Overview of the Commercial Real Estate Industry

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January 11, 2008

Submitted to the National Association of Real Estate Investment Trusts (NAREIT).®

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Executive Summary

Real estate contributes significantly to the wealth of the United States and is one of the four "core" investment asset classes, along with cash (T-bills), stocks, and bonds. The total market value of non-government owned real estate was approximately $25 trillion in the mid 2000's, exceeding the stock market valuation of about $20 trillion. As a result of this size, the impact of the real estate industry on the overall economy is significant. Analysis of the component parts of the U.S. Gross Domestic Product (GDP) indicates that the real estate industry (residential and commercial real estate) accounts for almost 20 percent of the country's economic output. Commercial real estate accounts for 6% of the GDP. Focusing on commercial real estate, total transaction volume in the U.S. was (about) $300 billion in 2006, and should approach that number in 2007. For comparison, in 2001 the volume was $65 billion, and in 2004 $160 billion. This represents growth of almost 50% during the past three years and about 350% over the past six years. Local, private investors still account for the largest share of transaction volume, followed by private, national investors, REITs, foreign investors, and space users.

This paper provides an overview of the commercial real estate industry, including that sector of the industry that owns and operates portfolios of investment property. The paper also provides an analysis of real estate as an investment asset class. There are seven sections covering (1) real estate economics, (2) the interactions between the space and asset markets, and the linkage provided by new development, (3) the role of real estate investments within the broader portfolio context, (4) the concepts of real estate leases and how they differ from leases on equipment and other assets, (5) the property development process, (6) the role of debt in real estate investment, and (7) a brief summary and conclusion.

An overriding theme is that real estate is an asset class with unique characteristics that differentiate it from other asset classes and that distinguish the real estate industry from other economic activities such as manufacturing and the financial sector.   These distinguishing characteristics are discussed in section 1.   Primary among them are

immobility and heterogeneity. While these are physical characteristics, they impact the economics of the marketplace. For example, immobility and heterogeneity lead to product market segmentation resulting from differences based on investor demand and relatively high debt-equity ratios used to finance real estate investments. Unlike assets such as equipment, investment properties have the expectation of substantial residual property value apart from the value that can be associated with financial contracts in place, notably leases. In addition, real estate differs from other asset classes by having high transaction costs and other barriers to entry, long-lasting improvements, and a relatively slow reaction of supply to changes in demand. These characteristics have implications for the overall efficiency of the market.

Section 1 also includes a discussion of real estate value estimation. Because real estate competes in the broader capital markets, analysts use the same tools to estimate real estate values as other assets. Properties are treated as single economic units, with their values based on forecasts of future cash flows discounted back to the present at a rate of return that reflects the underlying risk associated with those cash flows. This process is standard regardless of whether the asset in question is real estate, a bond, or a piece of equipment. Furthermore, the process is relied upon by lenders in loan underwriting, by investors in determining expected returns, and security analysts when calculating net asset values (NAVs) of REITs and other owners of investment property. Two key conclusions from this part of the paper are that value is driven by the expected cash flows from an investment property, and that there is often not a direct link between the value of leases in place or the cost of building components and the fair value of the property.

Section 2 continues with a presentation of how the supply and demand for real estate as an investment and as a physical location interact with each other. As a unique industry, real estate comprises three interrelated components referred to as the space (or physical) market, the asset (or capital) market, and the development process. Since the characteristics of the space market are often tied to the ultimate use of the real estate within that market, the space market is often delineated by its functionality (e.g. residential, office, industrial, retail, hotel, and mixed-use.) Furthermore, the immobility

feature of real estate adds a location characteristic to the space market (e.g. central business district, suburban, etc.) Because of these interacting characteristics, the space market is highly segmented. This differentiates real estate from other assets, such as automobiles, aircraft, or equipment that are not tied to specific locations or use.[1] Within this space market, the interaction of supply and demand determines the "price" paid for the use of real estate, which is often in the form of a lease. In contrast, the asset market describes the investment activity for real estate and investors make buy/sell decisions based on the expected future cash flows derived from real estate existing in the space market. In the asset market, prices change due to forces from the space market, and in reaction to changes in the returns offered by other assets in the broader capital market. As a result, the real estate asset market is integrated into the broader capital market. Finally, the development process completes the real estate industry by creating new supply in the space market based on values observed in the asset market. One of the characteristics differentiating the real estate industry from other asset classes is that the supply response occurring in the space market adjusts slowly to shocks in the asset and space market. As a result, the real estate industry is exposed to cycles of over and under development.

Section 3 discusses measuring real estate performance and how real estate fits in mixed asset portfolios. Modern portfolio theory is based on the fundamental proposition that investors can generate an improved risk/return relationship by combining assets with return series that are not perfectly correlated. While differences exist among academics regarding how to properly measure real estate returns, the general consensus is that real estate returns are not highly correlated with other assets and, as a result, real estate assets provide a significant diversification opportunity to investors. Indices that track the performance of REITs and those that track the performance of direct real estate investment reveal that commercial real estate investments offer an attractive risk-return trade-off and that real estate has an important role in mixed asset portfolios.

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[1] For example, commercial jet aircraft can be quickly diverted from low demand routes to high demand routes or converted from passenger to cargo service.

Section 4 is devoted to real estate leases and leasing strategies. These are key considerations in the marketplace, as the long-life expected for most real estate easily allows for the economic separation of control from ownership through the use of lease contracts. In general, the unique characteristics of real estate ensure that even long-term real estate leases fail to meet the Financial Accounting Standards Board's requirements for being classified as capital leases. For a variety of reasons, most businesses find that leasing real estate is preferred to ownership. For example, leasing is often more cost effective when space requirements are less than quantity supplied in a typical building in the desired location. In this case, purchasing a property would place a firm in the "real estate business" by requiring that it assume the risks of ownership for leasing space that it does not occupy. Given the importance of leasing to the real estate industry, section 4 discusses the differences in real estate leases arising from property characteristics in the space market as well as various leasing strategies.

Recognizing that new property development is integral to linking the space and asset markets, section 5 provides greater detail on the project level risk and return characteristics associated with the various phases of the development process. Risks and expected returns to a developer can be substantial, and given the immobility and durability of improvements, development decisions in the private sector have long lasting impacts on the public in terms of urban form and the quality of life. This partly explains why development is a highly regulated activity.

The development process is surprisingly front-end loaded in terms of value creation. As regulation increases, the initial permitting and due diligence stage is where the risk level is highest and where ultimate value is largely determined. Developer control is also at its peak then, with control rapidly diminishing when construction begins and the process becomes effectively irreversible. We also note that at this point of diminishing control is when the dollar investment accelerates. Thus it is difficult to overstate the importance of decisions made prior to that point.

The risks and returns associated with development (and later investment) also provide insights into the relationship between cash flows and property value. An umbrella observation is that there is often not a direct link between the value of leases in place and the value of a property. In fact, as noted above, much of the ultimate value of a property is created at the initial permitting stage, typically prior to any lease contracts being in place. This same idea holds through the development and investment continuum. Below or above market rents may create a gap between property value and the value of current leases, and furthermore, real estate has substantial residual value after the expiration of existing leases in place. The latter is in contrast to many other leasing situations, such as for equipment, which unlike real estate tends to lose value over time.

The use of debt in the real estate industry differs significantly from its use in other industries. This is the topic of section 6. Due to the immobility and durability features of real estate, lenders are willing to use real estate as collateral for long-term debt contracts, creating mortgage contracts. This also matches well with the existence of long term lease contracts that provide more certainty about future cash flows. For these reasons we observe much higher debt to equity ratios in real estate markets than we do in other industries. While the prominence of debt in most properties' "capital structures" does not impact the market value of those properties, it does impact both the expected return to equity and the risks associated with achieving that return. The use of debt also shifts the source of return outward, with a higher percentage of total return coming from terminal value relative to operations. Because capital gains are typically taxed at a lower rate than regular income, pushing the source of returns toward capital gains, along with the deductibility of interest on mortgage debt, are tax related explanations for high debt to equity ratios.

1. Real Estate Economics: Some Fundamentals

Real estate contributes significantly to the wealth of the United States, and is one of the "core" investment asset classes, along with cash (T-bills), stock, and bonds. This section presents data on the flow of funds in U.S. real estate markets, discusses the economic characteristics of real estate that differentiate it from other asset classes, and concludes with a description of the process of value estimation.

1.1 U.S. Real Estate Markets: Capital Flows

The U.S. dominates commercial property markets, accounting for approximately one third of world value. For comparison, Europe as a whole contributes about the same percentage. The total value of non-government owned real estate was approximately $25 trillion in the mid 2000's, compared to an approximate stock market valuation of about $20 trillion at that time.[2] About 55 percent of real estate value was in private equity, 19 percent in private debt, 16 percent in public debt and 10 percent in public equity.[3]

Though the value of real estate is concentrated in developed land, the latter is only about 6 percent of the total land area in the U.S. The largest shares of land use are water areas and federal land (about 23 percent), followed by forest land (21 percent) and then various agricultural uses. These numbers have changed only slightly over the past two decades. In terms of percentage change, however, developed land has increased by about one-third during that period.[4]

Real estate competes with other asset classes in the capital markets, and over the past several years there has been a sharp increase in transaction flows. Total commercial real estate volume in the U.S. was (about) $300 billion in 2006, and should approach that number in 2007. For comparison, in 2001 the volume was $65 billion, and in 2004 $160 billion. This represents growth of almost 50% during the past three years and about

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[2] Source: Ling and Archer (2005) and updated by the authors.
[3] Source: Geltner et al (2007).
[4] Source: Ling and Archer (2005).

350% over the past six years. Local, private investors still account for the largest share of transaction volume, followed by private, national investors, REITs, foreign investors, and space users.

1.2 Economic Characteristics of Real Estate

Real estate assets have unique characteristics that differentiate them from other asset classes, and distinguish the real estate industry from other economic activities such as manufacturing and the financial sector. Primary among these characteristics are immobility and heterogeneity. While these are physical characteristics, they impact the economics of the marketplace. Immobility is associated with localized and segmented markets, and in the public sector largely explains the regulation of land use. Property owners are hostage to their locations, and therefore society has determined those locations should be afforded varying degrees of protection from surrounding land use that may negatively impact quality of life and in turn property values. Zoning and environmental regulations are the most visible examples. Immobility also creates differences in accessibility across properties, a major factor in explaining land values and land use patterns.

Immobility and heterogeneity also help to explain the local/regional focus of most analyses. Competition is largely confined to a limited geographic area, with that area dependent on property type. The single family home market is the most narrowly defined, while larger commercial uses, for example retail centers, have a wider area of potential interest. Heterogeneous products also contribute to market segmentation. In commercial markets segmentation occurs on the basis of both price and quality, with higher end, more costly properties in larger Metropolitan Statistical Areas (MSAs) tending to be concentrated in institutional portfolios. As a result, a high percentage of properties in REIT portfolios are in the 30-35 largest MSAs. These are referred to as institutional or investment grade properties. Thus there is a segmentation of competition between institutional grade and "other" markets.

Immobility and long-lasting improvements help explain the relatively high debt-equity ratios used to finance property. Collateral that can not be moved and which promises to endure is attractive, as is the fact that over time, land value increases tend to offset any depreciation of the improvements. Put differently, unlike assets such as equipment, there is the expectation of substantial residual property value apart from the value that can be associated with financial contracts in place, notably leases.

Other characteristics that differentiate real estate from other asset classes include barriers to entry, notably high transaction costs and land use regulations, and a relatively slow reaction of supply to changes in demand. Barriers to entry are associated with a slow reaction of markets to new information. This inefficiency implies that more or better market knowledge and experience may have a payoff. One result is that a significant portion of both institutional and private real estate investors choose investment strategies focused either geographically or by property type.

A relatively slow reaction of supply to changes in demand (an inelastic supply curve, at least in the short to medium term) further differentiates real estate markets from the relatively efficient product and financial markets.

1.3 Estimating Real Estate Value

Because real estate competes in the capital markets, analysts estimate the market value of property using the same tools as are applied in the valuation of other asset classes. That is, a forecast of future cash flows is developed, and then discounted to a present value at the required return. The required return reflected in the discount rate is the sum of the pure time value of money and a risk premium. This estimating approach is the industry standard; relied upon by lenders for determining collateral value when making loan decisions, by investors when estimating expected returns, and securities analysts when making estimates of value, for example the Net Asset Values (NAVs) of REITs and other companies that own and operate portfolios of investment property. Statement of Financial Accounting Standards No. 157 *Fair Value Measurements* defines fair value as "the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date". Fair value differs from

the historical cost that is reported on balance sheets based on current U.S. GAAP, and it is increasingly supported on the basis that periodic "marking to market" provides more transparency than historical based measures.

The value estimate is critical, as the price paid ultimately determines the rate of return to the investor, recognizing that the cash flows that are achieved are not affected by the price paid. The rate of return can be divided into the portion attributable to operating cash flows, and the portion attributable to changes in the value of the property. Value change is realized either at sale or when the property is refinanced. The contribution of value change to the total return is case specific, but under a set of reasonable assumptions about operating cash flows, value change, and holding period, a 25 percent to 40 percent contribution is not uncommon. Thus value creation and change is a critical factor in achieving target returns.

Capitalization Rates and Vales

Industry observers and participants often refer to capitalization rates when discussing property values. The capitalization rate is calculated by dividing a single year of cash flow (typically the expected first year operating income) by the value estimated by discounting cash flows, or in the case of a transaction that has been completed, dividing the single year of cash flow by the actual transaction price. Taking the inverse of a cap rate produces a price-earnings multiplier that is completely analogous to the P-E ratios that often accompany securities analysis. And, the interpretation is the same. P-E ratios differ across companies and sectors for two fundamental reasons; differences in risk and differences in expected cash flow and value growth. Thus we observe higher multiples for growth stocks than for more stable stocks such as utilities. The same is true in real estate markets, where properties expected to experience relatively high growth in operating cash flows and value will sell at higher multiples (lower cap rates) and therefore higher prices than properties with more modest expectations. More precisely, a property that sells at a cap rate of, say, 8 percent, and experiences 3 percent annual growth in cash flow and value, will produce a total return of 11 percent.

Published surveys of appraisers and investors typically report on average capitalization rates by property type, often broken out by MSA or region.

"Leased Fee" Value

The values estimated for properties are often "leased fee" values, reflecting any impact of rents that are not at market levels. Thus a property encumbered by a lease(s) at below market rent will have a leased fee value that is lower than its fee simple value. That value will reflect the below market rents, as well as the impact of the conversion to market rents when the current leases expire. The distinction between leased fee and fee simple values recognizes that the value of the real estate is often different than the value of the leases in place. References to leased fee and fee simple values are consistent with the accepted idea that property values are a function of the productivity reflected by the expected cash flows from investment property as a single entity. Also consistent with this idea is that the use of the "cost approach," which estimates property value by adding the costs of the individual physical components of the buildings and land, has been largely abandoned for commercial properties. Cost estimates are now used mainly by developers to compare to the expected market value at completion, another application of the difference between component costs and market value. That is, while replacement costs estimates are regularly used in comparisons to fair value, they are not themselves a reliable basis of fair value estimates. Thus, neither the value of leases in place nor the summed values of the component parts of a property provide appropriate bases for estimating the fair value of investment property.

A Note on Land Values

An appreciation for how land use and land values are determined provides additional insight. Land value, like the value of already developed properties, is a function of the expected cash flows and value changes associated with what economists and appraisers call the property's highest and best use. Highest and best is the use that maximizes the land's value, which is equivalent to maximizing the expected risk adjusted return. It follows that if land is developed into a use different than its highest and best use, the resulting return will not be sufficient to compensate for the associated risk. Thinking

about this with reference to value estimation, it is seen that a non-highest and best use development can incur costs equivalent to a development at the highest and best use, but have a different market value at completion. This reinforces the conclusion that the cost of building components is unlikely to equal the market value.

Estimating the Value of Entities that Own Portfolios of Investment Property

Most investment analysts translate individual asset values into estimates of the value of companies that own portfolios of investment property. In addition to estimates of the fair value of real estate assets, most analysts estimate the value of other significant assets and the company's debt in order to estimate the NAV of the entity. The NAV is then used as a basis to value the company's shares. Share estimates are generally valued at premiums or discounts to NAV based on various factors unique to each company. These factors include the quality of management, the prospects of new development, the quality of properties in the portfolio, etc.

Entity values may also be estimated based on multiples of performance metrics, primarily Funds From Operations (FFO). FFO, as defined by NAREIT, has been used by most REITs as a supplemental performance measure and as a basis for estimating a REIT's share value.

2. The Real Estate Industry

The real estate industry comprises three interrelated, yet distinct, components commonly referred to as the space market, the capital market, and the development process. In addition, by interacting with these components, forces from outside this system, such as changes in broader capital markets or local and national macro economic conditions, impact the real estate industry in a variety of ways. This section describes these components and their relation to one another.[5]

2.1 The Space Market

The first component, the space market, describes the physical nature of real estate. The term "space" denotes the physicality of real estate in that it ultimately provides a physical location and/or shelter for the individual activities that take place within that space. Since the characteristics of the space market are often tied to the ultimate use of the real estate within that market, market participants normally delineate space markets by their functionality. Thus, we use the term "residential" space market when referring to the use of real estate in providing shelter from the natural elements for individuals or households. Similarly, we refer to the "office" space market when describing the use of real estate to provide shelter to firms so that their employees can conduct business. Thus, we define the space market according to its intended use, with the traditional (and most common) uses being residential, office, industrial, retail, hotel, and mixed-use.[6]

One of the key features distinguishing real estate from other assets is its specific locality. The fact that real estate is tied to a specific location makes each asset unique and thus market participants often add a location characteristic to the intended use when describing a specific space market. For example, one often classifies office markets as being "central business district (CBD)" or "suburban" and hotel properties as being "business-class" or "resort."

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[5] See DiPasquale and Wheaton (1992) and Fisher (1992) for a more in-depth treatment of this topic.
[6] It is common to refer to non-residential real estate as "commercial."

The interaction of real estate location with real estate use often results in a segmented real estate market. A market is classified as segmented when it can broken into various "sub-markets". As a result, the space market is segmented along location and use dimensions. Further reflecting the unique nature of real estate, the space market is also segmented by quality. Thus, the real estate space market is normally classified by type of use, location of the property, and quality of property being provided.

Regardless of how we characterize its physicality, the space market brings together the suppliers of existing real estate (building owners and landlords) and the ultimate end users who determine the demand for space. As with any market, the fundamental law of economics dictates that the interaction of supply and demand will determine the "price" of space. In the space market, the observable price comprises two components: rents and occupancy. Rent is normally the monetary amount paid by the user to the owner (and is usually quoted as an amount per unit of space). Quoted rents are often easily observed and reported. However, quoted rent normally does not fully reflect the actual "price" paid for the use of real estate. The actual economic rent is impacted by factors such as periods of "free rent" and allowances for building out the space to the demander's specifications (called tenant improvements). These factors are often not disclosed – making the determination of economic rent difficult to most outside observers. An exception is that experienced valuation consultants use actual market data to determine economic rents.

Although economic rents are difficult to observe, one factor readily observable and directly linked to economic rent is occupancy level. Occupancy describes the actual amount of physical space utilized and its converse, vacancy, describes the amount of space currently available to meet end-user demand. In a well functioning space market, the amount of vacant space will reflect the overall demand for space. Normally, one would consider that a space market in equilibrium (i.e., supply equaling demand) would have zero vacant space. However, in real estate markets a positive amount of vacant space is optimal to facilitate end-user turnover. Furthermore, given the long-term nature of some real estate lease contracts, space providers may prefer to retain some vacant

space (in effect as inventory) in order to have the option to meet future demand that could result in higher economic rents.

The final identifying characteristic of the space market is the shape of the supply curve. Unlike the traditional upward sloping economic supply curve (higher prices leading to greater supply), the short-run real estate supply curve is inelastic reflecting the fixed-nature of the market. That is, due to construction lags, the supply of real estate can not expand (or contract) instantaneously to reflect changes in user demand. This leads to potential imbalances in supply and demand. As will be discussed below, the development process is responsible for adding new property to the space market and the economics for new development depend upon values determined in the capital market as well as external forces coming from the construction activity.

2.2 The Asset Market

The real estate asset market describes the investment activity for real estate. As such, the asset market brings current owners wishing to sell real estate (supply) together with investors wishing to purchase real estate (demand). In this market, investors make buy/sell decisions based on the expected returns offered by real estate. As with any financial asset, the fundamental driver of expected returns is expected future cash flow. Thus, the asset market is linked to the space market through the cash flow provided by the real estate. Cash flow is a function of the economic rents obtained in the space market along with property expenses.

To external observers, the capitalization rate is the link between the supply and demand for investment real estate and the property cash flow. The capitalization rate is the property level net operating income (typically first year income) divided by the property sale price. In essence, the capitalization rate provides a mechanism for linking the current market value of a property to the property's discounted cash flow in perpetuity.

Market capitalization rates may change for a variety of reasons. For example, changes in the supply or demand of investors can alter capitalization rates. An increase in investor

demand for real estate will increase prices resulting in a decline in observable capitalization rates. Analogously, a decrease in investor demand for real estate would cause a decline in prices resulting in an increase in observable capitalization rates (all else being equal). Thus, changes in investor supply or demand will impact the value of real estate by changing the market capitalization rate, which, as discussed in section 1, translates a given dollar of cash flow into value.

Furthermore, because the capital markets are well integrated (i.e. capital flows freely to investments offering the most attractive combination of risk and expected return), changes in the supply and demand in other investment markets will impact the supply and demand for real estate investments. Thus, forces in the capital markets that increase (or decrease) investor required rates of return will increase (or decrease) the market capitalization rate resulting in a decrease (or increase) in the underlying real estate value. As a result, the real estate asset market is highly integrated and investors only differentiate across property uses or location as a means of denoting the specific assets being transacted.

2.3 The Development Process

The development industry closes the loop between the asset market (where value is determined) and the space market (where use is determined). Real estate development is a business activity that seeks to profitably provide new real estate to the space market. Profitability in this context depends upon being able to provide space that has a "value" greater than the costs of production. For real estate development, the cost of production reflects all land, material, labor, fees, and the cost of invested capital required to produce new space. Thus, the developer looks to the asset market to determine the potential value for new space and only provides that space when the expected value exceeds the cost of production. Put differently, the development industry provides a feedback mechanism that allows for the cash flows determined in the space market, which then impact property values, to determine the level of new real estate added to the space market.

3. Macro Level Performance Issues

Real estate's emergence as a prominent asset class makes it necessary to not only be able to measure its investment performance, but also to use that performance as the basis for mixed asset portfolio allocation decisions.

These macro level topics are the subject of this section. Included are real estate's role in portfolios, measuring real estate investment performance, and interpreting and using performance indices.

3.1 Real Estate's Role in Portfolios

Modern portfolio theory began with Markowitz (1952), who combined the considerations of risk and return to provide the beginnings of a solution to the question of how best to allocate capital across various asset classes. From this beginning came not only portfolio theory, but later widely used capital asset value models, most famously the Capital Asset Pricing Model (CAPM).

Portfolio theory is based on the fundamental proposition that the investor can generate an improved risk/return relationship by combining assets with return series that are not perfectly correlated. At one extreme, consider two possible investments with returns that are perfectly correlated; that is, they move up and down exactly the same each period. Dividing capital between these two investments with their correlation of +1.0 would have no advantage over simply investing all of the capital in one or the other. The result in either case would be the same expected return and volatility. Now consider two investments with returns that are perfectly negatively correlated; that is, when the return on one changes, the return on the other changes in the opposite direction by an equal amount. This is a case of a -1.0 correlation, with the result that dividing capital equally between them would produce the same expected return, but with -0- portfolio volatility. Real world correlations between investments are never at the extremes, but there are

diversification benefits whenever correlation is less than 1.0, and the farther from 1.0 the greater the benefit.

Portfolio managers are typically less interested in measuring correlations between individual investments than they are in measuring correlations among asset classes. These measures are the basis for allocating capital, and thus the common reference to the percentages of capital invested in the various asset classes. It follows that investment performance is almost always reported with reference to, and comparisons among, the "core" asset classes of cash (T-bills), stocks, bonds, and real estate.

Since portfolio theory began to dominate institutional practice in the 1970s, a great deal of effort has gone to answer the question of what is real estate's proper role. Early efforts were hampered by insufficient data and sometimes data of questionable reliability. This began changing with the increased transparency associated with the emergence of REITs and the globalization of property markets. Both NAREIT and the National Council of Real Estate Investment Fiduciaries (NCREIF) began accumulating real estate investment performance data in the 1970s. A consistent finding has been that real estate's relatively low correlation with other asset classes makes it an attractive candidate for inclusion in mixed asset portfolios. While correlation estimates vary by sampling period and across property markets, a reasonable conclusion is that the correlation between the returns to stocks and the returns to REITs and non-REIT listed real estate companies has been between .30 and .40, suggesting substantial diversification benefits.

Given this evidence, the question becomes not whether real estate belongs in portfolios, but rather how much real estate is appropriate. This is not easy to answer, as there has been a persistent gap between the prescriptions that result from the application of portfolio theory, and what is observed in practice. While the percentage allocations suggested by theory and empirical evidence vary across sampling periods, the percentage for real estate has seldom been less than 15 percent, and some credible research suggests something closer to 30 percent. These suggestions are what might be expected based on real estate's share of U.S. investment wealth, but they stand in contrast to actual practice,

which is that real estate is typically around 5 percent of institutional portfolios, with a non-trivial portion of portfolios containing no real estate.

Are portfolio managers unaware of what they are missing? Probably not, yet most continue to allocate smaller than prescribed percentages. There is no shortage of explanations for this puzzle, three of which in our view deserve the most consideration. First, there may be the suspicion that the risk measure (standard deviation) underlying portfolio theory is not as reliable with reference to real estate. Second, it is likely recognized that direct investment in segmented markets like real estate requires a focus and expertise within specific, often local markets. These skills are lacking by most portfolio managers. This also helps to explain the growth of REITs, which carry with them the required expertise. The third explanation for the theory/practice gap is a combination of inertia and the fear of a bad decision, particularly when that decision is contrary to accepted practice. The portfolio manager who was alone in allocating, say 20 percent to real estate, and in the short run it performs poorly, is potentially more visible (and possibly more accountable) than the manager, who, like many others, allocated 5 percent.

The discussion to this point has been with reference to capital allocation across asset classes. The other issue is the applicability of portfolio theory within an asset class. That is, can portfolio theory be used to do things like allocate the real estate portion of a mixed asset portfolio among different property types or geographic areas, or be used to make allocations within a stand alone real estate portfolio? Some argue that it can and should be used in this way, while others point out that the whole objective of portfolio allocations is to maximize the performance of the overall portfolio, and not the performance of individual components of the portfolio. Another constraint on using portfolio theory within the real estate asset class is that there is sometimes insufficient performance data available for individual properties and property types. This constraint mainly affects direct investment real estate, but is much less an issue with respect to REITs and non-REIT listed companies.

3.2 Are REITs Stocks or Real Estate?

Since the late 1980s the percentage of property held by REITs and non-REIT listed companies has increased sharply, beginning in the U.S. and more recently globally. REITs offer liquidity not available with direct investment, and because they are securities, a greater level of transparency with respect to performance measures and management accountability. At the same time, because REIT shares are liquid and trade daily in public markets, the prices of those shares reflect changing investor expectations with respect to developments in the overall economy as well as in real estate and financial markets. As a result, the correlation of publicly traded REIT returns with those of other market-priced equities, while attractively low, tend to be higher than the correlations of direct real estate investment returns with those of the same market-priced equities.

3.3 The Performance of Commercial Real Estate

Indices that track commercial real estate performance can be divided into two main categories: those that track the performance of REITs, and those that track the performance of direct investment real estate. Table 3.1 below shows return measures across the core asset classes for the period 1992 through the third quarter of 2007. This period covers the beginning of the "modern" era of REITs through the most recent data available. The FTSE/NAREIT Equity REIT index is calculated and published by FTSE Group in cooperation with NAREIT. The TBI index (Transaction Based Index) is developed by MIT and tracks returns from direct investment real estate.

Table 3.1

Quarterly Performance Measures, 1992 – 2007 (Q3)
"The Modern REIT Era"

	T-Bills	Bonds	S&P 500	TBI	NAREIT
Arithmetic mean	.92%	1.60%	2.94%	3.13%	3.49%
Standard deviation	.37%	1.99%	7.36%	3.55%	6.99%
Coefficient of variation	.40	1.24	2.50	1.13	2.00
Geometric mean	.92%	1.58%	2.68%	3.07%	3.26%

Source: NAREIT database, 2007.

An important similarity between the TBI and FTSE NAREIT indices is that both are transaction based, meaning they avoid some of the measurement difficulties associated with alternative indices that are appraisal based. There are also some differences between the TBI and FTSE NAREIT indices with respect to how their returns are calculated.

One of those differences is that the TBI returns are reported on an unlevered (property level) basis while the FTSE NAREIT returns are reported on a levered (equity level) basis.   This helps explain both the higher returns and the higher volatility of the REIT index. Also contributing to the volatility difference is the point made earlier that REITs are traded as securities with prices that reflect factors that affect equity securities generally.   A number of researchers have attempted to adjust the various performance indices for these kinds of differences.[7]

Table 3.1 shows returns calculated two ways: over a single period (arithmetic mean) and a holding period (geometric mean). Consider a $1 investment which grows to $1.20 the first year, then falls to $1.08 the second and final year. The arithmetic mean return is (20 percent - 10 percent) / 2 = 5 percent, while the holding period return (IRR) is 3.92 percent.

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[7] An excellent example is in Geltner, D. et. al, *Commercial Real Estate Analysis and Investments*, 2nd ed., 2007, Thomson, ch. 25.

During relatively stable markets, the difference between arithmetic and geometric return measures tends to be relatively small. When markets are more volatile, the arithmetic mean tends to be higher than the geometric mean. Care should be taken when comparing indices, as some published data is unclear whether the returns reported are arithmetic or geometric.

Both the TBI and FTSE NAREIT returns are generated from the experience of investors whose portfolios tend to be concentrated in the largest 30 to 35 MSAs, and further concentrated within those markets in investment or institutional grade properties. Therefore, the indices may or may not represent the broader real estate market.

Finally, though relative asset class performance naturally varies across sampling periods, during the modern REIT era real estate equity shares have achieved returns more than 100 basis points greater than the performance of the broader equity indexes as measured by the Dow Jones Wilshire 5000 index. Based on these returns and the low correlations of returns between real estate and other asset classes, there is virtually unanimous agreement that real estate has an important role in mixed asset portfolios.

4. Leases and Lease Strategy

4.1 Overview of Leases

The concept of leasing assets recognizes the economic separation of control from ownership. Leasing allows the lessee (the tenant in real estate) to gain control over real estate for a predetermined period while the lessor (the landlord or property owner) retains full ownership rights. Given the long-life expected for most real estate, leasing effectively separates the shorter-term use of property from the longer-term ownership interests in the property.

The Financial Accounting Standards Board (FASB) makes the distinction between "operating" and "capital" leases depending upon whether the lease conveys economic "ownership" to the lessee. Under operating leases, the lessee receives only the right to use the property during the lease term. Since the lessee does not receive any ownership benefit, the full lease payment is recognized as an operating expense and the lease is not recorded on the firm's balance sheet. In contrast, under a capital lease the lessee assumes some of the risks of ownership. As a result, the accounting treatment for capital leases requires that the lease be recognized as an asset on the balance sheet as well as a liability. Acknowledging that a strong incentive exists to record leases as operating leases, the FASB requires that a lease be treated as a capital lease if any of the following conditions exist:

      (1) the lease term is greater than 75 percent of the asset life;

      (2) ownership of the asset is transferred to the lessee at the end of the lease;

      (3) the lessee has the option to purchase the asset at the end of the lease for a "bargain price;"

      (4) the present value of the lease payments are greater than 90 percent of the current asset market value.

In general, most real estate leases are structured such that they do not meet these conditions and are thus classified as operating leases. For example, even relatively long-term leases (say, 30-years) with multiple renewal periods will be shorter than the

expected life of a well maintained building. Furthermore, the residual real estate remaining after the lease term often has significant value helping establish that the rental payments will not exceed 90 percent of the current asset value. By classifying real estate leases as operating leases, the lessor recognizes that the real estate investment is an asset that produces cash flows that are recorded as income. It is worth emphasizing that the fourth item in the FASB test of capital leases explicitly recognizes that real estate leases are "operating" leases since the residual value of real estate (i.e. the present value of all future cash flows accruing to real estate after the expiration of the lease) normally exceeds 10 percent of the present value of the leases in place. The longevity associated with physical buildings leads to the large residual values.

4.2 Real Estate Leases

Real estate leases come in three basic flavors: gross, net, and hybrid. The gross real estate lease implies that the property owner pays all operating expenses associated with the property. Thus, the gross lease fits most closely with the concept of an operating lease as defined by FASB since the owner remains responsible for all expenses associated with the property and the lessee has limited control over the property only during the lease term. In contrast, net leases provide that the tenant will pay most operating expenses. In fact, the triple net lease specifies that the tenant pays all operating expense, including property taxes, insurance and maintenance. As a result, triple net leases appear to convey "ownership" to the lessee. However, even under this type of lease the lessee does not retain the property's residual value and thus still meets the FASB definition of an operating lease. Finally, the third lease type, the hybrid lease, combines characteristics of both net and gross leases.

Real estate leases often share similar characteristics depending upon the type of property being leased. For example, retail leases often provide for a base rent plus a percentage of gross sales, referred to as percentage rent. Percentage rent is designed to align the interests of the property owner with the retail business such that the property is maintained in order to make it as attractive as possible for potential customers. Gross

leases often contain expense stops or index clauses that limit the property owner's exposure to increases in expenses due to inflation.

Real estate leases often contain a variety of embedded options that cover future contingencies. For example, real estate leases often contain renewal options that allow the lessee and lessor to recontract for the use of the space at the prevailing market price. In effect, the renewal option provides the lessee with flexibility to meet future space needs and capitalize any investments and relationships created at that location. From the lessor's standpoint, the renewal option provides a mechanism that allows for periodic rent payment adjustments to better match market conditions.

4.3 Effective Rent

Earlier a distinction was drawn between quoted and economic rent, the key point being that economic rent is a more complete measure that reflects the actual price being paid for the use of space, including such things as rent concessions and tenant improvements. A third way that rent is sometimes described is as "effective rent". It can be calculated based on either quoted or economic rent, and is the present value of the rent converted into the equivalent level annuity payment. Expressing lease contracts on an effective rent basis enables comparisons of contracts with differing terms.

4.4 Leasing Strategies

One of the most important concepts in leasing real estate concerns the implications of the generally observed downward sloping term structure of rents. That is, longer-term leases generally command lower rents than shorter-term leases. This concept, similar to the concept of the term structure of interest rates, implies that rent levels observed in the space market are a function of lease length. One aspect not fully reflected in the effective rent calculations is the differences in risk across leases of various terms (longer term leases containing rent escalation clauses are often considered as being less risky since they reduce the uncertainty about future cash flows). In addition, shorter-term leases provide tenants with greater flexibility with respect to future space utilization and this option to either expand or contract space use in the future results in a premium placed on

short-term rent contracts. As a result, we often see a downward sloping lease term structure with longer-term leases having lower rents than shorter-term leases.

4.5 Lease versus Own

In general, the decision to lease or buy real estate ultimately hinges upon the cost/benefits associated with leasing versus owning. For a variety of reasons, many businesses find that leasing real estate is preferred to ownership. Leasing is often more cost effective when space requirements are less than the quantity supplied in a typical building in the desired location. In this case, purchasing a property would place a firm in the "real estate business" by requiring that it assume the risks of ownership for leasing space that it does not occupy. Furthermore, owning property often requires a large capital commitment to an asset that is not integral to the firm's core business. Finally, many firms find that leasing offers additional flexibility to leave markets or consolidate to a different location more efficiently than if space were owned.

5. Micro Level Analysis: Property Development

Real estate development is an economic activity that significantly impacts both the private and public sectors. This section extends the discussion of the space and asset markets from section 2, by providing more detail on the project level risk and return characteristics associated with the various phases of the development process.

5.1 The Development Process

As discussed in section 2, development links the space and asset markets. Risks and potential returns to developers can be substantial, and given the immobility and durability of improvements, development decisions in the private sector have long lasting impacts on the public in terms of urban form, quality of life, and property values. This largely explains why the development process is a highly regulated activity, and becoming increasingly so.

Development is often thought of as a linear process that begins with an idea and ends with stabilized occupancy and perhaps a sale to an investor. In fact, while references to the various stages of development makes the discussion more manageable, in practice the process tends to be non-linear. It is the rare project that proceeds smoothly from idea to occupancy, on time and with no changes or surprises. There may be political and regulatory issues, delays or denials in the permitting process, construction problems and cost overruns, a market that softens, a design that needs change, and a marketing plan that disappoints. From idea through occupancy may take several years, and it is not possible to foresee all sources and magnitudes of risk and return. It follows that developers require substantially higher returns than do investors in completed and occupied projects.

Except for very small projects, the complexity of the process requires a development team with a variety of skills. The team will typically include those involved in planning, design, permitting, due diligence, engineering, construction, marketing, leasing (or

selling), and property management.   It is unusual for all of these functions to be completed in house.   More common is to outsource some or all of them.[8]

5.2 Risk, Return and Value

Figure 5.1 below summarizes the development process, including comparisons of risk, expected return, and value added at the various stages.

Perhaps the most important lesson from Figure 5.1 is that while we may associate development with a building coming out of the ground, or with a completed project occupied by tenants, the value-adding process is in fact much more front-end loaded. The ratio of value to investment is highest in the initial stages, as decisions with respect to site selection, the price to pay for the land (or the opportunity cost if the site is already owned), design, permitting and due diligence are where ultimate value is largely determined.   Permitting is of particular importance as differences in permitted uses can have a significant impact on value.   It is interesting that this value is created at a point that is typically prior to any leases in place.
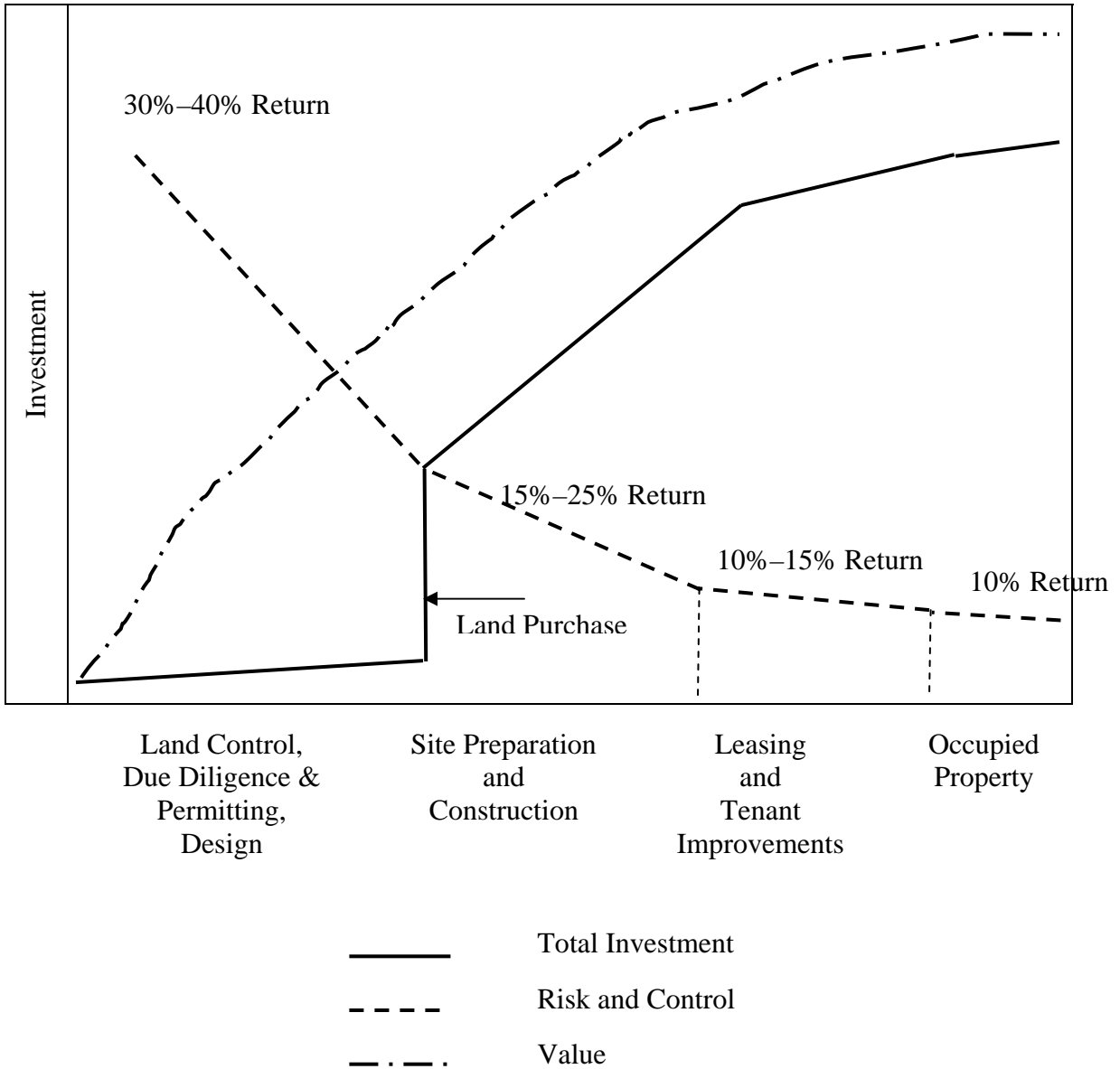

As the importance of permitting has increased, it has become less common for developers to purchase already permitted land.   The value added prior to that point would require a purchase price that would consume a significant portion of development profits.   As a result, it is more common now than in the past for developers to absorb the risks associated with taking the site through the permitting and due diligence process.

Consistent with the idea that substantial value is created early in the development process, the risk level is highest at that point.   Though there is a relatively low dollar investment in the early stages, it is at high risk.   Things like market changes, legal and regulatory issues, soil problems, and so on can and often lead to a project being abandoned, delayed or substantially changed prior to the onset of construction.

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[8] The development team is discussed in detail in Peiser, R., and A. Frej. *Professional Real Estate Development*, 2nd ed., 2003, Urban Land Institute, ch. 1-2.

Figure 5.1

Development Stages

30%–40% Return

Investment

15%–25% Return

10%–15% Return

10% Return

Land Purchase

| Land Control, Due Diligence & Permitting, Design | Site Preparation and Construction | Leasing and Tenant Improvements | Occupied Property |

——————— Total Investment

– – – – Risk and Control

— · — · Value

Source: Geltner, D. et. al, op. cit., p. 759. Modified by the authors.

Figure 5.1 illustrates another important characteristic of development, which is that as the process moves forward, the developer's control declines. This is seen by considering a building under construction. At that point, there is little that can be done to substantially change course without enormous cost, and therefore the development decision and attendant costs are effectively irreversible. Notice too, that this loss of control is occurring at a time when the dollar investment is rapidly increasing. For these reasons it is difficult to overstate the importance of decisions made prior to the onset of construction.

Because the risk level declines as development proceeds, there is an associated decline in expected returns. At the extremes, the expected return to an institutional investor that purchases the property after it is fully leased will be substantially less than the expected return to the developer. The absolute returns shown on Figure 5.1 are not meant to be precise, as they will differ across projects. However, they are consistent with the results of limited empirical work (McGrath, 2005), and the relative returns do reflect typical risk-return relationships along the development continuum.

A final insight from Figure 5.1 relates back to the observation that a substantial portion of value is created early in the development process. It was noted that this value exists despite the fact there may as yet be no tenants committed. The expectation is that those tenants will appear, but at that point there is by definition no relationship between the value of leases in place and the value of the property. The same idea holds throughout the development and investment continuum. Because the economic life of a property typically exceeds by a large margin the remaining terms on existing leases, the property will have a substantial residual value at the expiration of those leases. This is particularly so because unlike assets such as equipment, real estate tends to increase in value over time. Also, when rents under current leases are either above or below market, a property's value will be different than the sum of the value of those leases.

As discussed in section 1, when a property is encumbered by a long term lease(s) at below market rents, the property as if vacant is likely to have a higher value than it does as occupied. This contractual inertia is one explanation for what is sometimes referred to as the "gray collar" around many central business districts. These are areas with older, industrial type buildings, housing tenants that signed long term leases at now favorable terms, and who are unwilling to move. The fair value of the underlying real estate in such cases greatly exceeds the value of the leases in place, due to the residual value that will be captured when the leases expire and the site is free to be put to its current highest and best use. Thus for a variety of reasons, a property's value is seldom as low as the collective value of leases in place. This is recognized in capital markets, in appraisal practice, and as noted earlier in FASB distinctions between operating and capital leases.

5.3 Development Feasibility and Decision Rules

Development decision rules are conceptually similar to other investment decisions. Developers are expected to accept projects that maximize land value, which is equivalent to selecting projects with expected NPVs of -0- or higher, or alternatively, that are expected to produce IRRs that meet the minimum hurdle rate. Said another way, the present value of future cash inflows must equal the present value of cash outflows applying appropriate discount rates.

For many kinds of investments, including investments in occupied properties, it is common practice to use a single discount rate to estimate NPV, or to have in mind a minimum acceptable IRR. Single discount rates are used despite the fact that it is recognized that risk changes over time, and that a conceptually superior approach would be to discount each periodic cash flow at the appropriate risk rate for that period. However, it is also recognized that estimating future and frequent changes in risk (and therefore periodic discount rates) is a difficult task, and that occupied properties are likely to be relatively more homogeneous than new developments with respect to risk levels over typical holding periods. Thus the use of a single "blended" rate is considered acceptable.

The situation is different for development projects, which have risks that vary substantially from idea through occupation. The single biggest overall change in risk takes place when the negative cash flows associated with development convert to the positive cash flows expected when occupied. The negative cash outflows are much more certain to be incurred than are the cash inflows. Thus it makes sense to separate the NPV calculation into at least two parts. The cash outflows should be discounted at something around the risk free rate, while the expected inflows that will begin sometime in the future should be discounted at a much higher rate. Estimating the latter is difficult, but in practice a reasonable estimate can be made by starting with the current market capitalization rate and adding the expected rate of future income and value growth. Good discussions of rate determination and estimation can be found in most real estate investment texts.[9]

In practice, rules of thumb are often used in place of a discounted cash flow analysis. One common approach is to accept projects with some minimum level of expected gross profit. For example, a development with total costs of $20,000,000 might be acceptable if the expected selling price upon completion was $24,000,000. Required margins vary across developments, but a range of 15 percent to 25 percent is frequently observed. The investment/value relationship shown at occupancy in Figure 5.1 is consistent with that range.

5.4 Development Financing
Section 6 will discuss differences across mortgage loan instruments with respect to repayment agreements. Here the focus is on the sources and uses of debt and equity funds at the various stages in the development process. Development debt financing (referred to as construction or interim financing) differs from the financing of already occupied properties (called permanent financing) in several ways. First, while some institutions make both construction and permanent loans, it is more common to specialize in one category or the other. Primary sources of construction loans are commercial

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[9] For example Brueggeman W. and J. Fisher, *Real Estate Finance and Investments*, 12th ed., ch. 10, 2005, McGraw Hill.

banks and mortgage banking companies. Mortgage backed securities emerged in the 1980s to provide increased liquidity and to provide the real estate industry with more diverse, efficient and consistent sources of capital. Two important sources of permanent financing are insurance companies and pension funds. Permanent loans are used to pay off (or "take out") construction loans. The suppliers of construction and permanent loans tend to be different in an attempt to match their assets and liabilities. Banks, for example, have shorter term assets (deposits) which they match with shorter term interim loans, while insurance companies and pension funds are fiduciaries holding long term savings that they match with longer term loans.

A second difference between construction and permanent loans is that the sources of the former tend to be local or regional, while the latter are often national or international. Local market knowledge and the ability to observe construction progress are of primary importance to a construction lender, but are less important to a permanent lender.

A third difference between interim and permanent loans is in the timing of the loan disbursements and repayments. Construction loans are divided into "draws" that are each a portion of the total loan commitment. The dollar amounts of the draws are designed to correlate with construction progress and hopefully value in place at the time. Interest accrues based on the total drawn, but there are no periodic repayments to the lender. Rather, as noted above, the loan amount plus the accrued interest is repaid in a lump sum using the proceeds of the permanent loan.

Though the construction loan funds are obtained before the permanent loan funds, it is common practice to obtain the commitment for a permanent loan prior to the commitment for the construction loan. This is driven by construction lenders who do not want to be in the permanent loan business, and therefore want assurance that their loan will be repaid at the end of construction. At the same time, the permanent lender's concern is that at the end of the construction period the project will not be producing the expected cash flow. This would have obvious implications for the collateral's value, and for the property owner's ability to service the debt. Therefore, permanent loans almost

always contain contingency clauses relating to such things as minimum occupancy levels before the permanent loan will be fully disbursed. This situation explains the existence of what are referred to as mini-perm or bridge loans that are used to bridge the potential financing gap between the completion of construction and the achieving of the minimum requirements for the full disbursement of the permanent loan. There are various sources of mini-perms, including some construction lenders.

Construction loans tend to be relatively homogeneous with respect to their structures, but that is not the case for permanent loans. There are a myriad of contractual possibilities that affect the cost of the debt and the cash flows to the developer and lender. One example is a "participating loan," which in addition to the interest rate, assigns to the lender a portion of the benefits that would otherwise flow to the equity position. This could be a percentage of cash flows, a percentage of cash flows above a threshold amount, and/or a percentage of the proceeds of sale. Specific agreements are limited only by the creativity of the lender and borrower. Not surprisingly, the compensation expected by lenders, just as equity investors, is consistent with the risk profile of the development process. Construction loans command higher returns than permanent loans, and mini-perms commonly require a premium over construction loans.

The complexity of debt markets is such that developers, particularly those relatively new to the business or to a specific market, often use the services of a mortgage broker to identify and make contacts with prospective lenders. Brokerage fees vary by the size of the loan, with a range of 1 percent to 2 percent not uncommon.

Equity for development projects may come from a variety of sources. The original seed money is typically supplied by the developer. Outside equity may come from private equity firms, opportunity funds, and sometimes insurance companies and pension funds.

6. Real Estate Investment Analysis: The Effect of Leverage

Leverage is the use of debt capital to finance investment. Debt represents a senior claim to the cash flow produced by an investment while equity, in contrast, is the residual claimant. In this section, we describe the fundamentals of using debt to fund real estate investment and describe how the use of leverage affects real estate values and investment performance.

6.1 Overview of a Mortgage

A mortgage is simply a debt contract that is secured by a claim on real estate. The debt contract is created by a "promissory note" that specifies the interest rate and maturity date. A mortgage is then created by pledging real estate as collateral in case the borrower fails to repay the promissory note. The minimum requirements for a valid mortgage are that the contract identify the borrower and the lender, clearly state the terms of the loan (the interest rate charged, the maturity date of the loan, and the required payments), the amount being borrowed, fully describe the property securing the loan (usually through a valid survey description), and that the borrower and lender sign the document.

Types of Mortgages

While mortgages generally fall into two categories, fixed-rate or variable-rate, commercial real estate often sees additional financing contracts containing hybrid interest rate features as well as equity participation provisions. As the name implies, the contract interest rate on a fixed-rate mortgage (FRM) is constant for the life of the mortgage. From the borrowers' perspective, the benefit from this arrangement is that the periodic (usually monthly) mortgage payments are constant. Given the constant payment, the traditional fixed-rate mortgage provides for full amortization such that the principal is completely repaid by the loan maturity date. Since market interest rates do not remain constant over time, the fixed-rate mortgage exposes the lender to significant interest rate risk. If interest rates rise unexpectedly after loan origination (perhaps due to an increase in inflation), the borrower will continue to make payments based on the contract interest

rate. However, if market interest rates fall after origination, then the borrower may repay the loan early (prepay) by refinancing the loan at the lower, market interest rate.

Lenders, recognizing the problems associated with committing to long-term, fixed-rate debt contracts, created variable-rate (also called adjustable-rate) mortgages in an effort to shift interest rate risk to the borrower. Under a variable rate contract, the mortgage contract rate is adjusted periodically (usually annually) to reflect changes in the market interest rate, and thus, the required mortgage payment changes to reflect the new economic environment. During periods of rising interest rates, the mortgage contract rate is adjusted upward and the lender is protected from unexpected shocks. Furthermore, during periods of declining interest rates, the mortgage contract rate is adjusted downward thereby reducing the borrower's incentive to prepay the loan. Thus, variable rate mortgages offer lenders some protection from unexpected prepayments. The protection is not complete, however, as these types of instruments typically include caps on the frequency and magnitude of interest rate changes.

In addition to fixed-rate and variable-rate mortgages, the commercial real estate market often utilizes hybrid mortgages having features such as interest-only provisions or partial amortization. As the name implies, an interest-only mortgage is a debt contract which does not require any principal repayment – the borrower is only required to pay the interest costs associated with the debt. At the debt maturity, the borrower is then required to pay back the full principal amount often by refinancing into a new mortgage. Given the greater default risk exposure associated with interest-only mortgages, these loans often have shorter maturities than fully amortizing mortgages. In fact, lenders will often set the loan maturity such that the loan's maturity date is earlier than the underlying lease maturity dates in order to ensure that sufficient cash flow will exist to successfully underwrite the new mortgage.[10] However, interest-only mortgages do provide borrowers with lower periodic debt service payments since no principal payments are required.

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[10] If the loan maturity date corresponds with the underlying lease expiration, then the lender faces the risk that market leasing conditions would result in insufficient cash flow (with a corresponding reduction in property value) to underwrite a new mortgage that would cover the principal payment on the existing mortgage.

Recognizing that some borrowers prefer the lower payments associated with interest-only mortgages while lenders would prefer the risk-reduction associated with amortization of principal, lenders developed the partial amortization mortgage. The partial amortization mortgage combines the features of borrower preferences for low periodic payments with lender preferences for risk reducing shorter maturities. The partial amortizing mortgage sets the periodic amortizing debt payment based on a long amortization date (usually 30 to 40 years) while also setting a loan maturity date significantly earlier (usually 5 to 10 years). Because the loan has not fully amortized at the maturity date, the borrower is expected to refinance the loan.

Finally, for commercial real estate investments, many investors utilize hybrid mortgages containing an equity participation feature. As the name implies, the "participation mortgage" provides the lender with the opportunity to participate in the equity cash flows (both operating income and capital appreciation) generated by the property. To compensate the investor for giving up part of the property operating and residual cash flows, the lender may extend a higher loan-to-value ratio and/or a lower interest rate than would otherwise occur. Specific agreements about the participation format are limited only by the creativity of lender and borrower. However, in a participation type mortgage, the lender looks to the expected return from the property income and appreciation as well as the interest income from the mortgage debt to provide sufficient total return to justify the debt.

6.2 Financial Leverage
Above we considered the various types of real estate debt available to investors and discussed the complexity of certain types of these instruments. In this subsection, we examine the role of debt and the effect that its use has on value and investor risk and expected return.

Financial Leverage and Value

The financial economics literature concerning the impact of firm financing decisions on the value of the firm is voluminous. In their seminal analysis, Miller and Modigliani (1961) show that, under the assumption of a perfect capital market, the choice of capital (debt or equity) used to finance a firm (or real estate project) has no impact on the value of the firm (or real estate project). To see this, consider two identical real estate properties. Property U is financed with all equity (i.e. unlevered) and Property L is financed with 90 percent debt and 10 percent equity (i.e. levered). The "law of one price" mandates that the underlying values of U and L must be equal since both properties are identical (and produce the same cash flows). This is made clear by realizing that an investor in the unlevered property can reproduce the same expected return as an investor in the levered property by simply borrowing 90 percent of his investment funds on his personal account to purchase the unlevered property – in effect, recreating the levered position. This being the case, there is no value added by debt in place. A different way of arriving at the same result is to recognize that the underlying risk of the investment is not changed by the source of the investment funds. Thus capitalization and discount rates are not affected by the mix of debt and equity. This proposition has been codified in finance as the "separation principle" – that a firm's market value is independent of the management's financing decision.

Financial Leverage and Investment Performance

Though a property's market value is unaffected by the financing decision, that decision does affect investment performance to the individual investor. As with any investment, an investor's expected return on a real estate investment is the expected future cash flow divided by the capital used to acquire the property. For example, assume a property can be purchased for $1 million and it is expected to produce $100,000 in rental cash flow next year and then be sold for $1 million. Assuming the investor's equity investment is $1 million, the simple one-year holding period return for this investment is 10 percent. Now, assume that the investor can borrow 50 percent of the purchase price using a simple one-year interest-only mortgage with an interest rate of 8 percent. Under this mortgage, the borrower receives $500,000 in debt capital and commits to an interest payment at the

end of the year of $40,000 plus the return of the principal amount. At the end of the year, the investor receives a net rental cash flow of $60,000 ($100,000 less the interest payment of $40,000) plus expected sales proceeds less the mortgage principal payment ($1 million less $500,000). Thus, the investor's equity return is now 12 percent ($560,000 divided into $500,000). If our investor were able to borrow 90 percent of the purchase price (under the same terms as before), then the equity return would increase to 28 percent.

Since we discussed in the previous section that the Miller and Modigliani (1961) separation principle holds that the firm's capital structure has no impact on the fundamental value of the firm, the second M&M principle is that the expected return on equity is a function of the firm's debt/equity ratio and the spread between the cost of debt and the fundamental asset return. Relating this concept to value, as the proportion of debt increases the expected return to equity also increases. This results in a capitalization rate (the weighted average cost of capital) that remains unchanged. As a result, value remains unchanged, which is consistent with our earlier discussion.

Furthermore, the previous example illustrates a number of basic principles of financial leverage. First, the example was constructed such that the use of debt generated positive leverage. That is, as the amount of debt increased, the expected return for the equity investor increased. Positive leverage occurs when the property level expected return is greater than the cost of debt. In the previous example, the property had an expected return of 10 percent while debt cost 8 percent – generating positive leverage. As long as positive leverage exists, greater use of debt will increase the expected return on equity. In contrast, negative leverage occurs when the cost of debt is greater than the property return and any use of debt will reduce the equity investor's expected return.

Since there is no free lunch, the second principal associated with leverage is that greater leverage increases the risk to the investor by increasing the volatility of expected returns. To see this, note from the previous example that the debt payment has a senior claim on the property cash flow (both operating as well as capital return). Now assume that the

property rental cash flow falls to $50,000 due to an unexpected tenant vacancy (or expense). The investor is still required to make the interest payment of $40,000, leaving only $10,000. As a result, the equity investor's expected return falls to 2 percent. In contrast, the overall property return is 5 percent. However, in all likelihood, the property's expected sale price will also decline with the fall in rental cash flow. Thus, if we assume that the expected sales price declines to $800,000, then the investor's expected return drops to -38 percent since he is required to pay back the $500,000 mortgage principal first, leaving only $300,000 for the equity investor.

The purpose of this example is to show that leverage has positive as well as negative implications for investors. Using leverage can greatly increase the expected equity returns. However, this increase in expected returns comes at the cost of increasing the volatility associated with those returns, and at the extreme the costs of financial distress.

Financial Leverage and the Source of Equity Returns

As discussed above, the use of debt will alter the equity investor's expected returns and risk. The expected return on equity is a function of the underlying property return, the leverage ratio, and the spread between the cost of debt and the property return. However, leverage also alters the source of the equity investor's return. In other words, leverage changes the percentages of the equity return that come from operations and capital gain.

To demonstrate this effect, assume that an investment costs $1,000 and will produce net operating income of $50 at the end of the year. We expect the property to be sold for $1,100 at the end of the year. Thus, our hypothetical investment has a total expected return of 15 percent (5 percent operating return plus 10 percent capital appreciation). Now introduce a 50 percent debt-asset ratio with the cost of debt at 8 percent. The expected return to the equity investor increases to 22 percent ($10 in cash flow plus $100 in capital appreciation divided by the $500 capital investment). However, the expected operating return has declined to 2 percent while the expected capital gain has increased to 20 percent. Thus, the use of leverage has reduced the equity investor's operating return and increased his expected return from the capital appreciation. To the extent that our tax

code favors income from capital gains (the capital gains tax rate is lower than the ordinary income tax rate), the tax code provides an additional incentive for the equity investor to use leverage to shift the source of his return from operating income to capital appreciation. Again, this shift (and the attendant increase in expected return) is not accomplished without increasing the financial risk associated with the use of debt.

7. Conclusion

Real estate is a significant component of the wealth and economy of the United States, accounting for approximately 20% of the U.S. Gross Domestic Product. The commercial real estate sector alone accounts for about 6% of U.S. economic activity. Given the size and importance of real estate investment, the National Association of Real Estate Investment Trusts (NAREIT) commissioned this paper to provide an overview of the commercial real estate industry, including that sector of the industry that owns and operates portfolios of investment property.

An overriding theme is that real estate is an asset class with unique characteristics that differentiate it from other asset classes and that distinguish the real estate industry from other economic activities such as manufacturing and the financial sector. These differences emerged in the sections discussing real estate economics, the interactions between the space and asset markets, the role of real estate investments within the broader portfolio context, the concepts of real estate leases, the property development process, and the role of debt in real estate investment.

In addition to the differences between real estate and the other asset classes, one important consistency is that, because real estate competes in the broader capital markets, analysts use the same tools to estimate real estate values as with other assets. In particular, values are based on forecasts of future cash flows discounted back to the present at a rate of return that reflects the underlying risk associated with those cash flows. This process is standard regardless of whether the asset in question is real estate, a bond, or a piece of equipment. Furthermore, the process is relied upon by lenders in loan underwriting, by investors in determining expected returns, and security analysts when calculating net asset values (NAVs) of REITs. Among the key conclusions of the paper are that value is driven by the expected cash flows from the property, that value can not be reliably estimated based on either leases in place or the cost of building components, and that the market value estimating techniques used in real estate are consistent with the GAAP 'fair value' definition.

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