

By Dennis R. Capozza
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Leverage and Value in Apartment REITs



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Executive Summary

Among the most important decisions made by corporate executives are those concerning whether to finance assets with debt or equity. For real estate investment trusts (REITs), leverage and related capital structure decisions have special significance since REITs cannot benefit from one of the most important determinants of financing decisions, the interest tax shield. In addition, other traditional textbook explanations of capital structure, such as bankruptcy costs and agency costs, have very limited relevance to REITs.

Since traditional theories of capital structure do not apply to REITs, new approaches are needed. We argue that organizational, institutional and cost structures are the primary determinants of capital structure for REITs. In particular, the administrative costs associated with debt have been overlooked in the past. We show that these costs play an important role in the optimal capital structure of REITs. We also find that the collateral value of assets, which varies considerably by property type and property diversification, also significantly affects capital structure.

This approach helps explain why (1) the ratio of debt-to-assets has averaged 7% to 9% higher for apartment REITs than for REITs that specialize in other property types; and (2) why apartment REITs carry significantly more long-term debt relative to short-term debt and significantly more fixed-rate debt relative to variable-rate debt.

Apartment REITs have two financial advantages over other REITs that makes greater use of debt a profit maximizing strategy. First, apartment properties have more “collateral value” than other properties. Lenders are willing to lend a greater percentage of asset value for apartments because apartments are more “liquid” than other properties. The apartment market is relatively liquid because it is large, active and well understood. Also promoting liquidity, the number of potential apartment property buyers is relatively large because the average property size is smaller than an office building or shopping mall. Additionally, apartment assets can adjust more quickly to the real estate cycle and unanticipated inflation due to their relatively short leases. This cash flow characteristic makes apartments attractive to lenders and enhances collateral value.

The second financial advantage enjoyed by apartment REITs is their access to the mortgage giants Fannie Mae and Freddie Mac. These government sponsored enterprises (GSEs) are mandated to provide financing to the residential real estate market, but they are generally precluded from financing commercial properties. The availability of these GSEs broadens the base of mortgage financing to apartment REITs and reduces its cost.

In addition to explaining how the capital structure framework for REITs differs from traditional theory, this research uses a strategic simulation model to enable individual trusts to determine the optimal capital structure tailored to their unique characteristics. A detailed database of REITs is employed to estimate the structural relationships between general and administrative (G&A) costs, interest costs, funds from operations (FFO), and Wall Street valuations of REIT equity. Based on this analysis, we find that shareholder value can be increased by 10% or more with the choice of an optimal capital structure, although value is not highly sensitive to moderate deviations from the optimal capital structure.

Our analysis yields a number of other important results. First, we demonstrate that apartment REITs have higher optimal leverage ratios than otherwise comparable REITs that are not apartment specialists. We also show that larger REITs have higher optimal leverage ratios, as do more focused

REITs – that is REITs that specialize in one property type, regardless of type. Finally, cyclical variation in property capitalization rates and interest rates strongly affects the optimal leverage ratio. Our new strategic modeling approach for REITs represents a promising managerial tool. The model can be calibrated to the cost structure of a specific REIT to provide insight into many financial decisions including capital structure, dividend policy and property diversification strategies.

Introduction and Overview

The 1990s have seen spectacular growth in the real estate investment trust (REIT) industry. Assets under management have grown dramatically over the decade, and the formerly obscure \$5 billion (equity REIT market capitalization) industry has blossomed into a \$150 billion giant. Although there are numerous motives for the phenomenal growth in this industry, this study instead concentrates less on the “why” and more on the “how.” Specifically, we examine the methods whereby either new REITs are established or existing REITs expand by examining capital structure decisions for REITs in general, and apartment REITs in particular.

We begin our investigation by providing some statistics that describe the capital structure employed by REITs. We also provide some comparisons of these sample statistics between those REITs that have at least 50% of their asset base invested in apartments (Apartment REITs hereafter) and all others. The remainder of our study examines the determinants of the capital structure of REITs. We do so by first reviewing the standard or “classical” theories concerning capital structure. Next we evaluate the relevance of these classical theories and conclude that new theories need to be forwarded that explicitly accommodate the unique institutional features of REITs. Then we provide such a list of potential factors and argue that features unique to the REIT industry, including the 95% dividend rule, organizational form, and the diversification of the portfolio of real assets have been important determinants of capital structure for REITs. We summarize this section by providing a simple statistical model to explain cross-sectional differences in the use of debt in the capital structure. We next investigate those differences along key dimensions between apartment REITs and other REITs, specifically the investment characteristics of properties and access to the securitization programs of Fannie Mae and Freddie Mac that would account for differences in capital structure across the two classes of REITs. We then provide some comparative static results that demonstrate the impact of capital structure decisions on equity value for a number of pertinent scenarios. Our final section offers some conclusions and implications.

The Stylized Facts for Leverage at Apartment REITs

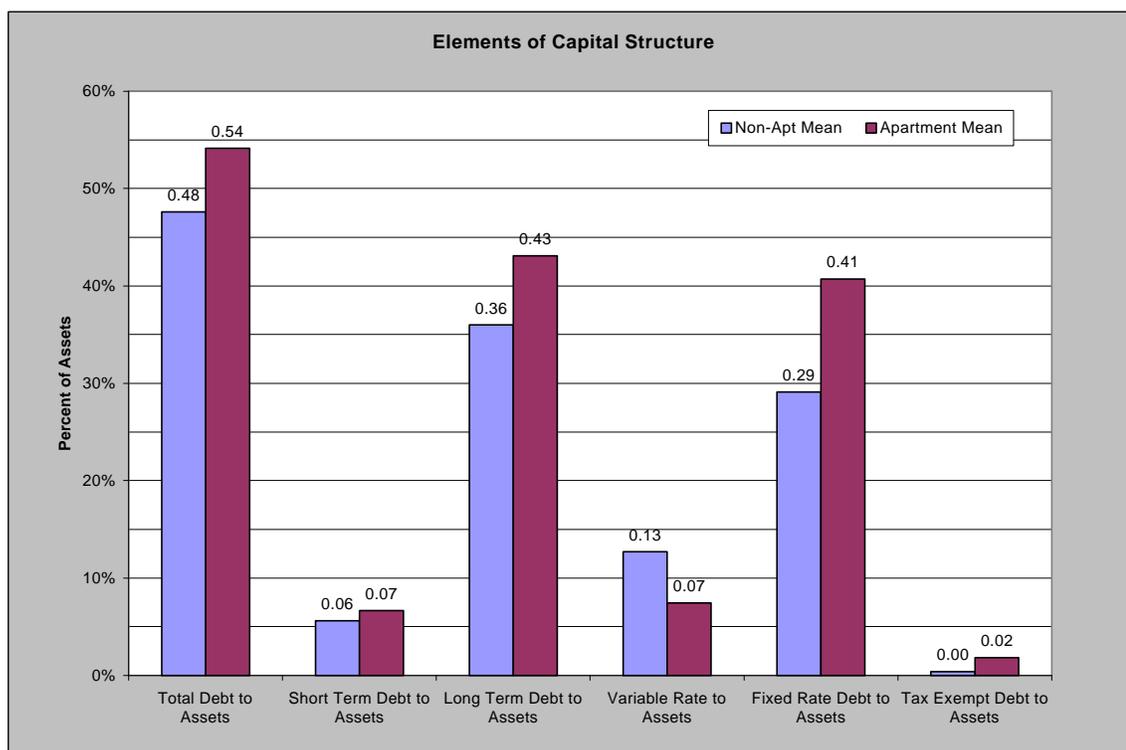
We begin our investigation into the capital structure of REITs in general, and apartment REITs in particular, by examining some stylized facts on the use of debt. In this study we use two databases. The first is compiled from SNL REIT data and includes 197 REITs from 1989-98. The second data set is a sample of 58 REITs from 1985-92. These data are described more fully in Capozza and Lee (1995, 1996). The statistics in this section are derived from this first data set which includes the initial public offerings (IPO) from the mid-1990s.

For comparative purposes, debt ratios are calculated using either assets or equity as the denominator. Although debt-to-equity ratios are quite prevalent in the popular press, we choose instead to investigate debt-to-asset ratios. These ratios, which are graphically displayed in Figure 1, can be interpreted as the percentage or proportion of assets that are financed by debt.

The first such ratio we investigate is the ratio of total debt-to-assets. Just over half (54.2%) of apartment REIT assets are financed by debt. This ratio exceeds the same ratio for non-apartment trusts, which equals 47.6%. Discovering why apartment REITs employ significantly greater amounts of debt in their capital structure is one of the major objectives of this study.

Figure 1

The graph displays a variety of debt ratios for apartment and non-apartment REITs using the sample of 197 REITs for the ten years from 1989 to 1998.



When total debt is partitioned into short- and long-term debt, we see that the difference in the total debt ratios is due primarily to differences in long-term debt. Short-term-debt-to-asset ratios are virtually identical for apartment (6.7%) and non-apartment trusts (5.6%), while the ratio for long-term-debt-to-assets is significantly larger for apartments (43.1%) than for their non-apartment counterparts (36.0%).

We also partition debt into fixed rate and variable rate. The differences in the use of these two types of debt are striking. While apartment REITs use less variable rate debt than non-apartment trusts (7.5% of assets vs. 12.7%), they use more fixed rate debt (40.7% of assets vs. 29.1%). Finally, we find that apartment REITs use more tax-exempt debt than non-apartments REITs, though the use is small for both types of REITs (1.8% vs. 0.4%).

In sum, we find that during the sample period apartment REITs used more debt and, in particular, more long-term debt in their capital structure. Our next task is to examine the theories that may explain these regularities.

The Classical View of Capital Structure

Franco Modigliani and Merton Miller were awarded Nobel Prizes in Economics in part because of their work on capital structure (Modigliani and Miller, 1958, 1963; Miller, 1977). To briefly paraphrase their work, they conducted an experiment in logic. Specifically, they envisioned a world where there were no taxes, no bankruptcy costs and no (what we now call) agency costs. The punch line of their thesis is that without taxes, bankruptcy costs and agency costs, their mathematical model proves that capital structure is unimportant. Using real-world data, however, they show that capital structure seems to matter. At this point, they conduct an exercise in logic and claim that: (i) if, as they show

mathematically, capital structure should not matter given their three assumptions, and (ii) if, empirically, capital structure does indeed seem to matter, then (iii) capital structure should matter for (at least one of) three reasons. The result is that MBA students are now taught that capital structure can only matter through three avenues: taxes, bankruptcy costs or agency costs.

Taxes matter since the Internal Revenue Service (IRS) code allows interest payments to be tax deductible: the higher the amount of debt in your capital structure, the greater the tax “shield.” So, MBA students are taught that the optimal capital structure has close to 100% debt as is feasible.

However, increasing the amount of debt in a firm’s capital structure increases the probability that a firm will experience financial distress. The phrase “financial distress” can mean anything from simply renegotiating a debt or loan contract to liquidating a firm. Financial distress costs matter along two dimensions. The first is “fixed” costs, or the costs to a firm once it is in distress and lawyers/judges/consultants are called into play. These costs are generally considered to be fairly small.

The second dimension is the market-to-book discount dimension. Specifically, every asset in a corporation has two values: the “book” and the “market” value. The book value captures the price that a firm paid for an asset less the accounting depreciation since acquisition. In contrast, the market value of an asset is the present value of an asset, or the discounted present value of expected cash flows that the asset will generate. In times of distress, the expected cash flows from the assets may be low and/or the discount rate may be high so assets may sell for much less than book value. The distress discount is one important aspect of the “liquidity” of the asset. In some lines of business, the discount arising from distress may be small, because the assets can be easily used by other industries. For example, a bus company has as its assets large buses, for which there is a large, liquid and well-defined market. Thus, in financial distress, the company could sell its assets at prices that are close to their normal market value. In contrast, a high technology or pharmaceutical company has as their market assets projected cash flows from proprietary projects, which cannot be easily transferred. Lenders will be less willing to loan at high ratios on such assets. The Modigliani-Miller paradigm suggests that capital structure depends on the “collateral value” or liquidity of the assets of the firms. Subsequent empirical analysis has proven this theory correct; firms with tangible, highly liquid assets tend to have more debt in their capital structure.

The phrase “agency costs” refers to the fact that oftentimes, the incentives offered managers differ from the incentive of maximizing shareholder wealth. For example, managers whose contracts are based on income or assets under management may engage in empire building by purchasing negative net present value (NPV) projects. When this occurs, the managers’ total compensation package may increase while shareholder wealth is simultaneously reduced. Such costs are greatest when shareholders cannot monitor managers, generally when the business is engaged in a high-technology endeavor or when assets are not transparent.

The Classical Theory and Real Estate Investment Trusts

Examining REITs represents a unique opportunity to test the logic experiment of Modigliani and Miller’s classical theory. Recall that they argue that capital structure should matter, but only for three reasons: taxes; bankruptcy; and agency costs. Logically, under their theory, if none of the three factors are present, then capital structure should be irrelevant, and researchers should find no pattern or cross-sectional differences in the use of debt in the capital structure.

This is, we believe, fairly close to the case with REITs. REITs are non-taxable entities, and cash flows from operations can be “passed through” to equity holders, as long as 95% of taxable income is paid annually in the form of a dividend. Bankruptcy costs should also matter much less in the REIT in-

dustry than in others. First, the larger and more economically significant type of bankruptcy costs, namely the discount to book value when attempting to liquidate inherently illiquid assets, is greatly mitigated for REITs. Since there is an active, liquid market for underlying real estate assets, we argue that the managers of a distressed REIT could liquidate some or all of their assets in a timely fashion at prices that do not represent large discounts from their normal market value. The second component of bankruptcy costs, the fixed costs associated with lawyers, bankruptcy court costs and consultant fees, may still be pertinent. But, given the ability of a REIT to partially liquidate, full-blown bankruptcy procedures are rare. We argue, therefore, that given the low *ex ante* probability of incurring bankruptcy, managers need not consider them when creating or modifying a trust's capital structure.

Finally, we consider agency costs, or the ability of managers to enhance their compensation at the expense of shareholder wealth. As with bankruptcy costs, we do believe that there is a potential for agency costs for a REIT structure, but we argue that the REIT structure mitigates agency costs for at least two reasons. First, since the parallel market for real assets provides benchmark prices for assets, external shareholders can quickly determine whether managers are engaging in empire building by overspending on real assets. We believe the existence of this parallel market, which is unique for REITs, mitigates agency costs. The second advantage is the transparency of the income statement. Unlike more traditional corporations, where extravagant or inefficient spending can be "hidden" under "Sales" or "Research and Development", REITs have much less discretion in the accounting. Indeed, we demonstrate in one of our recent studies (Capozza and Seguin, 1998) that shareholders are good at identifying even small deviations in G&A expenses, the one discretionary account REITs have. Further, the deviations in these expenses have an economically and statistically significant impact on equity valuations. We conclude then that the transparency of REITs makes it difficult for managers to engage in wealth destroying activities without being immediately detected.

A New Theory of Capital Structure

Given that the three determinants of capital structure are, at best, of limited relevance for REITs, we need to create a REIT-specific set of determinants for capital structure. In this section we propose and discuss a number of such REIT-specific features.

Internal- versus External-Managed REITs

The key link between managerial structure and capital structure is through compensation agreements. Typically, managers of internally-managed trusts are compensated, at least in part, based on the performance of the REIT's equity. In contrast, advisors for externally-managed trusts, are more typically compensated based on assets under management and/or property-level income. External advisors, then, have incentives to boost their compensation by issuing debt and using the proceeds to acquire more properties. In our forthcoming empirical work (Capozza and Seguin, 2000), we find significant differences in debt financing between the two organizational forms. Internally-managed funds are financed with roughly one-third debt, while externally-advised funds use around 44%. Further, debt contracts for externally-advised funds are negotiated at high rates; interest expenses are an average 285 basis points higher for externally managed trusts than for their internally-managed counterparts. The combination of higher debt levels and yields suggest that the "demand" curve for externally-managed trusts has shifted out, which is consistent with managers acting quite rationally by issuing debt to expand their asset or property-level income base and, hence, their compensation.

Finite- versus Infinite-Lived Trusts

While no longer a common organizational form among REITs, the finite life structure provides a unique laboratory for understanding capital structure. Many REITs were formed with an article in their

charter specifying that properties would be sold and capital returned to shareholders within a specified “finite” time. In work in progress, we have contrasted the capital structures of these two organization forms. We find that the yields on the debt issued by finite-lived trusts are statistically and economically higher than the yields on infinite-lived trusts. However, we also find that finite-lived trusts have significantly less debt in their capital structure.

We interpret the higher yield or cost of debt servicing, combined with the lower amounts of debt in their capital structures, as an upwards or backwards shift in the supply curve of debt. In other words, holding everything else equal, lenders would prefer to lend to an infinite-lived trust. To induce lenders to lend, despite their lower creditworthiness, finite-lived trusts must offer higher yields.

The lower creditworthiness of debt for finite-lived assets stems from “balloon risk” in the sequential option model of debt. To illustrate, in a simple one-period debt contract with a face value of, say \$100 and a negotiated interest rate of 8%, the borrower must either pay \$108 at the end of the year, or default on the debt and “walk away.” If the value of the firm one-year hence is less than \$108, the simple solution is to walk away. If the debt contract spans multiple periods, however, the debt holder needs to consider not only the decision rule for this period, but also the fact that by defaulting he loses the option to continue with the firm in subsequent years. Thus, the borrower may be willing to pay the debt amount even if it exceeds the value of the firm for no other reason than to keep his options alive. Obviously, with a finite-lived trust, the end game occurs in finite time, so theoretic models predict a higher incidence of default. It is this higher expected default rate that causes lenders to charge higher rates for debt to finite-lived trusts.

Dividends

Despite considerable attention to the issue, few researchers have been able to find links between dividend payout policies and capital structure decisions. Indeed, the famous Modigliani-Miller paradigm expressly states that such a link should not exist. However, there are two unique REIT features that imply that dividends and capital structure are indeed linked. The first link stems from the tax-exempt status of a REIT (if that REIT pays out at least 95% of its net income). Since interest expense is a deductible expense in calculating net income, the more debt in the capital structure, the greater actual cash outflows to debt holders will be and declared net income will be reduced. Thus, the cash that must be distributed to shareholders to meet the 95% hurdle is likewise lowered.

The second link is due to the lack of growth options for REITs. Unlike technology-based stocks, where most of the perceived value comes from current R&D and/or expectations about future cash flows, the valuation of REITs depend crucially upon current levels of cash flows, including dividend levels. In “Dividend Policy and Cash-Flow Uncertainty” (Bradley, Capozza and Seguin, 1998), we demonstrate a relation between dividends and changes in share price, even after controlling for changes in cash-available-for-shareholders (FFO). That is, shareholders care not only about the amount of cash generated by the trust, but also the amount disbursed in the form of a dividend. More surprisingly, we detected a dividend reduction penalty; REIT prices fall by over 10% when a dividend is cut, regardless of the magnitude of the cut.

As a result of the severity of this penalty, we argue that REIT managers will manage their dividend policy to minimize the probability of a subsequent dividend cut. Our prime insight is that managers will pay out lower dividends as the riskiness of cash flows available to shareholders increases. The riskiness of these cash flows is in turn driven by three key factors: the size of their asset pool; the focus of their asset pool; and the amount of debt in their capital structure.

Traditional portfolio theory argues that the volatility of returns is reduced as you add heterogeneous assets to a portfolio. The same is true for real estate assets, no two of which are identical. If a portfolio is

highly focused (poorly diversified) by property types or regions, then the portfolio risk (volatility) is greater than with a wider assortment of property types. Finally, as the amount of debt in the capital structure increases, interest expenses increase and cash flows available to shareholders become more volatile. As a result, we predict in that earlier paper, and empirically show, that dividend payout ratios are lower for smaller, more focused and more levered REITs. This result is important for a REIT manager who has a target payout ratio, perhaps due to clientele preferences by his shareholders. In that case, either the characteristics of the asset base or the capital structure must be managed.

Liquidity

One of the primary motives for the existence of a REIT is to provide liquidity to real estate investors. Organizing properties into a trust creates value by creating liquid equity claims on a less liquid real properties. In some work in progress, we estimate this value creation to be in the neighborhood of 20% of the assets under management. However, this percentage premium is not constant, with the percent gain varying with the size of a trust. This non-constancy is due to the fact that organizing properties into a trust does not come for free, since there are expenses associated with running a trust. Of these expenses, at least one, G&A, has a fixed component. As a result, the Wall Street value of the equity claims to the trust will be less than the Main Street or real estate market value of the underlying assets for smaller trusts, where the fixed G&A costs dominate the calculation. That is, the trust will sell at a relative discount to net asset value (NAV). However, as the trust gets larger, the liquidity effects dominate the fixed G&A cost effects, and the ratio of stock market to real estate market valuations (equivalently, the ratio of market capitalization to net asset value) begins to exceed one (Capozza and Lee, 1995).

However, upon closer scrutiny, we detected that it was not the sum of debt plus equity (the trust's asset base) that determines the equity liquidity. Instead, it was only the equity portion. This final insight has a number of provocative implications for capital structure policy. First, expanding the asset base only through debt issuance will have little effect on the liquidity of the equity claims and, thus, will not necessarily improve the valuation of the equity. Second, issuing debt to retire equity (keeping the asset base the same size but changing the capital structure) will have a deleterious impact on liquidity and on the liquidity premium. If, however, expansion is financed or debt is retired by introducing additional equity into capital structure, both liquidity and valuation can be expected to improve.

Size of the Asset Base

It is probably easier for a REIT than for most other types of corporations to alter the size of the asset pool under management. For example, a technology company can only increase its asset pool through internal (R&D-based) growth or perhaps through an acquisition. A REIT, however, can add or delete assets in virtually any magnitude given the almost infinite pool of real estate assets available for purchase. This is important since the pure magnitude of the asset base is a key determinant of capital structure.

The size of the asset base affects capital structure for at least two reasons, both of which we touched upon above. First, there exists a "fixed" cost to running a REIT, such as the cost of managing both bank and public debt, including reporting, debt rating agency and trustee fees, and managerial time. If a trust is too small, then these fixed costs outweigh any benefits of having debt in the capital structure. As a result, only larger REITs would enjoy net benefits from having significant debt in their capital structure.

The size of an asset pool could also affect the capital structure through diversification. Specifically, if large trusts generally have a greater number of properties under management, and the cash flows from these properties are not perfectly correlated, then larger firms should have less volatile cash flows. Therefore, the larger asset base has a more reliable collateral value (though diminishing as assets are added), suggesting that larger trusts will employ a greater proportion of debt in their capital structure.

Putting it All Together

We present a simple statistical model to show how a number of the above listed features can simultaneously affect capital structure. Of the five features we mentioned above, two—dividends and liquidity—could best be thought of as outcomes or consequences of the capital structure decision. The remaining three—the two dimensions of organizational form and the size of the asset pool—are not consequences of the capital budgeting decision, but are determinants of it. Our motivation in this section is to demonstrate how these three determinants affected the capital structure decisions for our large empirical sample of REITs.

Using a simple regression framework (see Appendix A for more detail), we find that:

$$\text{Debt/Assets} = -37\% + 6\%(\text{Log of Size}) - 4\%(\text{Finite Life}) + 11\%(\text{External Advisor}) + 8\%(\text{Apartment})$$

Working from left to right, this model tells us that a typical (that is, infinite life, internally managed, non-apartment) average size REIT has a debt-to-asset ratio of around 26%. (Taking the natural log of the average REIT size and multiplying it by 6% yields 63%, so the typical capital structure for a REIT is $26\% = 63\% - 37\%$.) However, as predicted, the proportion of debt in the capital structure rises as the size of the assets under management increases. The resulting coefficient says that if assets double the proportion of debt in the capital structure increases by about 6%. Next, we see that REITs structured as finite-lived trusts have, on average, 4% less debt on their balances sheets, while externally-advised trusts have, on average, 11% more. Finally, we include a variable that captures whether the trust is primarily invested in apartment assets. We find that after controlling for differences in size and organizational form, apartment trusts have, on average, 8% more debt in their capital structure. We explore this finding in the next section.

What is Different About Apartment REITs?

In the previous section, we described a number of institutional factors or regularities that we believe make the capital structure decision for REITs unique. Even after controlling for a number of these institutional factors, however, we still found that apartment REITs hold an economically and statistically greater proportion of debt in their capital structure. In this section, we address this issue by investigating two other differences between apartment REITs and their counterparts: the nature of the assets and the source and costs of debt financing.

Assets

Since our methods already consider the impact of asset pool size, any differences in capital structure attributable to assets must be a result of the nature of these assets, particularly, their value as debt collateral. We believe that there are at least two reasons why the collateral value of apartment REITs generally exceeds that of other REITs.

First, we believe that apartment assets are more liquid in the real estate market. That is, if a trust or a lender needs to liquidate a portion of the portfolio's assets to cover debt principal or interest payments, they can liquidate apartment assets more quickly and at a smaller discount compared to other real estate assets. This is so since the apartment market is a large, active and well understood segment of the real estate market. In addition, the monetary size of an apartment complex is smaller than the size of, say, an office building or an enclosed shopping mall. As a result, the number of potential buyers is relatively large and liquidity is enhanced. Second, we believe that lenders prefer the nature of the cash flows generated by apartment assets. Due to relatively short lease lengths, cash flows to apartment assets can adjust more quickly to the real estate cycle and unanticipated inflation. Therefore, real prices of apartment as-

sets react less to inflationary or interest rate shifts than do prices for other real estate assets with less flexible cash stream flows.

Sources of Debt Financing

Aside from owning assets with superior collateral value, apartment REITs have an additional comparative advantage in the debt markets in that they can access forms of debt financing at costs below those faced by non-apartment REITs.

Apartment assets are easier to securitize because of the comparative liquidity of these assets. Because of this, the GSEs, especially Fannie Mae and Freddie Mac, are able to lend on residential collateral at favorable rates. As a result, either through GSEs or private securitization deals, apartment REITs have access to a vast financial market. This access can be viewed as increasing the demand for real estate backed debt, or equivalently as offering greater amounts of debt and similar costs, or providing similar amounts of debt at lower debt costs.

Good Debt vs. Bad Debt: Towards a Strategic Model of Leverage for Apartment REITs

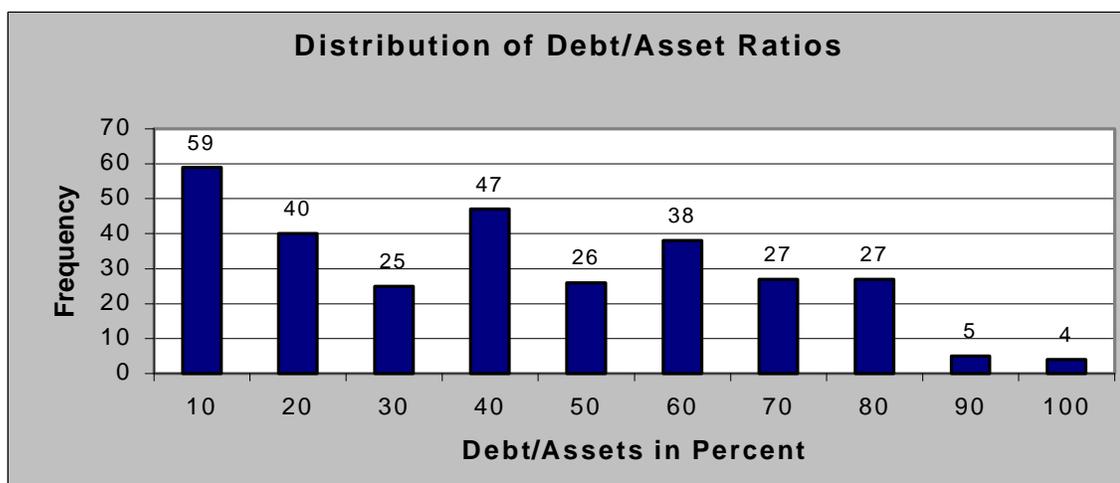
Earlier we argued that the conventional determinants of leverage--taxes, bankruptcy costs and agency costs-- are either absent or greatly diminished in importance for REITs. Thus, the use of leverage should be relatively neutral for REITs and have little impact on shareholder equity value. The statistical evidence from our detailed sample of REITs (Capozza and Lee, 1995) is consistent with this argument; a dollar of additional assets financed by debt does not add significantly to the value of equity.

Nevertheless, there has traditionally been great diversity in the leverage strategies followed by REITs. Figure 2 illustrates this diversity. If debt for REITs is relatively neutral then it may be that leverage strategy is simply a matter of managerial whim where widely diverse strategies can be rational or economically neutral.

It is also possible, however, that there are situations where debt can have an impact on the value of shareholder equity, and that this impact depends crucially on the characteristics of specific REITs. In this section we pursue the possibility that additional debt may be generally neutral for REITs, but that it can be either good or bad for a particular REIT depending on some specific characteristics of that REIT.

Figure 2

This figure provides a frequency distribution of debt-to-asset ratios for the detailed sample of 58 REITs from 1985-1992. It illustrates the wide range of capital structures used by REITs.



We begin our analysis with the dividend discount model of equity value, where share price equals the present value of all future dividends. This model is attractive in the REIT context because since REITs are required to pay out 95% of earnings as dividends, the link between earnings and dividends is much stronger for REITs than for other firms. However, the average REIT today actually pays out more than 100% of accounting earnings.

The largest determinant of dividends for REITs is not accounting earnings, but funds from operations (FFO). FFO is composed of property level cash flow (net operating income or NOI) minus G&A and interest expenses (INTEXP). Thus, FFO, which ignores the non-cash depreciation expense, can be thought of as a measure of cash flow from which cash dividends can be paid.

Our logic is as follows: if equity value is driven by FFO, and FFO is a function of NOI, G&A and INTEXP, then leverage can affect shareholder value through its impact on any of these components of FFO. Obviously, capital structure has an impact on interest expenses, but we will show that this is not the sole channel.

Property Cash Flow

A common method of analyzing financial issues is to separate the investment and financing decisions; that is, to separate the decision to invest in property from the decision on how to finance the investment. However, the composition of property assets can effect debt and equity costs so the decisions are not completely independent. For example, we have found that the collateral value of assets increases, and, therefore, debt costs are lower, if the assets are focused by property type (e.g., apartment, industrial, office or retail) (Capozza and Seguin, 1999). Investing in property assets that increase the focus of the portfolio, whether by region or by property type, increases the collateral value and reduces the interest cost of debt secured by the portfolio. More focused assets also decrease the cost of equity since stock prices, on average, are higher relative to net asset values for more focused REITs (Capozza and Seguin, 1999). On balance, there is a slight tendency (not statistically significant) for more focused REITs to choose to hold more debt in their capital structure. (See Appendix A.)

Since focus should increase the value of the assets for both bondholders and shareholders, it is feasible that increased focus could increase the desirability for both debt and equity financing equally. Under this scenario, increased focus could have a neutral effect on capital structure. However, our empirical results show that greater focus leads to a relative increase in debt in the capital structure. Thus, we conclude that the benefits of focus to prospective debt holders are greater relative to any benefits to prospective equity holders.

General and Administrative Expenses

An often-ignored aspect of leverage is that liabilities are costly to manage. Public debt requires the services of a trustee and bond rating agencies. Further, once debt is added to the capital structure, management time is needed to finance, refinance, account and report/disclose. We find that G&A expenses per additional dollar of assets financed by debt are about 35 basis points higher than for an additional dollar of assets financed by equity (Capozza and Seguin, 1998). However, we also have evidence that a number of these costs are “fixed;” that is, they do not vary by the amount of debt in the capital structure. As a result, the ratio of G&A expenses to assets under management decreases as equity or liabilities increase.

These characteristics of G&A expenses imply that for larger REITs with more absolute dollars of debt, the G&A cost of adding an additional dollar of assets financed by debt will be lower. An added dollar of assets financed by debt for a larger REIT will add more to FFO than for a smaller REIT. Thus we expect that larger REITs will use more leverage and indeed we find a significant positive relationship between REIT size and leverage.

For apartment REITs we find weak evidence (not statistically significant at standard levels) that marginal G&A expenses are lower than for non-apartment REITs; that is, apartments are less costly to manage at the margin than other property types. This works in favor of the use of more debt in apartment REITs, which is also consistent with the stylized facts reported above. Finally it is less expensive at the margin to manage assets that are focused by property type.

Interest Expense

Obviously, interest expenses rise as the amount of debt increases, but what is of interest here is the relationship between capital structure and interest expense ratios (interest expense divided by debt). Consistent with models of risk and return, interest expense ratios are higher for REITs that are more highly leveraged. This implies that as assets are added and financed by debt, the spread between the return on the property assets and the cost of the debt (the marginal interest cost) will decline and may eventually disappear or even become negative.

Consistent with the belief that the collateral value of a portfolio increases as the portfolio becomes more transparent (easier to value), interest expense ratios are significantly lower for REITs focused by property type and weakly lower still for apartment REITs. Thus, there is an incentive for focused apartment REITs to use more debt than other REITs.

Good Debt and Bad Debt

We define good debt as debt that increases shareholder value. Under what conditions will property investments financed by debt add to shareholder value? To answer this question we analyzed the evidence from our more detailed REIT data sample, which covers 58 REITs from 1985 to 1992. We found that as a dollar of property assets financed by existing equity is added to assets, equity value increases in two ways. First there is a direct effect of \$.88 on shareholder value. This captures the consensus belief about the real estate market or replacement value of the asset. Second, to the extent that the asset increases FFO, there is an indirect effect of about three times the increase in FFO. On average, one dollar of property assets increase FFO by \$0.075. Therefore the average indirect effect is \$0.225. The total effect on shareholder value is \$1.105, on average. As a net result, issuing one dollar of equity increases the value of equity claims by \$1.105, which represents a value creation to existing shareholders of about \$0.10.

On the other hand if property assets are financed by debt there is no direct effect. Only the indirect effect through FFO applies. Since on average a dollar of property assets financed by debt adds only \$0.0075 to FFO (i.e., 1/10 the effect of equity on FFO), this indirect effect adds only about \$0.02 to the shareholder value per dollar of assets financed by debt. This is an average effect, and it is economically very small. The implication is that it takes only slight changes in the characteristics of a REIT to make the impact of debt-financed acquisitions on shareholder value negative. In particular, if a REIT is smaller, less focused or not an apartment REIT, the marginal G&A expense will be higher and FFO correspondingly lower. If the REIT is more levered and less focused by property type, marginal interest costs will be higher. Again, debt will be more likely to have a negative impact on shareholder value.

The stylized facts are consistent with the predictions of this strategic model. As reported above, we find that the debt-to-asset ratio is higher for larger REITs, higher for apartment REITs, and slightly higher (but not statistically significant) for more focused REITs.

Simulations from the Strategic Model

In the analysis above we outlined how leverage affects management expenses, interest costs and shareholder value in relatively complicated ways. Leverage interacts with REIT type, focus and size to give varying amounts of optimal debt. Because the relationships are complex, the most efficient way to implement the analysis is with a simulation model. In this section, we illustrate the effects of four variables-- property type, property capitalization rates, property focus and asset size-- on optimal capital structure for REITs.

Our simulation is based on statistical estimates using our sample of 58 REITs from 1985 to 1992. The data are described more completely in Capozza and Lee (1995, 1996). The sample includes a wide variety of REITs including REITs of all four property types and a wide range of sizes and characteristics. Because the sample does not include the most recent round of mergers and consolidations, the average size in the sample is smaller than would be the case today. The largest REIT in the sample is about \$1 billion in assets (New Plan) whereas REITs with over \$5 billion in market capitalization can now be found (e.g., Equity Office, Simon Property Group, Equity Residential).

Nevertheless, the simulations provide considerable insight into the strategic nature of capital structure decisions and into the determinants of shareholder value. Because our goal is to illustrate the effects of capital structure decisions, we have chosen a simplified model that could be easily extended to address many other kinds of managerial decisions as well. We leave issues like dividend policy, property quality, regional diversification, incentive contracts, and many others for future analysis.

The Base Case

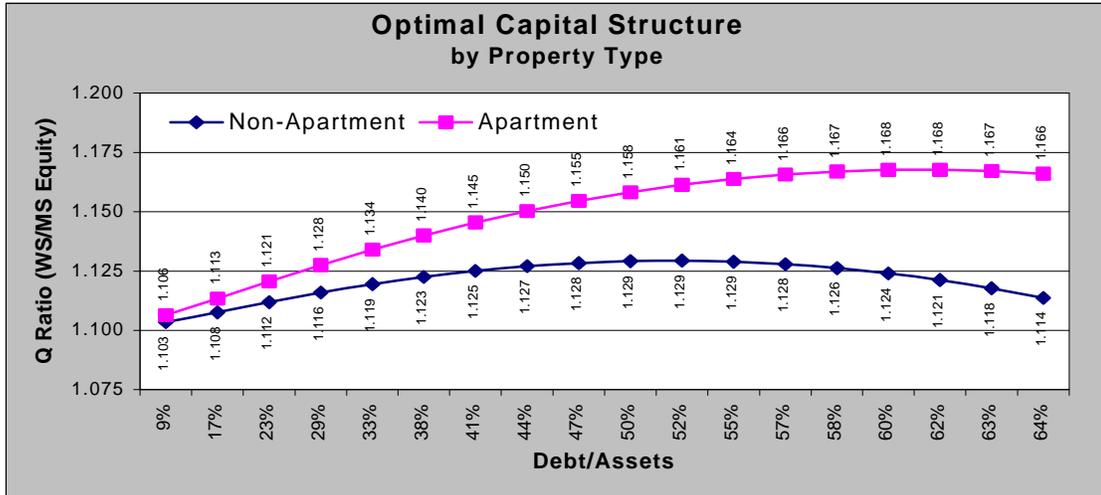
The first simulation is a base case with all variables set at the sample means and is depicted in Figure 3. The vertical axis is the ratio between the Wall Street value of equity (or market capitalization) and the Main Street value (i.e., the net asset value or the real estate market value of the assets minus liabilities). The numerator represents the value to the shareholders of the trust, while the denominator can be thought of as the replacement value of the net assets. The horizontal axis depicts various debt structures, here defined as the ratio of debt-to-assets.

The two curves separate apartment REITs from all other REIT types. Several items are worth noting. First consider the curve for non-apartment REITs. The capital structure that maximizes shareholder value contains debt equal to 52% of assets. More remarkable is the fact that substantial deviations from this optimal level have less than a 1% impact on shareholders. Variations in the debt-to-asset ratio from 30% to over 60% result in quite similar shareholder value for the “average” REIT in the sample.

Secondly, we note that for apartment REITs, the optimal debt-to-asset ratio is about 10% higher. The combination of lower debt and management costs plus the greater collateral value for apartment REITs raises the optimal amount of debt. The 10% optimal difference between apartment and other REITs is remarkably similar to the actual difference and suggests that, on average, managers are able to recognize the benefits of higher leverage for apartment REITs.

Figure 3

The graph illustrates the results of the simulation model for the relationship between shareholder value and the Debt-to-Asset ratio for apartment and non-apartment REITs. The vertical axis is the ratio of shareholder equity as measured by stock prices to shareholder equity measured using property market valuations net of debt (NAV). The model is based on equations estimated from the detailed sample of 58 REITs from 1985-92.

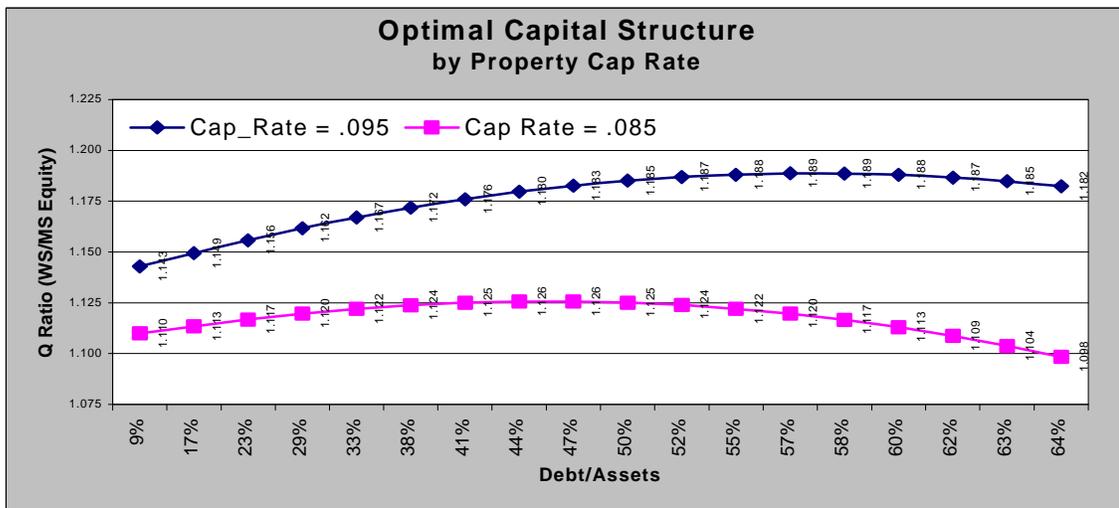


Capitalization Rates

Figure 4 illustrates the effect of market conditions on optimal capital structure. Over the real estate cycle, property capitalization rates can vary considerably. The figure provides two curves bracketing the average cap rate. Typically when cap rates are high, the difference between property capitalization rates and interest expense ratios widen. Thus, more shareholder value can be added, and it becomes worthwhile to use more debt in high cap rate conditions. The difference in optimal debt-to-asset ratios when average cap rates are high versus low (one standard deviation above versus one standard deviation below the mean) is over 10%.

Figure 4

The graph illustrates the results of the simulation model for the relationship between shareholder value and the Debt-to-Asset ratio two property capitalization rates that reflect a one standard deviation change from the mean capitalization rate. All variables other than the cap rate taken at the sample means. The vertical axis is the ratio of shareholder equity as measured by stock prices to shareholder equity measured using property market valuations net of debt. The model is based on equations estimated from the detailed sample of 58 REITs from 1985-92.



Property Focus/Diversification

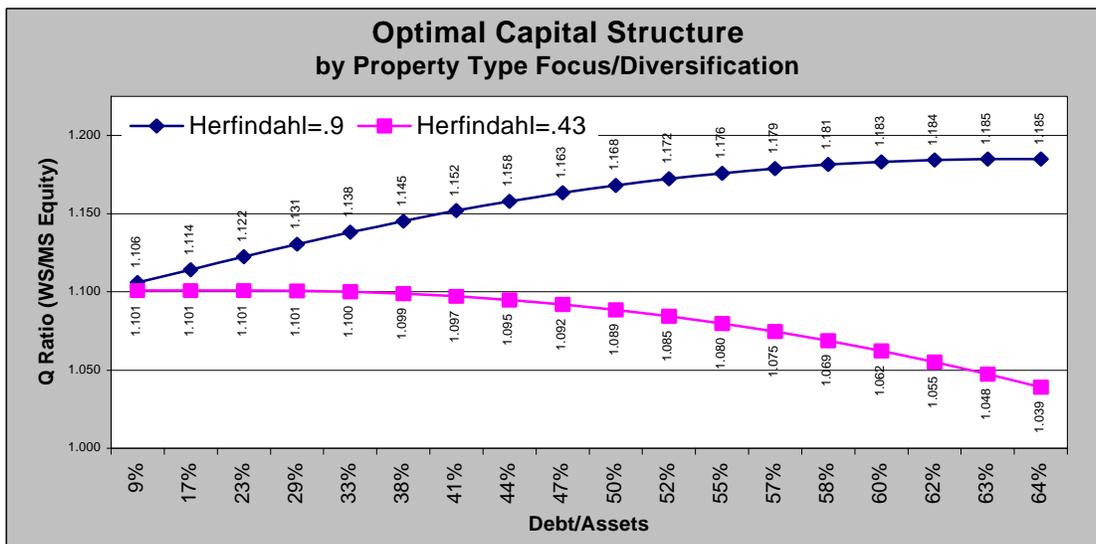
Figure 5 illustrates the importance of focus in the modern REIT world. We measure focus/diversification by a Herfindahl index over the four property types (residential, industrial, office and retail). The index number is the sum of the squared percentages in each property type. For example, a trust with 25% in each of the four property types would have a Herfindahl of .25 ($= .25^2 + .25^2 + .25^2 + .25^2$). A REIT focused on one property type has a Herfindahl of 1 ($= 1^2 + 0^2 + 0^2 + 0^2$).

The optimal structure of a focused REIT is dramatically different from that of a diversified REIT. Large differences in management costs and interest costs make debt unattractive for a diversified REIT. In the simulation our focused REIT optimally uses 40% more debt than the unfocused REIT.

Given that we have defined an “apartment REIT” as one with at least 50% of their asset base in apartments, apartment REITs are, mathematically, more focused than the average REIT in our sample. We believe that this greater concentration also leads to a greater use of debt by apartment REITs.

Figure 5

The graph illustrates the results of the simulation model for the relationship between shareholder value and the Debt-to-Asset ratio for two levels of focus/diversification that reflect a one standard deviation change from the mean. All variables other than focus taken at the sample means. The vertical axis is the ratio of shareholder equity as measured by stock prices to shareholder equity measured using property market valuations net of debt. The model is based on equations estimated from the detailed sample of 58 REITs from 1985-92.

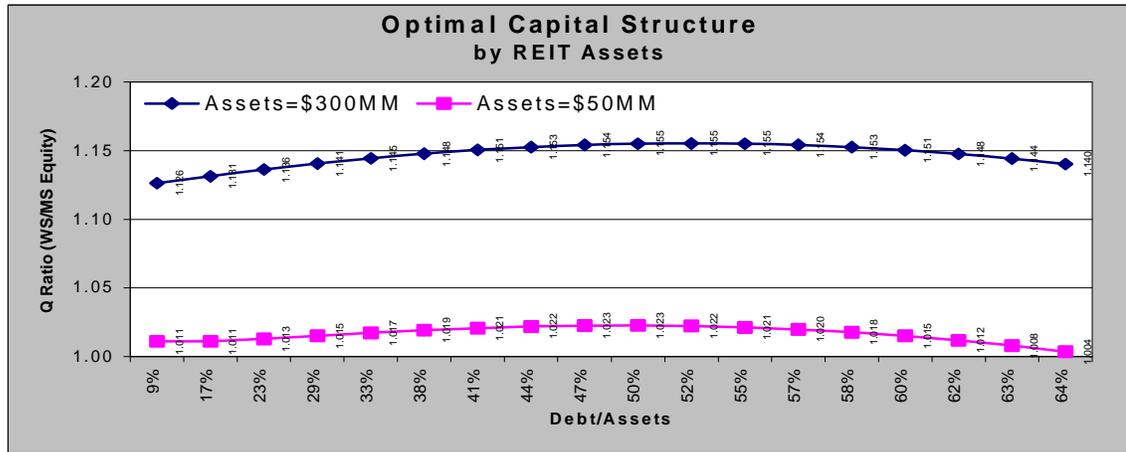


D) Asset Size

Our final simulation investigates the effect of size as measured by equity. Larger REITs are able to exploit the economies of scale in management on both the asset side and the liability side. In addition, the collateral value of the assets may be greater for a cross-collateralized loan or favorable for corporate level debt. Size has relatively little impact on the optimal capital structure. Figure 6 considers REITs with \$50 million and \$300 million in equity. The larger REIT optimally carries more debt, but only about 5% more.

Figure 6

The graph illustrates the results of the simulation model for the relationship between shareholder value and the Debt/Asset ratio for two levels of total assets that reflect a one standard deviation change from the mean. All variables other than size taken at the sample means. The vertical axis is the ratio of shareholder equity as measured by stock prices to shareholder equity measured using property market valuations net of debt. The model is based on equations estimated from the detailed sample of 58 REITs from 1985-92.



Summary and Conclusions

In this study, we investigate the use of debt by REITs in general, and apartment REITs in particular. We find that apartment REITs use significantly more debt (7%) in their capital structure on average, and that this increase is mostly in the form of long-term debt.

To uncover why apartment REITs employ greater amounts of debt, we need a theory for the use of debt in REITs. We review the standard or classical paradigm in finance that states that differences in capital structure can be attributed to only one of three factors: bankruptcy costs, agency costs and taxes. However, we subsequently argue that these three factors are either irrelevant or largely immaterial for REITs due to their unique organization structure.

Since the relevance of the standard financial paradigm is limited, we turn to creating a theory for capital structure that captures the unique features of REITs. We suggest that factors including dividend policy, the size of the asset pool, institutional organization (internal- versus external-managed, finite- versus infinite-life), and the degree of diversification of assets play a role. Using a simple statistical model, we examine the impact of these factors on capital structure and find evidence that these factors do, indeed, affect the capital structure employed by the managers of REITs.

However, these factors do not fully explain the differences in debt employed by apartment versus non-apartment REITs. Indeed, when we control for these factors, we find a 9% increase in debt loads for apartment REITs. To explain this difference, we investigate those factors that differentiate apartment REITs from others. We suggest that several factors differentiate apartment REITs, including the nature of their assets (less costly to manage, more liquid with less interest rate sensitivity) and access to unique capital markets (GSEs and other securitizers). These factors combine both to increase the collateral value of the assets and to increase the pool of prospective lenders. As a result, apartment REITs have a com-

parative advantage in borrowing.

Finally, through simulation, we provide a strategic model that makes specific recommendations as to what capital structure maximizes shareholder value. This model, based on discounted cash flows, demonstrates that there does not exist a unique optimal capital structure appropriate for all REITs. Instead, the capital structure for a particular trust depends on a number of features including the size and the degree of focus of the asset pool, the asset capitalization rate, and whether the trust is predominantly invested in apartments.

Capital structure decisions are some of the most complex and most important ones made by managers. The strategic model developed for this research provides a number of specific guidelines for managers of apartment REITs as well as other REITs. First, shareholder value (i.e., stock price) can easily be increased by 10% or more with the correct choice of capital structure. In most cases, however, the relationship between shareholder value and debt ratios is relatively flat near the optimal level, so that deviations of 5% to 10% from the optimum debt level have small effects on shareholder value.

Second, although the function relating shareholder value to debt ratios is usually flat, there are strong interactions between optimal debt ratios and the characteristics of REITs. Debt can be strongly favorable or unfavorable in specific situations. For example, property type focus plays an important role. More focused REITs have much higher optimal debt ratios.

Third, there are time periods when debt is more favorable. The higher property capitalization rates are in relation to real interest rates, the greater will be the optimal debt ratio. In periods of low inflation, the effect of favorable debt on shareholder value is more immediate. When inflation rates and nominal interest rates are high, managers will have to wait longer for the indirect effect of debt through FFO to increase share values. When nominal interest rates exceed capitalization rates because of high inflation rates, adding properties and financing with debt will reduce cash flow in the short run. The increase in FFO arises only after inflation has increased rents and cash flow in later years.

The simple strategic model developed here represents an important and valuable managerial tool. The model can easily be calibrated to the cost structure and asset base of a specific REIT to model not only its optimal capital structure but also other financial decisions as well. For example, dividend policy and property diversification strategies are highly amenable to this type of analysis.

Finally, we reemphasize that although apartment REITs carry higher debt burdens, these higher debt levels appear to be justified by the unique features of the underlying properties and the institutional features of the industry. Our evidence indicates that apartment assets are less costly to manage at the margin and that interest costs are lower for apartment REITs. We hypothesize that the lower interest costs arise because apartments are more transparent to lenders and/or less risky. These characteristics of apartments combine to make higher debt levels appropriate for apartment REITs.

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Appendix A

The Reduced Form Regressions for Debt Ratios in REITs

The dependent variable is the ratio of debt-to-assets. The results are derived from the detailed sample of 58 REITs from 1985 to 1992 with 298 usable observations. Total assets are measured by adjusted book assets. Finite life, External Advisor, and Apartment are categorical variables taking the value 1 if the indicated characteristic applies and 0 otherwise. Focus is a Herfindahl index measuring both property type and regional diversification of the REIT. Higher values indicate a more focused, less diversified property portfolio for the REIT. * indicates significance at the 10% level or higher.

	Equation 1		Equation 2	
	coefficient	t-statistic	coefficient	t-statistic
Constant	-.37	-2.4*	-.42	-2.7*
Finite Life	-.04	-1.4	-.03	-1.0
External Advisor	.11	4.3*	.11	4.3*
Apartment	.08	1.7*	.07	1.6
Focus			.09	1.5
Adjusted R²	.11		.12	



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