Focus, Transparency and Value: The REIT Evidence

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In this study, we trace the impact of corporate focus by examining the relationships among focus, cash flows and firm value. In contrast to past studies that examine the effects of diversifying across SIC-code-defined industries, we show that diversification, even within a single industry, negatively affects value. Our evidence, drawn from a panel of real estate investment trusts, indicates that this value reduction is not due to poor managerial performance. Project-level cash flows are actually higher for less focused firms. However, these gains are offset by higher management, administrative and interest expenses. Thus, the corporate cash flows available to shareholders are not related to focus. Finally, we provide empirical evidence that links the effect of focus on value to informational asymmetries which cause the equity of diversified firms to be less liquid. We attribute some of the effect of focus on the cost of both debt and equity to informational asymmetries or "transparency" costs.

Arguably, no one topic has attracted attention from more of the disciplines making up business administration than the topic of corporate focus. Leading journals in the fields of Accounting, Business Economics, Business History, Law, Marketing, Manufacturing, Planning, Statistics and Corporate Strategy have all published articles dealing with the costs and benefits of the concept variously described as corporate focus, diversification, product line width or core competency[1]. Across the dramatic range of analytic paradigms used in the investigation of corporate focus and performance in these disciplines, only moderate consensus has emerged. Montgomery (1994, p. 169) summarizes the empirical literature and concludes that there is "a neutral or negative, not a positive, relationship between diversification and firm performance." Firms that have been less focused or more diversified either under perform or perform as well as their more focused, less diversified counterparts.

Researchers in finance have also investigated the link between focus and performance, but have reached conclusions that are more uniform than those reached in other disciplines. Recent research regularly documents a strong, negative relationship between value and diversification. For example, Berger and Ofek (1995) estimate stand-alone values for individual business segments of conglomerates. They then compare the sum of these imputed values to the conglomerate's market value and conclude that diversification results in a 13% to 15% value loss. Comment and Jarrell (1995) examine the relationships between changes in focus– as measured by year-to-year changes in asset-based Herfindahl indices– and stock returns. They conclude that an increase in focus of .1 is associated with a 3.5% increase in shareholder wealth over a two-year horizon. Lang and Stulz (1994) examine *q*-ratios (the ratio of the market value of equity plus the book value of debt to the estimated asset replacement cost) and find that they are lower for less focused firms: average *q*-ratios for firms with one line of business exceed 1.5, but are uniformly below .95 for firms with multiple lines of business. Their results are not attributable to industry effects or to differences in size or R&D expenditure.

Previous studies generally measure focus by analyzing diversification across SIC-defined lines-of-business[2]. Our study, in contrast, examines diversification within a single SIC-defined line-of-business, namely real estate investment trusts. Although the diversification benefits of adding real estate investments to a portfolio have been extensively examined (see Corgel, McIntosh and Ott, 1995, pp. 28-29 for a review of this literature), we are unaware of academic studies of the role of focus within this industry.

Limiting our study of focus to one industry provides both advantages and disadvantages. One disadvantage is a limited sample size and a possible reduction in statistical power. Specifically, our sample consists of only 75 publicly- traded REITs over eight years. Secondly, the results from an investigation into only one industry may not be generalizable to all industries. It is conceivable that one of the unique features of the REIT industry (e.g., tax-exempt status, minimum dividend restrictions) may impact the relationship between focus and valuation.

These disadvantages are outweighed by the many advantages of examining this single industry. First, the simplicity of the REIT industry and the availability of detailed financial accounts allow us to distinguish project-level cash flows from corporate cash flows. As a result we analyze the effect of focus on project-level performance as well as on corporate-level performance. Second, because the underlying assets--real properties--are traded in an active primary market, we are able to obtain estimates of the replacement cost of assets with much greater precision than previous studies. Since active markets for underlying assets do not exist for the majority of industries, previous studies could only coarsely estimate replacement costs by accumulating historical capital investment and adjusting for inflation and estimated economic depreciation (Lindenberg and Ross, 1981). In contrast, our replacement cost estimates are based on recent market transactions prices of assets similar to those underlying each REIT.

The third advantage stems from our ability to measure not only project-level and corporate-level cash flows, but also the cost of the management team. For typical firms, the Sales, General and Administrative Expense number captures numerous types of corporate-level or overhead activities. In contrast, for a typical REIT, the general and administrative (G&A) expense number is dominated by the costs of the management team (Capozza and Seguin, 1998). As a result, by examining reported G&A, we can more accurately measure the costs of management, and can determine whether managing a diversified portfolio of projects is more costly, and the economic significance of these costs.

An additional advantage of examining a single industry is that we are able to circumvent a potential problem identified by Lang and Stulz (1994). They argue that firms in industries with poor growth prospects may be more inclined to diversify. If so, a negative relationship between diversification and performance may be spurious. That is, it is possible that it is not diversification that causes poor performance, but poor performance in the underlying line of business may be "causing" diversification. By concentrating in a single line-of-business, the cross-sectional variation in growth opportunities is diminished. Thus, the probabilities that any documented relationship is due to the spurious "industry effect" are like-wise diminished.

Finally, limiting our investigation to a single industry can provide important evidence on the upper bounds of synergistic gains to diversification. Since all firms and projects in our sample are within a single SIC classification, any gains from synergy should be great. As a result, we have essentially "stacked the deck" towards finding advantages to diversifying. If we are unable to detect any advantages even under these presumably favorable experimental conditions, then we have strong evidence that synergistic gains are not economically meaningful.

Our study extends previous research on focus along a number of dimensions. Although the statistical link between focus and performance has been well established, uncovering the latent economic channels between the two has proven to be elusive. In this study we examine three possible avenues through which focus affects value. We provide evidence that rejects two of the three candidates and that supports the remaining one.

First, we find no evidence that diversification leads to managers choosing less profitable projects due to limited or over-extended expertise. Indeed, our estimates suggest that project-level returns-on-investment are larger for firms with diversified asset bases. We interpret this finding as being consistent with the joint hypothesis that managers prefer to hold focused asset bases, and choose diversified assets only when tempted by larger project-level expected returns.

Second, there is no evidence that focus affects cash flow available to shareholders. Although less focused firms realize higher project-level rates-of-return, corporate-level expenses (general and administrative expenses and interest expenses) also increase with diversification. This increase occurs at a rate that is sufficient to offset most of the increase in project-level yields. As a result, corporate-level cash flows (cash flows available to claim holders) do not vary significantly with focus.

These findings are consistent with the following scenario. When diversifying, a manager must choose between (i) stretching her expertise across a greater range of investment types and suffering lower yields (perhaps due to asymmetric information or adverse selection problems), or (ii) acquiring additional (and more specialized) managerial talent. Our results suggest that the later course of action is predominantly chosen. However, the gains in project-level yields due to

increased managerial expertise are on average offset by their attendant costs. Thus, for our sample, there is no reliable evidence linking focus to corporate-level cash flow performance

Third, we do find evidence linking focus to liquidity. Amihud and Mendelson (1988) argue that a reduction in liquidity acts like a tax on the proceeds of the sale of a security, and so is reflected in current market value. We empirically demonstrate that equity value is related to liquidity, and that liquidity is, in turn, related to asset focus. Firms with more focused asset bases enjoy greater equity market liquidity, and higher equity market value. Further, once the indirect effects of focus on value via liquidity are explicitly accommodated, focus does not have a statistically significant impact on value.

In the following section, we present an economic model of the effect of focus on value. The third section describes our database and provides some details about the REIT industry pertinent to this study. We next describe our empirical results linking focus and performance. The analysis of focus, value and liquidity based on *q*-ratios follows. Our study ends with a discussion of conclusions and implications.

An Economic Model of the Effects of Focus

The model underlying our empirical specification is the fundamental dividend discount relationship. If V_t is the value of a share of stock at time t, D_t is the dividend paid at time t and r is the discount rate we have

$$V_t = \int_t^{\infty} D_t e^{-rt} dt \qquad (1)$$

For REITs, the corporate cash flow available to be distributed to shareholders, C_t, is simply the cash flow from properties, Y_t, minus any interest expense, I_t, and minus corporate overhead expenses, G_t (see Exhibit 1).

$$C_t = Y_t - I_t - G_t \qquad (2)$$

If REITs pay out 100% of corporate-level cash flows we have (from (1))

$$V_t = \int_t^{\infty} (Y_t - I_t - G_t) e^{-rt} dt \tag{3}$$

If cash flows from properties and overhead expenses are expected to grow, then we can write (from (3)),

$$V_t = \frac{Y_t}{r - g^y} - \frac{I_t}{r} - \frac{G_t}{r - g^g}, \tag{4}$$

where g^y and g^g are the respective growth rates of net property income and overhead expenses.

The dividend-discount model outlined above posits that equity value is the present value of future dividends. Since, by law, REITs are required to distribute 95% of earnings to maintain their tax-exempt status, the correlation between cash flow available to shareholders and dividends is high. As a result, the value of REIT equity is closely tied to the present value of future cash flows. Therefore, if focus affects equity value, it can do so through two channels, through corporate-level cash flows or through the rate used to capitalize future cash flows.

If focus affects corporate-level cash flows, it must affect at least one of the three components of corporate-level cash flows. For example, it is possible that more diversified firms realize lower property-level cash flows, perhaps due to the stretching of property-level managerial expertise across a wide range of property types and regions.

Alternatively, more diversified firms could enjoy higher property-level cash flows. One scenario consistent with this outcome is that firms prefer to hold focused portfolios but increase their diversification only if non-core projects offer abnormally large returns. It is also possible that focus is unrelated to property-level cash flows but does affect corporate-level cash flows. Under this scenario, focus must be related to at least one of the corporate-level expenses: G&A expense and interest expense.

The second channel through which focus can affect value is through the capitalization rate. Following Amihud and Mendelson (1988), we posit that one determinant of the appropriate discount rate for equity is the liquidity of that equity. If the potential for agency costs increases with diversity, either due to greater informational asymmetries (Harris, Kraebol and Raviv (1982)) or to increased costs of collecting information (Ippolito (1989)), greater diversification leads to higher required rates of return. Then focus can affect value, even if cash flows are unaffected. For example, Ferris and Sarin (1997) find that diversification is related to analyst coverage and the degree of informational asymmetries. More diversified firms have less analyst coverage and greater dispersion of earnings forecasts.

Figure 1 depicts the two economic channels though which focus can affect value. First, focus can affect at least one of the components of corporate-level cash flow (project-level cash flows, interest expenses and/or G&A expenses). The second, indirect route by which focus can affect value is through the liquidity component of the discount rate.

Our statistical tests are designed to distinguish between the above indirect effects and a direct effect of focus on value. We first show that focus has a significant but offsetting effect on the three components of corporate cash flow (project-level cash flow, interest expense, and G&A expense). Since there is no significant effect of focus on corporate-level cash flow, the link between focus and value cannot be arising from the numerator or corporate cash flow channel.

We then estimate specifications relating *q*-ratio to focus variables alone. Since we rule out the effect of focus on corporate cash flow, we deduce that a significant relationship is consistent with focus affecting value either through a direct effect on the discount rate or indirectly through liquidity. To disentangle these possibilities, we estimate specifications linking *q*-ratios to both focus and liquidity variables. If the focus variables remain significant when liquidity is included, we can deduce that the impact of focus on value is not entirely attributable to the effect it has on liquidity. In contrast, if focus is significant when focus alone is included but insignificant when we control for cross-sectional variations in equity liquidity, we have evidence that focus affects value through the liquidity component of the discount rate. The results support this latter case.

Data

The database contains a subset of the REITs listed in the NAREIT (National Association of Real Estate Investment Firms) source books from 1985 to 1992 and is described in detail in Capozza and Lee (1995). The database focuses on equity REITs and excludes all mortgage, hotel, restaurant, and health-care REITs; REITs that do not trade on the NYSE, AMEX, or NASDAQ; and REITs for which property information is not available. These exclusions result in a sample of 75 REITs, which are listed in Table 1, leads to a total of 298 usable observations.

For each observation, balance sheet, income statement, and property variables were collected using 10-K reports, annual reports to shareholders, and proxy statements. The CRSP daily returns files were used to compute equity value information.

One particularly powerful feature of this database is that it provides estimates of the real estate market, or replacement, value of properties held. Capozza and Lee derived these estimates by first assigning property-specific capitalization rates to each property based on its location and type. They next calculated an individual REIT's average capitalization rate as the weighted average of the component property capitalization rates. For a particular portfolio, the market value of properties was estimated by dividing the property cash flow by the REIT's weighted average capitalization rate. Finally, net asset values were estimated by subtracting liabilities from estimated property assets plus other assets. Additional adjustments were make for joint ventures, differences between coupon rates and market yields on debt, and property turnover.

We construct our modified *q*-ratios by dividing the equity-market value of equity by the real-estate-market (replacement) value of properties plus the book value of other assets minus the book value of debt. Other assets and debt are predominantly current assets or liabilities with low durations. Thus, deviations between book and market values for other assets and debt tend to be small. While we recognize that these estimates of value contain measurement error, we believe they are the most sophisticated available. Further, given the homogeneity of the

assets and the methodology employed, we posit that our estimates of real-estate-market values of assets are economically less noisy than those used in estimates of Tobin's *q* which are usually based on the depreciated accounting cost of assets.

Our measures of focus in this study are Herfindahl indices based on product line (property type) and regional location. The first, Type Herf, is computed as $\sum_{t=1}^{4} S_t^2$ where S_t is the proportion of a firm's assets invested in each of four real estate types: office, warehouse, retail or apartment. Higher levels of concentration by property type lead to higher levels of the index: If the firm is highly focused along one dimension, the index is close to one; while the index approaches .25, if the firm's portfolio of properties is equally diversified across the four property types. We also compute Regional Herf as $\sum_{r=1}^{8} S^2_r$ where S_r is the proportion of a firm's assets invested in each of eight real estate regions: New England, Middle Atlantic, Southeast, Midwest, Plains, Southwest, South Pacific, and North Pacific. As with the Type Herf variable, this concentration variable can vary from one for a geographically focused REIT to .125 for a REIT with holdings equally diversified across the eight regions. We also create a single variable that captures both type and regional focus simultaneously. This variable is constructed as $\sum_{r=1}^{8} \sum_{t=1}^{4} S_{rt}^2$ where S_{rt} is the proportion of a firm's assets invested in real estate type *t* in region *r*. If regional and property type diversification are not independent, then this variable will capture these interactions.

Table 2 contains mean, standard deviation and extreme value information on variables used in this analysis. There is a large dispersion in the size of the firms considered here; estimated real estate market or replacement values of total assets vary from just under $7 million up to over $750 million. The weighted-average capitalization rates used to construct estimates of property values vary between 7.4% and 10.6%. There is considerable variation in the use of debt in the capital structure, with debt representing anywhere from zero percent to 94.4% of the capital

structure. We also provide summary data on three income statement items. Project Cash flows (PCFs) represent property level cash flows and represent the difference between property level revenues and property level expenses (see Exhibit 1). These gross cash flows vary from under a half million dollars to over $70 million. To determine funds available for distribution to equity holders, both interest expenses and corporate-level or general and administrative (G&A) expenses are subtracted from the property cash flow, yielding corporate cash flows (CCFs). G&A expenses vary from $66,000 to $5.04 million, or, expressed as a fraction of assets, from zero to 4.7% with a mean of 1.1%

Of perhaps greatest importance here are the two measures of focus and the estimates of *q*-ratios. Both Herfindahl's vary across almost their entire feasible ranges. Property type concentration varies from 26% to 100% with a mean of 67%, while the regional concentration metric varies from 15% to 100% with a mean of 58%. Estimates of replacement-to-book-values-of-assets average .99, but there is great variation, with estimates ranging from .11 to almost 2.

In Panel B of this table we provide correlations for the key variables of our study. Notice first that the regional Herfindahl is slightly negatively correlated with the property-type Herfindahl, suggesting that decisions about diversification along the two dimensions are independent. Second, the Herfindahls are weakly and positively correlated with assets, trading volume or leverage. Focused REITs tend to be larger, more levered and more liquid. Finally, although these are simple correlations, the Q-ratio is positively correlated with focus in general and dollar trading volume, our proxy for liquidity, which provides at least preliminary support for the hypothesis that focus affects value and that liquidity is a key factor in this relationship.

Focus and Cash Flow Performance

In this study, we investigate the impact of product-line focus and regional focus in two ways. This section examines the links between focus and cash flows. We investigate the role of focus on property level cash flows, on corporate-level expenses (G&A expenses) and on interest expenses. This section concludes with our investigation of focus and cash flows by examining the relationship between focus and corporate-level cash flows. In the section that follows, we present the second direction of our investigation where we examine links between valuation and focus directly by employing our modified *q*-ratios.

Project-level Cash Flows

As a benchmark or baseline model, we regress property-level cash flows– the difference between property-level revenues (rents) and property-level expenses (maintenance, property taxes, advertising, etc.)– on our estimates of the real-estate-market values of the assets held by the REIT. The coefficient can be interpreted as a gross or property level yield. The results of estimating this specification using weighted-least-squares with asset replacement values used as weights and allowing for intercepts that vary annually appear in the first column of Table 3.[3] The estimated coefficient associated with real-estate-market value of assets indicates that REIT's earn, on average, a gross yield of 8.7%, which is consistent with the range of capitalization rates presented in Table 2.

It is important to note that we are considering cash flow yields computed using an objective measure of real-estate-market value as the denominator rather than an accounting measure of the actual price paid for the property. Therefore, the notion of rates of return is based on the intrinsic value of the property and not based on return to the actual investment made. As a result, this specification does not allow us to consider whether managers paid a fair value for the properties originally, nor does it allow us to investigate rates of return based on original prices. Our final tests, based on *q*-ratios will shed some light on these issues, however.

While the data also do not allow us to assess whether managers extract more value from a given property, the analysis can address whether managers choose higher yielding properties when they diversify. Management may have a preference for a focused asset base, but can be induced to run more diversified, and therefore more complex, asset bases if lured by higher rates of return. In this case, property-level cash flows will increase as diversification increases. Alternatively it is possible that when diversification increases in the cross-section, managerial expertise in generating cash flows or in containing property-level expenses becomes over-extended. As a result, property-level cash flow yields might decline as diversification increases.

To empirically distinguish between these alternatives, we modify the previous specification and allow the yield to vary with focus. Abstracting from our use of weighted-least-squares and annual intercepts, the benchmark specification was:

$$Cash\ Flows = \beta\ Assets + \varepsilon, \qquad (5)$$

so that β is a measure of the cash flow yield.

In this specification, we allow β to vary along both dimensions of focus, so:

$$\beta = \beta_0 + \beta_t\ (Type\ Focus) + \beta_r\ (Regional\ Focus). \qquad (6)$$

Substitution of (2) into (1) indicates that the proper specification includes not focus itself, but the interaction of our focus variables with the real estate market ("main street") value of the assets.[4]

Estimates of this specification are presented in the second column of Table 3. The results are consistent with the hypothesis that managers choose to diversify only when the marginal

property offers high property-level cash flows. The coefficients associated with both dimensions of focus are negative: increases in focus, as measured by movements in the Herfindahl indices towards one, are associated with declines in property-level cash flow yields. Each coefficient is significantly negative, and an F-test rejects the null that both coefficients are simultaneously equal to zero at any standard significance level. The coefficients are also economically significant. A trust that is perfectly focused along both dimensions (e.g., a trust holding only apartment buildings in the Southwest) has an expected gross yield of 8.14% [= 9.71 – (1) .77 – (1) .80], while a trust that is equally diversified across the four property types and nine regions has an expected gross yield of 9.43% [= 9.71 – (.25).77 – (.125).80], or about 130 basis points higher.

The third specification presented in Table 3 augments the previous specification by including debt and by allowing the gross yield to vary by the size of the asset pool. We include this specification for two reasons. First, this specification can be considered a test of robustness of our results to alternative functional forms. Second, and more importantly, we include this specification since these additional variables are relevant in subsequent analyses. We will exploit this second feature below.

The results of this specification reinforce our previous estimates. Again, coefficients associated with focus are individually and jointly significant and negative. Consistent with independence between investing and financing decisions, neither of the debt variables is significant. Finally, the positive coefficient associated with squared assets represents weak evidence that gross or property-level cash flow yields increase with the size of the asset base. This is consistent with economies of scale at the property management level.

In these and most of the regressions that follow, the regional focus Herfindahl has a weaker effect than the property type Herfindahl. This suggests that diversifying to another property type has more effect on cash flows and expenses than diversifying to another region. Given the nature of real estate assets, this result is reasonable since managers are often specialized by property type.

Corporate-level Administration Expenses

There are two deductions from gross cash flows that determine net cash flows, alternatively called corporate-level cash flows, or funds from operations (FFO). The deductions are interest expenses, which we examine in the next sub-section, and the cost of the corporate-level management team, called general & administrative (G&A) expenses, which we examine here. This G&A measure includes corporate-level asset management expenses (including salaries to the management team, filing and reporting costs) but excludes all property-level expenses (such as property management, maintenance, or taxes).

Following Capozza and Seguin (1998), we consider three dimensions of firm "structure:" the size of the firm, the focus of the firm, and the amount of leverage employed in the capital structure. Size is relevant if there are economies of scale in managing real estate assets. If such economies exist, then total G&A expenditures would increase with firm size, but at a decreasing rate.

We also consider the use of leverage in the capital structure. Capozza and Seguin (1998) argue that the often cited benefits of debt; the tax shield due to the deductibility of interest as an expense, and the reduction in agency costs due to the mitigation of "free cash flows," (Jensen (1986)) is of limited relevance in the context of REITs. First, REITs are not subject to corporate taxation, so there is no tax-shield benefit to issuing debt. Second, since REITs are required to pay out 95% of earnings as dividends, the temptation to accumulate cash is ameliorated. Since the benefits of debt are limited, the use of debt imposes costs on shareholders. First, increases in the amount of debt increase *ex ante* the expected value of wealth transfers due to bankruptcy-induced restructurings. More importantly, adding debt to the capital structure creates additional financial management, reporting and filing requirements. Capozza and Seguin (1998) argue and provide empirical evidence that the interplay of these costs creates a concave relationship between G&A expenditures and leverage.

Of primary importance, however, is the relationship between corporate-level expenses and focus. It is plausible that diversification across property types increases research and search costs perhaps due to asymmetric information or adverse selection problems. One set of options available to a manager of an increasingly diversified portfolio is to stretch her expertise across a greater range of investment types, increase her efforts expended and / or suffer reduced performance. Another alternative is to acquire more, specialized, managerial talent. Under this later scenario, holding assets under management fixed, increasing the diversification of a portfolio increases G&A expenditures.

Estimates of our specification linking G&A expenditures to size, leverage and focus appear in the fourth column of Table 3. As above, estimation is performed using WLS with the real-estate-market value of assets used as weights. Again, annual intercepts are estimated but not reported. Consistent with the predictions and estimates in Capozza and Seguin (1998), there is strong evidence of a concave relationship between the use of leverage and G&A expenditures. The annual intercepts, which are not reported, but provide estimates of a fixed-cost component of G&A expenditures, varied from $69,000 to $154,000. Marginal costs of corporate-level management can be inferred from the coefficient associated with assets under management. This estimate slightly exceeds 1%. Inconsistent with the notion of economies-of-scale, the quadratic term is insignificant, suggesting that the marginal corporate-level cost of management is invariant to the size of the asset base and equals a constant 1% of real-estate-market value of assets under management.

There is, however, evidence that this marginal cost varies with focus. The coefficients associated with each dimension of focus are negative and significant. Further, the estimates are economically meaningful. Duplicating the analysis of the impact of focus on gross cash flows from above, a trust that is perfectly focused along both dimensions has an expected marginal G&A expense rate of .50% [= 1.09 – (1).38 – (1).21], while a trust that is equally diversified across the four property types and nine regions has twice the expected G&A expense rate, at .96% [= 1.09 – (.25).38 – (.125).21)].

Interest Expenses

The second expense subtracted from property-level cash flows to calculate cash flows available for shareholders is interest expense. We use the same functional form and set of independent variables in investigating the determinants of interest expense as we used in investigating gross cash flows and G&A expenses. Absent an obvious alternative functional form, we employ this specification for two reasons. First, since the specifications for gross cash flows, net cash flows, and the two corporate-level expenses use (i) the same dataset of independent variables, and (ii) identical functional form, differences in the impact of a factor on gross versus net cash flows can be readily traced and attributed to one of the two corporate-level expenses. The coefficient associated with a particular independent variable in the net cash flow specification must equal the coefficient associated with that same variable in the gross cash flow specification minus the coefficients in the interest and G&A expense specifications[5].

The second motivation for the use of this specification is that it is consistent with a simple model linking the rate of return required by debt holders to the quantity and quality of assets used as collateral. Assume that the rate of return required by debt holders, i, is a function of the ratio of debt to the value of the assets as collateral to debt holders, or $i = i(D/A)$ with ι'>0 and ι">0. Partial differentiation yields the intuitively consistent results that $\partial i/\partial D > 0$, $\partial i/\partial A < 0$, *and* $\partial^2 i/\partial A^2 > 0$. Further assume that the value of the assets as collateral to the debt holders, A, is related to their focus, F, so $A=a(F)$. The sign of the relationship between interest expense and focus depends crucially on the sign of $\partial A/\partial F = a'(F)$. It can be argued that diversification reduces total cash flow risk, so that a less focused asset base is of greater collateral value for debt holders. Alternatively, if a more diversified asset base is more difficult to value and monitor, perhaps due to increased informational asymmetries, then a less focused asset base would have, *ceteris paribus*, less collateral value. Therefore, the sign of the relationship between asset focus and interest costs may only be determined empirically.

The fifth column of Table 3 contains estimates of parameters linking interest expenses to assets, liabilities and asset focus. As predicted by the simple model linking interest expenses to capital structure, the estimated coefficients associated with assets and squared-assets are negative and positive respectively, although the coefficient associated with asset levels is not significantly so.

The coefficient linking interest expense with the amount of debt can be interpreted as an estimate of the marginal cost of debt. There is evidence that this marginal debt servicing cost, estimated to be 8.8%, varies with the amount of debt in the capital structure. The coefficient associated with the quadratic debt term is significantly negative, suggesting that as the amount of debt in the capital structure increases, the marginal cost of this debt declines. This is consistent with a scenario where those trusts that have an advantage in securing debt financing, due to relationships with lenders, are those trusts that tend to issue more debt.

There is no evidence that greater diversification increases the collateral value of assets. Instead, the parameter estimates provide some weak evidence that greater focus reduces borrowing costs. Both focus-related coefficients are negative, and the hypothesis that the two jointly equal zero is rejected at the 5% level. However, only the estimate associated with property-type focus is significant. These results are consistent with the hypothesis that an asset base that is more diversified along the product-line dimension has a lower collateral value, perhaps due to a lack of transparency, i.e., the increased difficulty in valuing and monitoring.

Funds Available to Equity Holders

Consistent with the specifications used above for examining the relationships between focus and gross cash flows, corporate-level expenses and interest expenses, we estimate a specification linking corporate-level cash flows (cash available to shareholders) to quadratics in assets and liabilities, and to the two dimensions of focus. The results, again using WLS and annual intercepts, are reported in the sixth column of Table 3. The coefficient associated with the real-estate-market value of assets can be interpreted as a net return-on-asset yield estimate. For reasons outlined above, this estimate of 8.2% equals the estimated gross cash flow yield (9.1%)

minus the marginal cost of G&A expenses (1.1%) and minus the (insignificant) marginal impact of interest expenses (-.2). The coefficient associated with assets-squared is insignificant. The coefficients associated with the first two moments of debt are negative and positive respectively, consistent with the concave relationship between debt and interest expenses.

Of principal importance, however, is the link between focus and cash flows available to shareholders. Our evidence provides no evidence of any such relationship: both of the individual coefficients are insignificant and the null hypothesis that the two are jointly equal to zero cannot be rejected at any usual significance level.

The lack of a relationship between focus and net cash flows may appear inconsistent with the evidence in column three that supports a significant relationship between diversification and gross cash flows. However, by exploiting the deterministic relationships among the coefficients in columns three through six, we can ascribe and apportion this difference to the relationships between diversification and the two corporate-level expenses. Although increased diversification along both dimensions increases gross cash flows, these benefits are essentially offset by higher G&A expenses and, in the case of property-type diversification, higher interest costs, perhaps due to lower collateral value.

To illustrate, a trust that is perfectly focused along both dimensions has an expected corporate level cash flow yield of 7.41% [= 8.23 – (1).41 – (1).41], while a trust that is equally diversified across the four property types and nine regions has a corporate level cash flow yield of 8.07% [= 8.23 – (.25).41 – (.125).41)]. This difference, 66 basis points, is half the difference at the property cash flow level, and is not statistically significant.

To summarize this section, corporate cash flows for REITs can be decomposed into three components--project-level cash flows minus corporate G&A expenses and interest expense. Our results indicate that cash flows from projects are lower for more focused firms; but, at the same time, G&A expenses and interest expenses are also lower. On balance, these latter effects offset the project-level effect so that corporate-level cash flows are not significantly related to focus.

Focus and Value

Results in the previous section provide no support for the hypothesis that focus affects performance as measured by cash flows available to shareholders. However, previous literature suggests that diversified firms are valued lower than focused firms. For this result to hold in our sample, it must be the case that the cash flows from diversified firms are discounted at a higher rate than from the focused firm. In this section we concentrate on two such explanations for differing discount rates.

Recall that throughout this analysis, we have examined cash flows by controlling for the size of the asset pool. Our metric for the size of the asset pool has been the replacement value of assets which we have estimated using the real-estate-market value of assets, rather than the actual purchase price. As a result, we cannot directly measure wealth losses or gains due to systematic over- or under- priced asset acquisition. However, if increased diversification taxes management's ability to accurately value proposed projects, then less-focused firms would be more vulnerable to acquiring "lemons." If diversified trusts consistently overpaid for acquisitions, or, equivalently, consistently acquired negative NPV projects, then their net-cash flow yields based on replacement values would not be affected. However, the growth rate of their cash flows would be reduced[6]. Since discount rates are the difference between the no-growth discount rate and the cash flow growth rate, trusts that consistently overpaid for assets would command higher discount rates.

The second hypothesized link between focus and discount rates stems from liquidity. Amihud and Mendelson (1987) argue that the costs of transacting act like a tax and that rational agents discount the present value of such taxes into their valuation calculus. They then demonstrate that less liquid securities command a higher required rate of return.

We argue that increasing the diversification of the asset base could curtail liquidity. Our argument is an extension of the analysis of Harris, Kriebel and Raviv (1982), who contend that information is more dispersed in conglomerates. As a result, information asymmetry costs

increase with the diversification of the asset base. Such increases stem from increases in the noise component of monitoring and signaling.

Although their analysis focuses on asymmetries between central administration and divisional managers, we posit that the intuition underpinning their analysis can be extended to examine the informational asymmetries between management and shareholders. We argue that if the asset base is more diversified, the asymmetric information problem is exacerbated since the ability of management to clearly and credibly signal the value of the firm or the amount of effort they expend is diminished. As a result, the ability of shareholders to value the firm and evaluate managerial efforts is likewise diminished.

The empirical analysis in this section has two aims. First, using *q*-ratios, we examine whether value varies with diversification. Although such a link has been thoroughly documented in the literature, our analysis is the first to examine whether value varies with diversification within a single industry. We choose *q*-ratios for reasons similar to those expounded by Lang and Stulz (1994) who argue that:

> By focusing on Tobin's *q*, rather than on performance over time, we avoid some of the problems of the earlier literature.... since *q* is the present value of future cash flows divided by replacement costs, no risk adjustment or normalization is required to compare *q* across firms.

Given our evidence showing no relationship between focus and cash flows available to shareholders, finding that diversified firms are valued lower than their focused counterparts indicates that discount rates vary with focus. The second objective of our empirical analysis is to determine the contribution of a link between focus and liquidity on discount rates. We will investigate whether liquidity varies with focus, and whether, after controlling for the impact of liquidity on discount rates, focus has any remaining effect on valuation. We will attribute any such residual impact as evidence consistent with the belief that managers of diversified trusts consistently overpay for their investments.

The first column of Table 4 presents estimates of a specification where our modified *q*-ratio is regressed against a series of annual intercepts. As discussed in the data section, the dependent variable is the equity-market value of equity divided by the net replacement value of equity. The denominator is calculated by adding the real-estate-market value of real estate assets and the book value of other assets, and then subtracting the book value of debt. Since this first specification contains only annual intercepts, the estimated coefficients can be interpreted as annual averages of the ratio. These averages declined from their heights of 1986 and 1987 until 1991. This decline can be attributed to equity market agents correctly anticipating declines in real-estate-market values due to overbuilding throughout the 1980's (see Hendershott and Kane (1995)).

In the second column of Table 4, we augment the specification by including Herfindahl indices to capture the two dimensions of focus. There is evidence, albeit weak, that valuation varies with property-type focus. The coefficient associated with the property-type Herfindahl is significantly positive, indicating that as focus increases towards one, the value of the firm increases. The magnitude of the coefficient is also economically significant. Comment and Jarrell (1995) compute Herfindahl concentration indices across SIC-defined lines of business. Using stock return data, they find that a .1 increase in a line-of-business Herfindahl is associated with a 3.5% wealth gain in two years. Our estimates suggest that, within a single SIC-defined line of business, a similar increase of .1 is associated with a 1.6% wealth gain.

Focus and Liquidity

Our strategy for determining whether the negative valuation effects associated with diversification are attributable to reduced liquidity requires two steps. The first step is to examine whether there is a link between liquidity and focus. If such a relationship exists, we would next investigate whether focus has any residual direct impact on value after controlling for the indirect impact of focus on value through liquidity.

Empirically measuring liquidity is not trivial due to the complexity and multi-dimensionality of liquidity. A common approach is to measure inputs or determinants of liquidity, including quoted, effective or realized bid-ask spreads, or quoted depths. However, recent evidence (Datar et al., 1998; Peterson and Fialkowski, 1994) find that "quoted spread is a poor proxy for the actual transactions costs faced by investors . . .".

In contrast, we choose to measure liquidity using a measure that reflects the outputs of the market exchange process; namely, dollar trading volume[7]. We regress annual dollar volume against the replacement value of assets and assets multiplied by the two Herfindahl concentration indices. Results are unchanged if we add squared assets, liabilities, or squared liabilities to the specification. Estimation via weighted least squares, with the real estate market value of assets as weights, yields:

$$\$Vol = \sum_{t=1985}^{1992} \alpha_t D_t + \underset{(11.9)}{0.93\ Assets} + \underset{(4.2)}{0.30\ Assets * Type\ Focus}$$

$$\underset{(-0.3)}{-0.02\ Assets*Regional\ Focus} + \varepsilon \qquad (7)$$

The coefficient associated with assets can be interpreted as a turnover ratio. It suggests that the annual trading volume for a firm that is fully diversified along both dimensions is roughly 100% [= .93+.3(.25) - .02(.125)] of the replacement value of its equity. However, the coefficient associated with property type focus indicates that this turnover ratio increases by 22.5% [=.3(1 -.25)] for a trust that is focused. The coefficient associated with regional diversification is insignificant. These results are consistent with the joint hypothesis that increased diversification

along the property type dimension makes monitoring and valuation more difficult, thus eroding liquidity.

Given that focus affects both firm value and liquidity, the final step of our analysis involves determining whether the deleterious effects of diversification on value are entirely attributable to the impact of focus on liquidity, or whether focus effects value through avenues other than liquidity. To do so, we augment our *q*-ratio specification by adding annual dollar trading value. The results appear in the third column of Table 4.

Consistent with the body of literature linking valuation to liquidity, the coefficient associated with dollar volume is positive and highly significant and causes the significance of focus to disappear. This result is consistent with the argument that focus affects value indirectly through liquidity. After controlling for this direction of causation, there is no evidence that focus has any additional impact on firm value[8].

Tests of Robustness

In this subsection we investigate the robustness of our results along two dimensions. First, there may exist a latent problem of simultaneity since share price appears both as the determinant of the dependent variable, *q*-ratio, and an independent variable, dollar volume. If price is measured with any error, this problem of simultaneity leads to estimates that are biased and inefficient. To mitigate this problem, we reestimate our primary specification while replacing dollar volume with share volume, which is highly correlated with dollar volume but not a function of price. The results of this estimation appear in column 4.

Our primary results and conclusions are robust to this modification. The coefficient associated with share volume is again positive and significant. Note that this coefficient is 17 times the coefficient associated with dollar volume in column 3. This multiple is of the same order of

magnitude as the average share price for our sample, which is $14. As above, neither of the focus variables is significant, and the F-test indicates that the two are jointly insignificant.

As a second test of robustness, we replicate these tests using our single variable that captures both dimensions of focus. The results of including this joint variable are reported in column 5. The estimated coefficient is positive and significant at the 5% level, suggesting that focus is associated with firm value. When compared with the estimates in column 2, the combined variable is slightly more significant.

However, when in column 6 we augment the specification by including our proxy for liquidity, in this case share volume, the significance of the focus variable again disappears. Although not reported, we reach similar conclusions using dollar volume instead of share volume.

Conclusions

In this study, we provide three contributions to the already extensive literature linking corporate focus to firm value or performance. First, we demonstrate that focus affects firm value, even when focus or diversification is measured not over lines-of-business, but within a single SIC-defined line. Using our sample of Real Estate Investment Trusts, we demonstrate that diversification across property types (office, warehouse, retail or apartment) adversely affects value. Since all firms are within a single SIC classification, the gains to synergy should be great. However, despite our attempt to "stack the deck" towards finding advantages to diversifying, we are unable to detect any valuation advantages. Thus we conclude that even the upper bound to synergistic gains may not be economically meaningful.

Our second contribution stems from our analysis of the relationships between cash flows and focus. We find that diversification does not lead to under performance. Indeed, our results show that less focused trusts actually earn higher gross yields from their properties, where yields

are calculated relative to real-estate-market values for the properties. However, the higher gross cash flow yields are offset by higher corporate-level expenses, interest costs and especially general and administrative expenses, for more diversified trusts. We interpret the positive relationship between diversification and G&A expenses as supporting a scenario where management teams are relatively larger for more diversified trusts. Overall, we find no evidence that cash flows available to shareholders vary with focus.

Since cash flows are invariant to focus but value varies significantly with focus, we deduce that focus affects value through the discount rate. Our final contribution is to provide a linkage between focus and the discount rate. We show empirically that focus has a significant effect on liquidity. We hypothesize that less focused firms are harder to value and monitor, i.e., less "transparent". As a result, information is costly to collect, informational asymmetries and agency costs increase and liquidity suffers. This hypothesis is bolstered by the empirical work of Ferris and Sarin (1997) who demonstrate that more diversified firms have less analyst coverage, and greater informational asymmetries as measured by the dispersion of earning forecasts. Since less liquid investments command a higher required rate of return, cash flows from less focused trusts are discounted at a higher rate and equity claims have a lower value. Since our evidence is that focus affects the discount rate through an indirect effect on liquidity and not directly on the discount rate, our results do not support an explanation where managers overpay for assets.

Why does focus matter? Our results point to an answer that is surprising. Since past research concludes that diversification decreases performance at the firm level, it is unclear why managers would ever choose to diversify. However, our results identify a potential motive; diversification can improve performance because diversified firms can review a broader selection of projects[9]. By choosing from the entire universe of available projects a fully diversified firm in our sample can increase overall yield by 160 basis points [= .75*1.29 + .875*.73, from Table 3, column 3].

Unfortunately, the extra project-level yield associated with diversification is not an economic "free-lunch." Indeed, this increase in gross yield comes only with a cost in the form of added administrative expenses. Managers may be aware of the extra G&A expenses associated with increased diversification but may choose to diversify despite these costs since the administrative expenses are not large enough to offset the benefits. Our estimate of these increased G&A costs for a fully diversified firm is 47 basis points [= .75*.38 + .875*.21, from Table 3, column 4] leaving a net yield gain of over 1%.

However, both the cost of debt and the cost of equity increase with diversification. In contrasting a fully diversified firm relative to the undiversified firm, our estimates indicate that the interest rate on debt is, coincidentally, also 47 basis points larger for the fully diversified firm [= .75(.48) + .875(.12), from Table 3, column 5]. Our *q*-ratio estimates imply that equity will be discounted by 23% [=.75(.16) + .875(.12), from Table 4, model 2] from the net replacement value of the equity (replacement value of the assets minus the liabilities). The magnitude of this impact probably explains why earlier studies are able to find a significantly negative effect of diversification despite noisy data and low statistical power.

We hypothesize that lenders and shareholders impose this penalty due to the exacerbation of the costs of information acquisition and information asymmetries when firms diversify. If the assets underlying a diversified firms are more difficult or costly for investors to evaluate, the collateral value of the underlying assets is lower, so lenders rationally demand a higher rate of return. Similarly, as Ippolito (1989) argues, as the cost of information acquisition increases, informed equity investors rationally demand a higher rate-or-return to compensate them for their greater information acquisition costs or potential agency costs. We believe that our results represent strong support for nominating liquidity as a key driver in the focus-value relationship.

Although the effect of liquidity on value has been identified at least since Amihud and Mendelson (1988), our findings—especially the magnitude of our estimate of the liquidity discounts—suggests that liquidity is an economically important determinant of value. This has implications for both researchers and practitioners. For researchers, it is important to control for the impact

of liquidity for studies of firm value in general and studies linking value with focus in particular. Practitioners, on the other hand, must explicitly consider the impact that their project selection decisions will have on the liquidity of their equity, the rate of return required by investors and thus, the wealth of their shareholders. Indeed, our data provides evidence that managers have become aware and have reacted to the penalty imposed on diversified trusts, especially those diversified by property type. Specifically, we calculate the average property type Herfindahl for each year in our sample and find a significant increase in property type focus (.59 rising to .72) over our sample period[10].

While our results provide strong evidence of a link from focus to liquidity and firm value, it must be recognized that our results arise from data for a single industry with unique characteristics. The characteristics of the REIT industry make it possible to construct more extensive tests of the economic channels through which focus can affect firm behavior. We see no reason why the fundamental economic relationships estimated in this research would not apply equally well to other industries. Nevertheless, because of the limitation to an industry with a unique regulatory structure, general conclusions should await studies of other industries. The results do provide a roadmap of promising avenues for future research on other industries.

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Table 1: The REIT Sample

The sample of REITs, drawn from the Equity REIT Database project, described in Capozza and Lee (1995). This database is constructed from the 1992 NAREIT (National Association of Real Estate Investment Trusts) source book, which lists all publicly traded REITs (209 REITs) as of December 31, 1991. The database excludes all mortgage, hotel, restaurant, and hospital REITs, REITs that do not trade on NYSE, AMEX, or NASDAQ, or for which property information is not available. These exclusions lead to a sample of 75 REITs, which are listed here. Given this list, the researchers then attempted to construct one observation per REIT for each of the years between 1985 and 1992. Of the 75 equity REITs, 32 appear in all eight years and are annotated with a star (*), with the remaining appearing for at least one year.

*B R E Properties Inc
Berkshire Realty Co Inc
*Bradley Real Estate Trust
Burnham Pacific Properties Inc
*California Real Estate Invt Tr
Cedar Income Fund Ltd
Cedar Income Fund 2 Ltd
Chicago Dock And Canal Trust
*Clevetrust Realty Investors
*Continental Mortgage & Eqty Tr
Copley Property Inc
Cousins Properties Inc
Dial Reit Inc
Duke Realty Investments Inc
*E Q K Realty Investors 1
*Eastgroup Properties
*Federal Realty Investment Trust
*First Union Real Est Eq&Mg Invts
Grubb & Ellis Realty Inc Trust
*H R E Properties
*I C M Property Investors Inc
*I R T Property Co
Income Opportunity Realty Trust
Koger Equity Inc
Landsing Pacific Fund
Linpro Specified Pptys
*M G I Properties Inc
*M S A Realty Corp
*Meridian Point Realty Tr 83
*Meridian Point Realty Tr 84
Meridian Point Realty Trust IV
Meridian Point Realty Trust VI
Meridian Point Realty Trust VII
Meridian Point Realty Trust VIII
*Merry Land & Investment Inc
Monmouth Real Estate Invt Corp
*New Plan Rlty Trust
*Nooney Realty Trust Inc
*One Liberty Properties Inc
P S Business Parks Inc
Partners Preferred Yield Inc
Partners Preferred Yield II
Partners Preferred Yield III
*Pennsylvania Real Est Invt Tr
*Property Trust Amer
*Prudential Realty Trust
Public Storage Properties VI
Public Storage Properties VII
Public Storage Properties VIII
Public Storage Properties IX Inc
Public Storage Properties X Inc
Public Storage Properties XI Inc
Public Storage Properties XII
Public Storage Properties XIV
Public Storage Properties XV Inc
Public Storage Properties XVI
Public Storage Properties XVII
Public Storage Properties XVIII
Public Storage Properties XIX
Public Storage Properties XX
*Real Estate Investment Trust Ca
Realty South Investors Inc.
*Santa Anita Rlty Enterprises
Sizeler Property Investors Inc
*Trammell Crow Real Estate Invs
*Transcontinental Rlty Invstrs
*U S P Real Estate Investmt Trust
*United Dominion Realty Tr Inc
Vanguard Real Estate Fund I
Vanguard Real Estate Fund II
Vinland Property Trust
*Washington Real Est Invt Tr
*Weingarten Realty Investors
*Western Investment Real Est Tr
Wetterau Properties Inc

Table 2: Panel A
Summary Statistics

This table reports means, standard deviations and extreme values for a number of summary statistics calculated across our sample of 298 observations for 75 firms. Market value of assets is estimated market value of properties plus the book value of other assets. The leverage ratio is defined as total liabilities / (total liabilities + market value of the equity). *q*-ratio is the ratio of market equity (stock price times number of shares) to the market value of properties plus the book value of other assets minus book liabilities (NAV).

Variable	Mean	Maximum	Minimum	Standard Deviation
Market Value of Assets ($ Mil.)	170.8	752.2	6.7	1591.2
Weighted Capitalization Rate (%)	8.9	10.6	7.4	0.5
Property Cash Flow (CCF aka NOI) ($ Thou)	15,002	70,407	416	14,370
G&A Expenses ($ Thou)	1,315	5,038	66	1,137
G&A / Total Assets (%)	1.1	4.7	0.0	.75
Corporate Cash Flow (CCF aka FFO) ($ Thou)	8,887	44,998	0.0	8,973.0
Cash Flow Yield (%)	8.9	58.0	0.0	5.1
Leverage Ratio (%)	36.8	94.4	0.3	25.0
Property Type Herfindahl (%)	66.7	100.0	26.0	24.1
Property Region Herfindahl (%)	58.2	100.0	15.0	28.0
Quarterly Dollar Volume ($ Thou)	131,260.6	925,086	1,255.0	152,793.8
q-ratio	1.0	2.86	.11	.36

Table 2: Panel B
Correlations

This table reports correlations for a number of summary statistics calculated across our sample of 298 observations for 75 firms. Property-type focus is a Herfindahl coefficient generated by summing the squared proportions of a firm's assets invested in each of four real estate types. Regional-focus is similarly, a Herfindahl index computed across eight geographic regions. Bivariate Herfindahl is a Herfindahl coefficient generated by summing the squared proportions of a firm's assets invested in each of thirty-two property-type and geographic region combinations Market value of assets is estimated market value of properties plus the book value of other assets. The leverage ratio is defined as total liabilities / (total liabilities + market value of the equity). Tobin's -*q*-ratio is the ratio of market equity (stock price times number of shares) to the market value of properties plus the book value of other assets minus book liabilities (NAV).

	Regional Herfindahl	Property-Type Herfindahl	Bi-variate Herfindahl	Dollar Trading Volume	Turnover	Assets	Leverage Ratio
Property-Type Herfindahl	-.10						
Bi-variate Herfindahl	.67	.52					
Dollar Trading Volume	.13	.05	.09				
Turnover	.00	.06	.08	.28			
Assets	.18	.06	.15	.86	.09		
Leverage Ratio	.15	-.06	.17	.04	.02	.28	
Tobin's Q	.13	.03	.13	.36	-.05	.26	.06

Table 3: The Effects of Focus on Cash Flow Components

Estimates from weight-least-squares regressions, with the (inverse of) real-estate market value of assets used as weights. Indicator variables capturing calendar year are used as intercepts, but estimates of their associated coefficients are not reported. The market value of assets is real-estate market values, based on Capozza and Lee (1995). Liabilities are book values of total liabilities. Property-type focus is a Herfindahl coefficient generated by summing the squared proportions of a firm's assets invested in each of four real estate types. Regional-focus is similarly, a Herfindahl index computed across eight geographic regions. T-statistics are in parentheses. The "F-test for Focus Significance" tests whether the two coefficients associated with the two dimensions of focus are simultaneously equal to zero. Asterisks indicate whether these test-statistics exceed the 5% (*), 1%(**) or .1%(***) critical values. All coefficient estimates have been multiplied by 100, except for squared assets and squared liabilities, which have been multiplied by 10^8.

	Dependent Variable:					
	Property- level Cash Flows	Property- level Cash Flows	Property- level Cash Flows	G&A Expenses	Interest Expenses	Corporate- level Cash Flows
Market Value of Assets	8.70	9.71	9.08	1.09	-0.24	8.23
	(91.0)	(33.9)	(23.4)	(7.9)	(-1.0)	(21.2)
(Market Value of Assets)^2			1.34	-0.27	1.68	-0.07
			(2.0)	(-1.1)	(4.0)	(-0.1)
Liabilities			1.02	0.53	8.77	-8.28
			(1.5)	(2.2)	(21.6)	(-12.6)
Liabilities^2			0.13	-1.89	-4.65	6.64
			(0.0)	(-2.1)	(-3.1)	(2.7)
Assets * Property type Focus		-0.77	-1.29	-0.38	-0.48	-0.41
		(-2.5)	(-3.8)	(-3.2)	(-2.4)	(-1.2)
Assets * Regional Focus		-0.80	-0.73	-0.21	-0.12	-0.41
		(-2.9)	(-2.7)	(-2.1)	(-0.8)	(-1.5)
Adjusted R^2	89.9%	90.0%	90.9%	18.1%	88.9%	81.5%
F-test for Focus Significance	n/a	7.33***	10.65***	7.23***	3.09*	2.00

Table 4: Focus, Liquidity and *q*-ratios

Dependent variable is *q*-ratio. Estimation by ordinary least squares. Indicator variables capturing calendar year are used as intercepts Property-type focus is a Herfindahl coefficient generated by summing the squared proportions of a firm's assets invested in each of four real estate types. Regional-focus is similarly, a Herfindahl index computed across eight geographic regions. T-statistics are in parentheses. The "F-test for Focus Significance" tests whether the two coefficients associated with the two dimensions of focus are simultaneously equal to zero. Asterisks indicate whether these test-statistics exceed the 10% (*), 5%(**) or 1%(***) critical values.

	Equation 1	Equation 2	Equation 3	Equation 4	Equation 5	Equation 6
Property Type Focus		0.16 (1.8)*	0.11 (1.3)	0.10 (1.2)		
Regional Focus		0.12 (1.6)	0.08 (1.0)	0.09 (1.2)		
Type & Regional Focus					0.21** (2.1)	0.15 (1.5)
Dollar Volume (x 10^6)			0.77 (5.8)***			
Share Volume (x 10^4)				0.13 (5.0)***		0.14*** (5.1)
1985	1.01	0.85	0.79	0.80	0.94	0.85
1986	1.21	1.04	0.96	0.97	1.13	1.03
1987	1.27	1.11	1.02	1.02	1.19	1.07
1988	1.07	0.89	0.87	0.86	0.98	0.91
1989	1.05	0.87	0.82	0.81	0.96	0.87
1990	0.98	0.81	0.76	0.74	0.90	0.79
1991	0.76	0.58	0.54	0.52	0.67	0.57
1992	0.84	0.67	0.63	0.62	0.77	0.68
Adjusted R^2	.17	.18	.26	.24	.18	.24
F test for Focus Significance	n/a	2.55*	0.23	1.24	4.21**	2.33

Exhibit 1: Real Estate Investment Trust Pro Forma Income Statement

	Revenues from Properties *Rents*
–	Property-level Cash Expenses *Maintenance, Advertising, Property Management fees, Property Taxes*
=	Property Cash Flow (**PCF**)
–	Interest Expenses
–	General and Administrative (G&A) Expenses *Corporate-level salaries, filing costs*
=	Corporate Cash Flows or Funds From Operations (**CCF**)
–	Depreciation (non-cash) Expense
=	Net Income (**NI**)

Figure 1: Recursive Model Structure

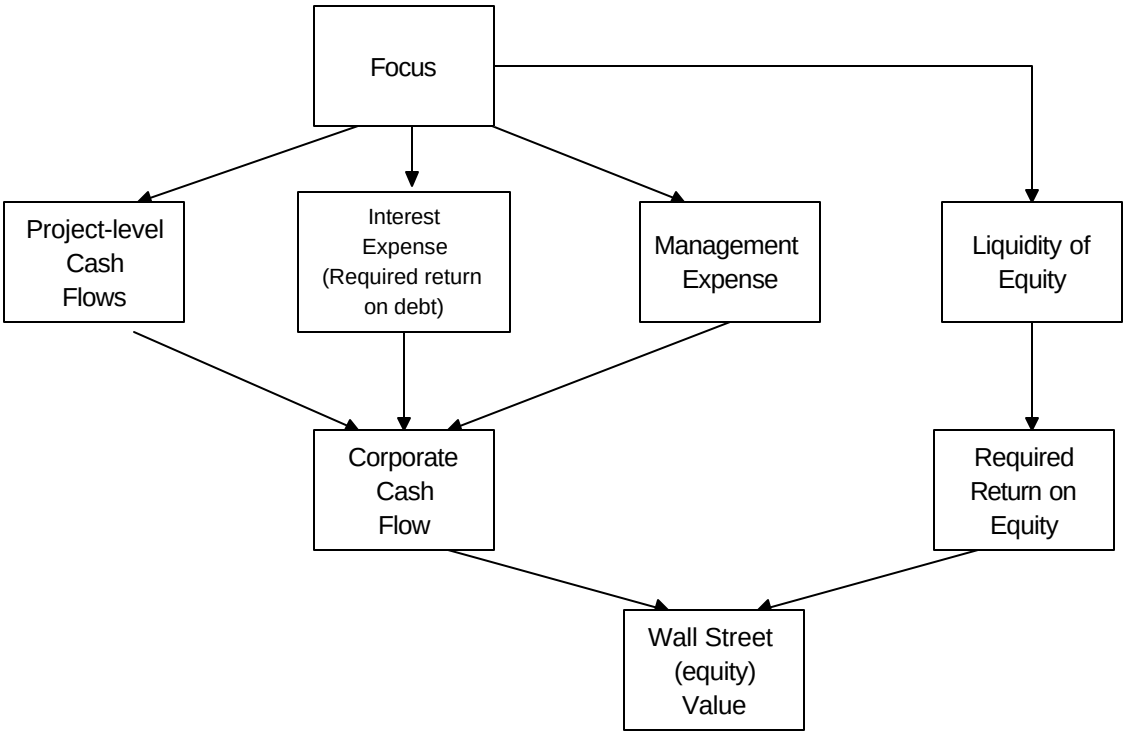

Figure 1
Recursive Model Structure

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[1] See, for examples, Amit and Livnat (1988) and Palepu (1985) in accounting, Boyle (1970) and Berry (1971) in law, Bass, Cattin and Wittink (1978), Day (1977) and Varadarajan (1986) in marketing, Amey (1964) in statistics, Gorecki (1975, 1980) in manufacturing, Didrichsen (1972) in history, Hako (1972) and Hedley (1977) in planning, Montgomery (1982 and 1985), Prahalad and Bettis (1986) and Rumelt (1982) in strategy, and Ravenscraft and Scherer (1982a, 1982b) and Wernerfelt and Montgomery (1988) in business economics.

[2] An exception is Palepu (1985), who examines 30 firms in the food products industry group.

[3] Readers may be more familiar with analyses performed on cash flows deflated by assets, or cash yields. We perform our analyses on levels since the coefficients can be easily interpreted as yields, or changes in yields. Obviously, these variables are more highly skewed. However, we use WLS and deflate these numbers by the real-estate-market value of assets. As a result, our regressions are comparable to running OLS regresions with yields as the dependent variables.

[4] Non-linear specifications with quadratics in focus were also tried. The quadratic terms were not significant. Replacing the estimated real estate market value of assets with book values gives similar results but with weaker goodness-of-fit statistics and coefficients closer to zero, thus suggesting measurement error bias. We also replicated the analysis of Table 3 with a single Herfindahl metric that jointly captures both regional and property type concentration. The results and conclusions are unchanged from those presented in Table 3.

[5] Assume that Y is a deterministic linear combination of a vector of random variables of length q, so $Y = y\theta$, where Y, y and θ are lx1, lxq and qx1 respectively. The OLS parmeter estimates from regressing Y on a set of k independent variables, X, can be written as $\beta = (X'X)^{-1}X'Y = (X'X)^{-1}X'y\theta = \alpha\theta$, where $\alpha = (X'X)^{-1}X'y$ is the kxq matrix of parameters generated by regressing each y on the set of X's one-at-a-time, and then stacking the results. Since $\beta = \alpha\theta$, the estimates from regressing Y on X must equal a linear combination of estimates from regressing each y on X. Further, the linear combination of estimates is the same linear combination mapping the y's into Y. In this case, if Y is net cash flows, and y is the vector of gross cash flows, G&A expenses and interest expenses, $\alpha = \{1, -1, -1\}$. The inutition extends to the case of WLS, employed here, or even GLS, since $\beta = (X'\Sigma^{-1}X)^{-1}X'\Sigma^{-1}Y = \{(X'\Sigma^{-1}X)^{-1}X'\Sigma^{-1}y\}\theta = \alpha\theta$.

[6] As a simple example, assume a trust owned a $100 property and yielded a "correct" net yield of 8%. Their first year's cash flows for shareholders would be $8. Now assume that the second year they sell the property and buy an equivalent property that yields $4.80. The new property's fair market (replacement) value is $60, (since $60 x 8% = $4.80), but the trust overpays and buys it for $100. Using our methods, we would show this REIT as yielding a normal net rate of return ($4.80/$60 = 8%). However, the growth rate of earnings would be negative.

[7] We did consider turnover, i.e., relative liquidity, as an alternative variable; however, those specifications provided no evidence that investors value relative liquidity. Rather they value total liquidity, which we measure using either dollar or share trading volume.

[8] The coefficient on focus in model 3 of Table 4, while not significantly different from zero, is also not significantly different from the coefficient in model 2. Therefore, the evidence is suggestive rather than definitive.

[9] This result is not inconsistent with the results of other studies which find that project level performance erodes in diversified firms. Because of the nature of the data we cannot test whether diversified firms extract higher returns

from a given asset. We can only test whether firms that diversify have chosen from those asset types and locations which on average exhibit higher yields..

[10] It is worth noting thath this trend towards increasing focus predates the advent of "new REITs," i.e., large, focused UPREITs.