownership* (Panel A), *Active Instl Number* (Panel B), and *Instl Ownership Herf* (Panel C). All variables are as defined in Table 1 and have been standardized to have mean of zero and unit variance. t-statistics for each coefficient are in parentheses, where standard errors have been corrected for clustering within firms over time. Both diversification measures use the negative of the respective Herfindahl index. In columns (1) and (2), Regions are used to measure *Geographic Diversification* and in columns (3) and (4), MSAs are used to measure *Geographic Diversification*. Weights for each property type and region, interacted with indicator variables for the year of the observation are also included, as well as the year indicator by itself (except for one property type, region, and year), but these coefficients and the constant are not reported. One, two, and three asterisks denote statistical significance at the 0.10, 0.05, and 0.01 levels, respectively. The table also presents the number of observations and the R-squared for each regression. Two F-tests are reported with p-value included in the parentheses: Tests of the difference in coefficients of *Geographic Diversification* between Low and High subgroups, and tests of the differences in coefficients of both *Geographic Diversification* and *Prop Type Diversification* between subgroups.

Dependent variable: *Tobin's q*				
	(1)	(2)	(3)	(4)
	Regions		MSAs	
	Low	High	Low	High
Panel A: Groups divided by median active Instl Ownership				
Geographic Diversification	−0.274	−0.011	−0.265	−0.043
	(*2.74*)***	(*0.13*)	(*2.86*)***	(*0.63*)
Prop Type Diversification	0.014	−0.116	0.01	−0.119
	(*0.24*)	(*1.83*)*	(*0.18*)	(*1.78*)*
OP Unit Indicator	0.081	0.02	0.117	0.024
	(*1.30*)	(*0.23*)	(*2.01*)**	(*0.26*)
Size	0.148	0.102	0.122	0.108
	(*1.49*)	(*1.21*)	(*1.39*)	(*1.49*)
Leverage	−0.068	−0.152	−0.072	−0.153
	(*1.06*)	(*1.82*)*	(*1.16*)	(*1.81*)*
EBITDA/Assets	0.44	0.332	0.45	0.332
	(*5.10*)***	(*4.50*)***	(*5.20*)***	(*4.48*)***
Turnover	−0.113	0.005	−0.119	0.008
	(*1.62*)	(*0.05*)	(*1.66*)*	(*0.07*)
Observations	803	796	803	796
R-squared	0.59	0.59	0.59	0.59
F tests (p-value):				
Difference between Geo Div, Low vs. High		0.013		0.046
Difference between Geo Div and Prop Type Div		0.013		0.033
Panel B: Groups divided by median active Instl Number				
Geographic Diversification	−0.154	−0.145	−0.209	−0.112
	(*1.59*)	(*1.98*)*	(*2.38*)**	(*1.63*)
Prop Type Diversification	−0.042	−0.078	−0.047	−0.067
	(*0.68*)	(*1.19*)	(*0.77*)	(*1.01*)
OP Unit Indicator	0.077	0.085	0.096	0.104
	(*1.27*)	(*1.05*)	(*1.73*)*	(*1.26*)
Size	0.043	−0.074	0.055	−0.113
	(*0.40*)	(*0.60*)	(*0.53*)	(*0.99*)
Leverage	−0.026	−0.081	−0.034	−0.084
	(*0.40*)	(*1.02*)	(*0.52*)	(*1.03*)
EBITDA/Assets	0.385	0.283	0.399	0.292
	(*4.26*)***	(*2.80*)***	(*4.45*)***	(*2.87*)***
Turnover	−0.1	−0.26	−0.096	−0.274
	(*1.28*)	(*2.36*)**	(*1.27*)	(*2.43*)**
Observations	813	786	813	786
R-squared	0.58	0.62	0.59	0.62
F tests (p-value):				
Difference between Geo Div, Low vs. High		0.745		0.272
Difference between Geo Div and Prop Type Div		0.943		0.484
Panel C: Groups divided by median Instl Ownership Herf				
Geographic Diversification	−0.233	−0.019	−0.186	−0.099
	(*2.69*)***	(*0.20*)	(*2.38*)**	(*1.18*)
Prop Type Diversification	0.033	−0.125	0.037	−0.13
	(*0.62*)	(*1.68*)*	(*0.71*)	(*1.69*)*
OP Unit Indicator	0.077	−0.038	0.106	−0.029
	(*1.22*)	(*0.38*)	(*1.70*)*	(*0.29*)
Size	0.155	0.101	0.118	0.111
	(*1.76*)*	(*1.20*)	(*1.54*)	(*1.51*)
Leverage	−0.089	−0.049	−0.088	−0.053
	(*1.65*)	(*0.46*)	(*1.66*)*	(*0.47*)
EBITDA/Assets	0.451	0.278	0.457	0.278
	(*5.01*)***	(*3.08*)***	(*5.07*)***	(*3.14*)***

(continued on next page)

Table 4 (*continued*)

Dependent variable: *Tobin's q*				
	(1)	(2)	(3)	(4)
	Regions		MSAs	
	Low	High	Low	High
Panel C: Groups divided by median Instl Ownership Herf				
Turnover	−0.06	−0.107	−0.073	−0.102
	(*0.90*)	(*1.18*)	(*1.06*)	(*1.18*)
Observations	803	796	803	796
R-squared	0.59	0.59	0.59	0.59
F tests (p-value):				
Difference between Geo Div, Low vs. High		0.013		0.046
Difference between Geo Div and Prop Type Div		0.013		0.033

proxy for the REIT's growth opportunities or relative valuation. Lagged values of *OP Unit Indicator*, *Size*, *Leverage*, *Turnover*, and year indicator variables are included as controls. As before, standard errors are clustered by REIT.

Table 5 presents the results of these regressions. We find some evidence that an increase in institutional ownership is associated with more diversification in subsequent years, although the significance is somewhat marginal, especially for the region-based measure of diversification. Combining this result with our previous results on institutional ownership and the diversification discount, suggests that institutions are not averse to diversification, even though it may destroy value on average.

Based on the results in columns (1) and (3), we find no evidence that changes in diversification are significantly related to current growth opportunities. We see stronger results when we examine the impact of relative value. We find significant positive coefficients on $Ln(Relative\ q\ Ratio_{t-1})$ in columns (2) and (4), suggesting that firms with higher valuations relative to their peers (e.g., due to higher quality management) are more likely to diversify in later periods. The coefficient on the interaction between $Ln(Relative\ q\ Ratio_{t-1})$ and the change in institutional ownership is negative and marginally significant in column (4), consistent with the idea that higher-relative-value firms are less likely to diversify following years in which their institutional ownership increased.

4.3. C. Do institutions buy or sell diversifying REITs?

Our final tests examine the extent to which lagged changes in diversification explain subsequent changes in institutional ownership. We regress the change in institutional ownership from year $t-1$ to t on the change in diversification over the

Table 5
Predicting changes in diversification. This table reports pooled OLS regressions of changes in regional diversification on lagged changes in *Instl Ownership*, measures of growth opportunities and relative valuations, plus interaction terms and controls. All independent variables are lagged by one year. All variables are as defined in Table 1 and have been standardized to have mean of zero and unit variance. The diversification measure uses the negative of the Herfindahl index. In columns (1) and (2), Regions are used to measure *Geographic Diversification* and in columns (3) and (4), MSAs are used to measure *Geographic Diversification*. t-statistics for each coefficient are in parentheses, where standard errors have been corrected for clustering within firms over time. Indicator variables for the year of the observation are also included, but these coefficients are not reported. One, two, and three asterisks denote statistical significance at the 0.10, 0.05, and 0.01 levels, respectively. The table also presents the number of observations and the R-squared for each regression.

Dependent variable: Change in Geographic Diversification				
	(1)	(2)	(3)	(4)
	Regions		MSAs	
Change in Instl Ownership$_{t-1}$	0.055	0.046	0.098	0.080
	(*1.75*)*	(*1.54*)	(*2.88*)***	(*2.63*)***
Synthetic Tobin's q_{t-1}	0.011		−0.005	
	(*0.34*)		(*0.12*)	
Synthetic Tobin's q_{t-1}	0.017		0.022	
* *Change in Instl Ownership*$_{t-1}$	(*0.63*)		(*0.72*)	
Ln(Relative q Ratio$_{t-1}$*)*		0.068		0.065
		(*2.56*)**		(*2.36*)**
Ln(Relative q Ratio$_{t-1}$*)*		−0.021		−0.049
* *Change in Instl Ownership*$_{t-1}$		(*0.83*)		(*1.94*)*
OP Unit Indicator	0.020	0.015	0.037	0.033
	(*0.87*)	(*0.66*)	(*1.74*)*	(*1.61*)
Size$_{t-1}$	−0.030	−0.038	−0.018	−0.027
	(*0.90*)	(*1.19*)	(*0.50*)	(*0.77*)
Leverage$_{t-1}$	0.025	0.020	0.039	0.033
	(*0.92*)	(*0.75*)	(*1.49*)	(*1.29*)
Turnover$_{t-1}$	0.092	0.100	0.070	0.080
	(*1.23*)	(*1.31*)	(*0.97*)	(*1.10*)
Observations	1397	1397	1396	1396
R-squared	0.05	0.06	0.05	0.06

Table 6
Predicting changes in institutional ownership using changes in regional diversification. This table reports pooled OLS regressions of changes in *Instl Ownership* on lagged changes in regional diversification, measures of growth opportunities and relative valuations, plus interaction terms and controls. All independent variables are lagged by 1 year. All variables are as defined in Table 1 and have been standardized to have mean of zero and unit variance. The diversification measure uses the negative of the Herfindahl index. In columns (1) and (2), Regions are used to measure *Geographic Diversification* and in columns (3) and (4), MSAs are used to measure *Geographic Diversification*. t-statistics for each coefficient are in parentheses, where standard errors have been corrected for clustering within firms over time. Indicator variables for the year of the observation are also included, but these coefficients are not reported. One, two, and three asterisks denote statistical significance at the 0.10, 0.05, and 0.01 levels, respectively. The table also presents the number of observations and the R-squared for each regression.

Dependent variable: Change in Instl Ownership				
	(1)	(2)	(3)	(4)
	Regions		MSAs	
Change in Geo Div$_{t-1}$	−0.013	−0.008	−0.022	−0.019
	(*0.48*)	(*0.29*)	(*0.88*)	(*0.72*)
Synthetic Tobin's q$_{t-1}$	0.019		0.020	
	(*0.66*)		(*0.68*)	
Synthetic Tobin's q$_{t-1}$ * *Change in Geo Div*$_{t-1}$	−0.037		−0.041	
	(*1.19*)		(*1.28*)	
Ln(Relative q Ratio$_{t-1}$*)*		0.002		0.002
		(*0.09*)		(*0.09*)
Ln(Relative q Ratio$_{t-1}$*)* * *Change in Geo Div*$_{t-1}$		0.010		0.014
		(*0.28*)		(*0.47*)
OP Unit Indicator	0.027	0.025	0.030	0.026
	(*1.21*)	(*1.10*)	(*1.30*)	(*1.14*)
Size$_{t-1}$	0.026	0.029	0.026	0.029
	(*0.82*)	(*0.91*)	(*0.83*)	(*0.91*)
Leverage$_{t-1}$	0.000	0.002	−0.001	0.003
	0.00	(*0.04*)	(*0.02*)	(*0.07*)
Turnover$_{t-1}$	−0.096	−0.095	−0.096	−0.095
	(*2.81*)***	(*2.74*)***	(*2.77*)***	(*2.75*)***
Observations	1279	1279	1278	1278
R-squared	0.10	0.10	0.10	0.10

previous year (from $t-2$ to $t-1$), as well as our measures of year $t-1$ growth opportunities (*Synthetic* q_{t-1}) and relative valuation (*Ln*(*Relative q Ratio*$_{t-1}$), plus interactions between the change in diversification and lagged growth opportunities or relative valuation. We include the same controls, including year fixed effects.

The results of these regressions are presented in Table 6. Across the various columns, we have little success explaining (future) changes in institutional ownership. In fact, the only significant coefficients are those for *Turnover*, which suggest that institutional ownership tend to increase more in our sample for the less liquid REITs. This is consistent with institutions being willing to hold an increasingly broader range of REITs over our time period.

Taken together, the results in Tables 5 and 6 present an interesting picture, although the results are not strongly significant in all specifications. They suggest that REITs with high valuations relative to their peers are more likely to expand into new markets. However, the likelihood that REITs do this is decreasing in ownership by institutional investors (column (4) of Table 5). This suggests that institutional owners either monitor such investments or tend to own more of firms with managers who are less likely to diversify in such circumstances. Moreover, while increases in institutional ownership are associated with subsequent increases in diversification, we have little ability to predict changes in institutional ownership as a function of changes in diversification. Combined with our evidence on the diversification discount and the number and concentration of institutional investors, these results suggest that institutions do not appear averse to buying or holding firms that diversify. Their presence is in fact associated with a significantly smaller diversification discount, especially for concentrated institutional ownership. These patterns are consistent with institutional investors serving as monitors of managers' decisions to diversify.[20]

5. Conclusion

This paper examines the relation between diversification and value on a sample of REITs from 1995 to 2008. We are ultimately interested in the degree to which large shareholders, such as institutional investors, affect both the costs and benefits of

[20] We also tested for relations between REITs' degree of diversification and either stock-market or operating performance, but do not present them for the sake of brevity. We find very little evidence of significant relations between stock returns and diversification, or between REITs' relative operating performance and diversification. Of course, the lack of results in these tests could be due to a lack of power. For stock returns, the non-results also suggest that these firms are fairly priced. This issue, which has been examined in a broader context by Lamont and Polk (2001), can be explored in future research, perhaps with larger samples. Our lack of evidence on operating performance suggests that any value-destroying effects of diversification may be difficult to pick up by examining REITs' earnings alone.

diversification. REITs offer a useful laboratory for examining these issues since they provide cleaner measures of both the degree of diversification and relative value. In addition, institutional investors provide a particularly important role in providing capital for REITs' investments, and thus may have more influence on their managers' decisions.

We find that REITs with greater geographically diversification trade at a discount, but find no relation between value and property type diversification. The latter result is probably due to the fact that most REITs in our sample period focus on just one property type. Turning to our central question, we find that the presence of institutional investors – especially types expected to be more active monitors – substantially reduces the diversification discount. This is consistent with institutions either effectively monitoring the REIT managers or selectively choosing good managers who can exploit the benefits of diversification. By sorting the sample based on the fractional institutional ownership, number of active institutional owners, and the concentration of institutional ownership, we find that the presence of a diversification discount is related to the level of institutional ownership and its concentration, but not the number of institutions. This latter result supports the monitoring over the selection hypothesis.

In summary, we find evidence consistent with diversification destroying value on average, as well as indirect evidence that suggest that the discount can be substantially reduced when managers are either better, or better monitored. However, the exact channels by which this diversification destroys value remains open and an area for future research. In our preliminary exploration of this issue we do not find evidence of more focused firms having either higher operating income or lower overhead than diversified firms, and we do not find evidence that diversified firms have higher returns which would suggest that their cost of capital is higher. Perhaps, future research can dig deeper into the data and examine other metrics. Real estate data may also provide advantages for such work, because it allows one to explore the underlying fundamentals of the firms' operations, such as vacancy rates of buildings and maintenance costs.

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