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Valuing Equity REITs: A NAV Debate

Supervisor:
Professor Stellan Lundström

Author:
Thomas Widmann

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Abstract

In recent years, more and more countries have introduced or are considering an introduction of tax-transparent property investment vehicles similar to real estate investment trusts (REITs) in the United States. The discussion about the pros and cons of such regimes has been especially intense in Germany, where the market for listed property companies has been rather underdeveloped so far. The majority of studies on this issue suggest that an introduction of REITs should have a positive impact on both the real estate and the financial market in Germany. In particular, these vehicles are expected to increase the investment universe by offering a unique risk-return profile currently unavailable to investors.

The focus of this thesis is on the different valuation methodologies that could be used to value REITs once they have been introduced in Germany. The thesis studies the different valuation approaches that are frequently applied in practice, in particular in the United States, and tackles the question whether there is something like a superior approach. Due to their commodity-like assets, REITs could in addition to the standard business valuation methodologies that are used across industries, like the discounted cash flow method or earnings multiples, also be valued with their net asset value (NAV), a concept frequently applied to determine the fair value of shares in closed-end funds.

As expected, the results of the study suggest that there is no general consensus among practitioners about which valuation methodology works best. Most of them apply several techniques in order to account for their individual strengths and weaknesses. However, there is some indication that the majority of U.S. REIT analysts and investors tend towards a NAV-based approach.

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Thomas Widmann

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List of Abbreviations

AFFO	**–**	**Adjusted Funds from Operations**
APV	**–**	**Adjusted Present Value**
CAD	**–**	**Cash Available for Distribution**
CAPM	**–**	**Capital Asset Pricing Model**
DCF	**–**	**Discounted Cash Flow**
DVFA	**–**	**Deutsche Vereinigung für Finanzanalyse und Asset Management**
EBIT	**–**	**Earnings before Interest and Taxes**
EBITDA	**–**	**Earnings before Interest, Taxes, Depreciation and Amortization**
EPRA	**–**	**European Public Real Estate Association**
EV	**–**	**Enterprise Value**
FAD	**–**	**Funds Available for Distribution**
FBI	**–**	**Fiscale Beleggingsinstelling**
FCF	**–**	**Free Cash Flow**
FFO	**–**	**Funds from Operations**
IAS	**–**	**International Accounting Standards**
IASB	**–**	**International Accounting Standards Board**
IASC	**–**	**International Accounting Standards Committee**
IFD	**–**	**Initiative Finanzstandort Deutschland**
IFRS	**–**	**International Financial Reporting Standards**
IPO	**–**	**Initial Public Offering**
LPT	**–**	**Listed Property Trusts**
MPGR	**–**	**Multiple-to-Growth-Rates**
MPGRY	**–**	**Multiple-to-Growth-Rates-plus-Yield**
NAREIT	**–**	**National Association of Real Estate Investment Trusts**
NAV	**–**	**Net Asset Value**
REIT	**–**	**Real Estate Investment Trust**
SG	**–**	**Schmalenbach Gesellschaft**
SIIC	**–**	**Sociétés d'Investissement Immobiliers Cotés**
US-GAAP	**–**	**United States Generally Accepted Accounting Principles**
WACC	**–**	**Weighted Average Cost of Capital**

1. Introduction

1.1 Background

In recent years, one of the hottest issues in Europe's real estate sector was tax-transparent property investment companies, often referred to as real estate investment trusts (REITs) according to their U.S. counterparts. These companies have proved very successful around the world and attracted many institutional and retail investors searching for safe and high-yield investments after the Dot-com Bubble burst in 2000/2001. These investors have become increasingly aware of property as an alternative investment asset. Especially in the United States, where these vehicles were already introduced in the 1960ies, the market for REITs has boomed in the last decade and reached a size of 330.7 billion U.S. Dollar in 2005 compared to only 8.7 billion in 1990.

Their success in conjunction with the fact that the real estate investment market is increasingly global, where countries are forced to provide a competitive institutional environment for property investments in order to attract foreign and domestic capital, has led many governments to introduce or to consider an introduction of similar tax-transparent property investment vehicles. In addition, there is evidence that the existence of REIT structures has generally a positive impact on the underlying real estate market.

The success of REITs around the globe has also raised questions in Germany whether REITs might be a valuable supplement to the investment universe currently available to investors. So far, the German market for indirect property investments has been dominated by regulated open and closed-end property funds. The market for listed property companies, in contrast, has been rather underdeveloped, partly as these companies suffer from double taxation.

In general, there is a strong support of the financial sector and the real estate industry to establish a German REIT vehicle and to create a level playing field with respect to taxation for indirect property investments. Some parts of the government, however, are concerned that REITs might be misused for tax evasions. Nevertheless, the government has acknowledged its merits and has announced its intention to create a REIT structure as soon as the tax problems are solved.

1.2 Problem Description

Once REIT legislation is in place, there will be the recurring problem of determining the fair value of a REIT: Underwriters will have to decide upon the fair issuing prices in initial public offerings (IPOs) in order not to be left with unsold shares, as investors will have to value REITs in order not to overpay for the issue. Later on, when shares are actively traded on the secondary market, investors will have to estimate fair values in order to identify undervalued and overvalued firms and to make sound investment decisions. Furthermore, when a company's management may wish to expand its business and considers to acquire another REIT, it has to think about a reasonable purchase price. If the acquisition is approved and the company holds a certain amount of shares, it may use its right to take full control of the company and to push out any minority shareholders in a "squeeze-out". In such cases, usually, an accounting firm is appointed to determine a compensation based on the fair market value of the company. Moreover, when two REITs may decide to merge their businesses, they have to decide about how the ownership of the new firm should be split among the shareholders of the existing companies based on their current values. Overall, there will be plenty of situations where market participants will need to estimate the fair value of a REIT.

Apart from tax-transparency and a few other regulations, REITs are pretty similar to property investment companies. Therefore, one could principally apply the same valuation methodologies. However, since the German market for listed property companies is rather underdeveloped, analysts and investors have little experience with the inherent peculiarities of valuing property investment companies and hence lack the necessary experience to value REITs.

In general, property investment companies can be valued in terms of expected future earnings and cash flows as other companies. However, property investment companies have a decisive advantage. In contrast to most other industries, they are defined by the ownership of commodity-like assets that trade on relatively liquid markets. This provides the basis for an additional valuation approach: determining their market value by the market values of their assets less the market values of their liabilities. This metric is often referred to as a business's net asset value (NAV).

1.3 Objectives

The purpose of this thesis is to illustrate different valuation methodologies that could be used to estimate a REIT's fair market value. In particular, the thesis will focus on the discounted cash flow methodology and multiples as a standard approach used to value businesses across industries and the net asset value approach as an additional technique that is particularly useful for valuing REITs or property investment companies. The thesis will explain the theory behind the different methodologies as well as their individual strengths and weaknesses. In addition, it tries to provide insights into which techniques practitioners use and what their opinion about the respective methods is. Finally, the thesis tackles the question whether there is a superior methodology for valuing REITs or not.

1.4 Disposition

The thesis is divided into eight chapters. The first chapter starts with the background, purpose and outline of the thesis. Subsequently, chapter two presents briefly the different ways which are currently available to invest into German property and explains their individual strengths and weaknesses. Furthermore, it introduces the concept of real estate investment trusts (REITs) and discusses the impact that their introduction may have on the German real estate market.

The third chapter describes the used methodology and the limitations of the thesis and provides an overview of the material that has been used to gain insights into the topic. The subsequent three chapters then explain three different valuation approaches and their respective strengths and weaknesses. Chapter four starts with the discounted-cash-flow methodology as the standard and most flexible approach to value businesses across industries. Subsequently, multiples are introduced in the fifth chapter as a short-cut valuation methodology based on market information. Thereafter, chapter six explains the net asset value approach as an additional valuation technique frequently applied to value REITs and property companies.

Finally, chapter seven and eight summarize the current state of the debate about which methodology works best and concludes whether there is something as a superior valuation methodology.

2. Real Estate Investment Trusts

The chapter starts with a brief description of the different ways which are currently available to invest in German property, including a discussion about their individual strengths and weaknesses. Thereafter, it will be explained in a little bid more detail what the key characteristics of real estate investment trusts are and how the market for REITs has developed in the past, in particular in the United States. Finally, there will be a discussion about the advantages of an introduction of a REIT regime in Germany. The question will be asked, whether the financial system will benefit. This might be the case if the new investment vehicle offers a risk/return profile that is currently not available to investors.

2.1 Investing in Property

In general, there are two different ways to invest in property: either people can buy real estate directly by acquiring land and the attached buildings or indirectly by purchasing shares in property companies or property funds, which own the real estate assets[1]. Each of the ways has advantages and drawbacks.

2.1.1 Direct Ownership

Direct ownership means that an investor personally holds a real property interest. The pros and cons of direct property investments are linked to the specific features of property compared to the other main investment classes: shares and bonds. Unlike shares and bonds, properties are heterogeneous. They vary by location, building size, building age, construction quality, tenants, etc.

The ***unit size*** of direct property investments is significantly larger than the one of shares and bonds. Usually, it amounts to at least several hundred thousand Euros. For that reason, it is very difficult for small investors to enter the market and if so only at the cost of low diversification and a high share of borrowing, which increases investment risk.

Moreover, direct property holdings need ***active management***. Shares and bonds require usually just the decisions to buy and sell (Apart from voting rights over some strategic decisions in the former case, which have no real influence anyway as long as the holding is not significant). In contrast, direct ownership of real estate involves day-to-day management: rents have to be collected, repairs must be carried out, rental contracts have to be reviewed, after lease expirations negotiations with prospective tenants must be held, decisions about refurbishments and redevelopments must be made, etc. Most of these tasks can be subcontracted, but only at some costs and the outcome of decisions, like whether or not to refurbish or redevelop a particular site at a certain point in time, will have a major impact on the return on investment. Active management is additionally complicated by government interventions. Since property as a fixed asset has a significant influence on the economic performance of enterprises, the living-quality of households and the environment, governments intervene by setting rent regulations, building codes, providing development incentives, restricting ownership, etc. In general, active management offers opportunities for additional profits, which cannot be achieved by shares or bonds, but also carries substantial risks, especially for those who do not have the required expertise, which is probably the case for most small investors.

Property transactions also involve comparatively high ***transaction costs***. Unlike shares and bonds, which are highly standardised financial instruments, property is ***heterogeneous*** and

[1] Actually, there are also debt and derivative instruments for investing into property. But since the risk-return profiles of these investment vehicles are quite different from those of equity REITs and hence no direct investment alternatives, the author left out a further description of these investment instruments in order not to overexpand this part of the thesis.

hence each transaction is unique to a certain extent. In most cases, at least legal and tax advice is necessary. Direct investments into property demand also for ***local market knowledge***, as property markets differ from region to region. For that reason, investors usually have to rely on local advisors in order to make sound investment decisions. Furthermore, the ***lack of a central market*** with real-time price information leads to economic costs for searching a counterparty and requires valuations in order to find reasonable sale or purchase prices. The actual transaction costs depend to large extent on the individual property types and differ very much from country to country due to different legal frameworks. For instance, transaction costs for commercial property vary from 2% in Germany to 18.4% in France (Source: Hoesli et al. p. 267).

Psychological factors play also an important role in buying direct property. *"**Pride of ownership"*** might prompt investors to pay more for a direct property investment than what would be justified under a rational analysis. The same reasoning might lead property owners to sell real estate for an unreasonably low price.

Another important difference of direct property investments is its ***illiquidity***. The trade of real property rights is money and time consuming and hence, in general, much less frequent than the trade of shares and bonds. The reasons for that are once again related to the specific characteristics of property, like their heterogeneity, the fixed location, the large unit size, the government interventions and the lack of a central market. Illiquidity does also complicate the timing of investment decisions as cash flows may not occur when one wants them to[2].

Due to the adverse features mentioned above, direct property investments are primarily attractive for big institutional investors or wealthy people with a long investment horizon and substantial funds that allow for within-real-estate diversification. For smaller institutional and private investors, the gains of adding property to their portfolios will be more than offset by the costs of low within-real-estate diversification, illiquidity, high transaction costs and the requirement for active management.

2.1.2 Indirect Property Investments

As a consequence, indirect property investment vehicles were developed to offer real estate investments to a broader class of investors. The two main types of indirect vehicles are: property companies and property funds. The underlying idea of all these instruments is to split up ownership of a property portfolio (or sometimes a single property) allowing small investors to invest in real estate as well without bearing the cost of low within-real-estate diversification. Moreover, there is no need for active management; this task is carried out by professionals. However, a negative side effect of the separation of ownership and management is that principal-agent problems emerge which might lead to additional costs.

2.1.2.1 Property Funds

Property funds are the most popular indirect property investment vehicle in Germany. In general, there are two types of funds: open-end property funds and closed-end property funds. The main difference is in the first case new shares are issued and redeemed permanently, i.e. the shares trade only on the primary market, whereas new shares in closed-end property funds can only be bought during an initial capital raising period until the fund is "closed". Thereafter, it may still be available for investment through secondary market trading.

[2] Investors demand usually a liquidity premium for direct property investments. However, there are also some shares and bonds that are illiquid despite their favourable characteristics and a central market. The liquidity premium is therefore not unique to direct property investments.

Open-end Property Funds

Open-end property funds are an indirect property investment vehicle that has proved very popular in Germany but found little international acceptance so far. It is a rather defensive investment vehicle, which is regulated by the German investment law ("Investment-Gesetz") in order to increase investor protection. The minimum unit size of investments is usually rather low with approximately €50. Consequently, these investment vehicles are particularly attractive for retail investors. The fund is obliged to invest at least 51% of the collected money in real estate assets. Additionally, there is a legal obligation for diversification. The purchase price of a property has to be lower than 15% of the funds total value. Moreover, the total value of properties which account for more then 10% of the total fund value are not allowed to exceed 50% of the total fund volume. An important difference to property companies is that open-end property funds are tax transparent, i.e. revenues are only taxed on the investor level. However, property taxes and property transfer taxes must be paid by the fund as well.

In contrast to shares in property companies, shares in open-end property funds are not traded on a secondary market. The funds are obliged to issue and redeem shares permanently. As a consequence, the equity position and number of shares outstanding varies significantly over time. In order to meet possible cash outflows, open-end funds are required to hold cash reserves. According to the German investment legislation, cash reserves must account for at least 5% of the invested capital, excluding already expected cash outflows in the near future. The investment strategy of a fund is therefore influenced by its current equity position. An unexpected large capital outflow might force funds to sell parts of their property holdings in weak markets; conversely an unexpected large capital inflow might induce them to pay too much for a property due to a current lack of good investment targets[3].

The daily price of a share is determined by the value of the fund's individual assets less its liabilities, the so-called Net Asset Value, divided by the number of shares outstanding. To assess the individual asset values, funds are obliged to appraise the properties at least annually by an independent appraiser. As a result, the return on investment in open-end property funds is valuation-smoothed, i.e. less volatile than the actual real estate market would imply. On the one hand the smoothed income streams increase the attractiveness of open-end property funds on the other hand they impose also substantial risks when people expect a considerable devaluation of the fund's property portfolio in the near future.

When DB Real Estate, a subsidiary of Deutsche Bank, announced a revaluation of its fund "Grundbesitz Invest" in December 2005, as it believed that the properties were overvalued, investors withdraw about 450 million Euros (~ 7.7% of its volume) in just 2 days in order to take advantage of the old repurchase prices. Then, the originator decided to stop a further cash outflow by closing its fund until the revaluation process was finished in order to safe other uninformed investors. At the same time, the originator had to initiate the sale of several properties in order compensate for recent and expected future cash outflows when the fund was reopened. Although it was the first time in history that a German open-end property fund was closed, it significantly decreased investors' confidence into such vehicles, as it revealed their weakness. In the wake of the announcement and the closing of "Grundbesitz Invest", investors of other open-end property funds became worried too and started likewise to withdraw large amounts of money. As a consequence, some other funds got into a tight liquidity position as well and were forced to close temporarily or had to be backed by their banks.

[3] According to German investment legislation, there are also restrictions on the maximum non-real-estate holdings of open-end property funds (49%).

Another drawback for investors into open-end property funds is that these kinds of funds usually require an issue surcharge of approx. 5.0 % and an annual management fee between 0.5 % and 2.0 %. Therefore, this type of property investment vehicle is less attractive for investors who tend to change their individual asset allocations frequently. It is primarily targeted at long-term investors.

Special Open-end Funds

In addition to the general open-end funds, which are often referred to as public open-end funds ("Publikumsfonds") as they are targeted to everyone, who likes to invest, German investment law defines a second type of open-end fund. These special open-end funds ("Spezialfonds") are limited to a small number of institutional investors (<30). They are less restricted and offer the opportunity for more individual regulations. Many of these funds are targeted at a single institutional investor.

Table 2.1

Open-end Property Funds	Volume (in million €)
Publikumsfonds	90,069
Spezialfonds	16,597
Total	**106,666**

Source: Deutsche Bundesbank (December 2005)

Closed-end Property Funds

Closed-end property funds are targeted at a limited number of investors to invest in a clear-defined and relatively small property portfolio, sometimes even a single property. In contrast to open-end property funds, they just issue a specified amount of shares during an initial capital raising period. After this amount of shares has been sold, the fund is closed, that means after this point in time the fund issues no shares any longer. Unlike open-end funds, investors have no right of redemption or on any cash flows during the life of the fund. However, shares may trade on a secondary market. But, due to high unit sizes[4] and the individual contractual structures these markets are usually less liquid than ordinary markets. Investors take therefore the risk of selling shares above or below NAV before a fund's liquidation. The average lifespan of a closed-end property fund ranges between 5 and 30 years. Due to their focus on small property portfolios, investments in closed-end property funds tend to be riskier than investments in open-end property funds.

Closed-end property funds have no destinct legal structure and are formed as ordinary limited partnerships or in some cases as a partnership under the civil code. Latter means that investors are fully liable for all fund operations. The advantage of this kind of structure is that expenses on the corporate level can be used, like in the case of direct investments, as "virtual losses" to offset earnings from other income sources in an investor's personal income statement. In addition, there are often benefits from favourable taxation of real estate returns on foreign real estate assets. Tax advantages have generally been a major reason why closed-end funds have proved very popular in the past.

2.1.2.2 Property Companies

In general, one distinguishes between two types of property companies: property investment companies, which develop or acquire real estate with the purpose of earning cash flows

[4] Although minimum investment volumes differ considerably from fund to fund, they are in most cases substantially higher than for open-end property funds (5,000 € to more than 100,000 €).

through rental income, and real estate developing and trading companies, which develop or acquire real estate with the purpose of receiving capital gains by selling them at a higher price afterwards. In many cases, a clear distinction is impossible, since property investment companies frequently sell properties out of their stock and real estate developing and trading companies often hold a portfolio of properties in the long-run. Investments in the latter type are usually more risky then investments into property investment companies.

Like shares in other public limited companies, shares in property companies can be traded on a stock exchange. They offer investors the same benefits as listed companies: a highly standardized financial product with a small unit size, a centralized secondary market, which significantly reduces searching costs, low transaction costs and, in case of substantial trading (high liquidity), reliable price information. However, property companies carry also some drawbacks. Share prices are formed by supply and demand and are hence prone to investor sentiment. Consequently, their total return (dividends + capital growth) is more volatile and less predictable than the return on open-end property funds. Property companies provide also less diversification in a stock-dominated portfolio than direct property investments[5], since their share prices reveal a higher correlation with the equity market.

Market participants also frequently state that investments into property companies in Germany suffer from double taxation, i.e. rental revenues are taxed both on the corporate level and, later on when they are paid out as dividends, on the shareholders level. However, the author does not fully agree with the latter argument. Due to German tax law, only 50 percent of dividend payments are taxed on the shareholder level ("Halbeinkünfteverfahren"). Since the corporate tax rate is currently at 25% and the personal income tax rate varies between 15% and 42% there is a "clientele effect". Investors with a personal income tax rate below 40% suffer from double taxation whereas investors with a personal income tax rate above 40% benefit from the tax regulation. Nevertheless, as most people have a personal income tax rate below 40%, their arguments holds in most cases.

2.2 What is a Real Estate Investment Trust?

Like many other financial innovations, real estate investment trusts (REITs) originated in the United States, where they were introduced in 1960. REITs are a special type of listed (or unlisted) property company with a separate fiscal status according to U.S. tax law. The purpose of their introduction was to offer a safe investment vehicle with relatively stable income streams to a broad class of people, in particular for their personal pension schemes. To ensure that this was actually the case, the government set up a list of strict requirements that must be fulfilled by property companies to receive REIT status.

2.2.1 Characteristics of U.S.-REITs

The main difference between the fiscal status of a REIT and an ordinary property company is that a REIT is exempted from corporate income taxes. The reasoning behind that is the same as for property funds in Germany; they should offer the opportunity of property investments to a broad class of people without putting them at a disadvantage in terms of taxation. REITs just serve as a pass-trough entity so that earnings from property investments are only taxed with the personal tax rate of the individual investor like earnings from direct property investments. In order to make sure that REITs serve their intended purpose and that no other business may "dress up" as a REIT, U.S. law set up strong criteria that must be met in order to qualify as REIT:

[5] For a deeper discussion of property in mixed-asset portfolios see chapter 10 in Hoesli & MacGregor (2000)

- A REIT cannot be a closely held corporation, in the sense that no five or fewer individuals (and certain trusts) may own more than 50% of the company's shares, and there must be at least 100 different shareholders.
- At least 75% of the company's total assets must be invested into property, mortgages, cash or government securities.
- 75% or more of annual gross income must come directly or indirectly from property (including mortgages, partnerships and other REITs).
- Not more than 30% of annual gross income is allowed to come from the sale of property assets that were owned less than 4 years by the company or from the sale of securities that were owned less than 1 year by the company or from some other specified non-admissible business operations.
- At least 90% of taxable income must be distributed as dividends[6].

From the requirements above, it becomes clear that REITs are designed as general property investment vehicles which are not solely limited to equity investments. Due to the resulting differences in the individual risk/return profiles, the National Association of Real Estate Investment Trusts (NAREIT), a U.S. trade association for REITs and other listed property companies, classifies REITs in terms of their core operations into equity REITs, mortgage REITs and hybrid REITs by applying a 75%-of-asset cut-off (i.e. an equity REIT invests 75% or more of its assets into equity real estate, etc.). Table 2.2 shows a breakdown of the NAREIT companies as of November 1st, 2005. Equity REITs are by far the most important category (see Table 2.2). As from now, the term REIT will be used synonymously for equity REITs, on which this thesis is primarily focusing on.

Table 2.2

	Number
Equity REITs	152
Mortgage REITs	37
Hybrid REITs	8
Total	**197**

Source: NAREIT (November 1st, 2005)

2.2.2 REITs vs. Existing Indirect Property Investment Vehicles

In general, REITs as an investment class have much in common with ordinary property companies but they also share some characteristics with property funds. Like in case of ordinary property companies, transaction costs are low, their shares have a low unit size and are in most cases frequently traded on a secondary market. Therefore, prices usually reveal all currently available information about the company. As mentioned above, this is not the case for open-end property funds, since their prices are based on annual valuations of their property stock.

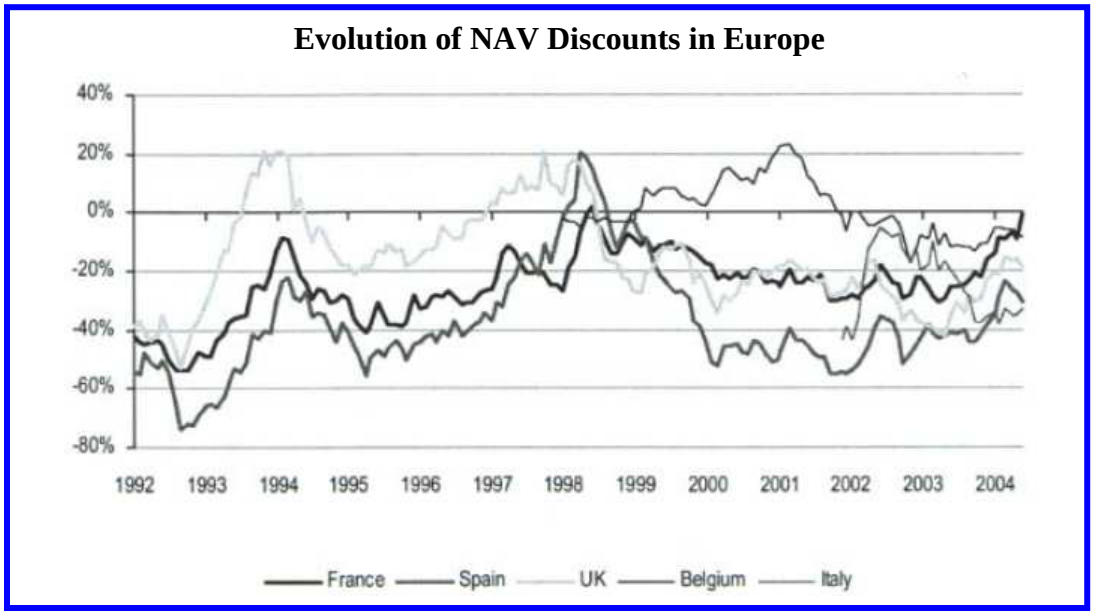
According to Hoesli et al., like property companies, REITs provide less diversification in a stock-dominated portfolio than direct property investments. Furthermore, REITs manage their properties by themselves in contrast to property funds. Cadmus (2003) points out that by investing in a REIT the investor does not only own property but a business as well. That means the management is solely responsible for the shareholders' interests, it must increase shareholder value and is under close scrutiny each day[7].

Nevertheless, REITs share also some characteristics of property funds which ordinary property companies do not. Like open-end funds, they are designed to act as a pass-through entity

[6] Prior to the REIT Modernisation Act in 2001, 95% of taxable income had to be distributed as dividends.
[7] Of course, this argument holds as well for ordinary property companies.

for property investments for a broad class of people with relatively stable cash-flows. For that reason, they are tax-exempt on the corporate level. This in turn makes them more attractive than investments in ordinary property companies if the investor does generally not have to pay taxes, like life insurances in most countries, or if the investor suffers from double-taxation as it is often the case in Germany[8].

Furthermore, REITs are likewise subject to regulations, though much less than open-end property funds. Consequently, REITs are less flexible in their business operations than ordinary property companies but also more transparent. Due to their high payout ratios, REITs are limited in their ability for internal growth and usually have to issue new securities when they consider larger acquisitions. This leads to higher expenses, but may also decrease their company's cost of capital, since it is favourable from a principle-agent perspective, as the management is under close scrutiny at each new issue. Block (2002) points out that aggressive real estate investors who are more interested in capital appreciation should invest in property companies, whereas real estate investors who are looking for high dividend yields – which he believes is the majority of real estate investors – should invest in REITs.



Source: UBS

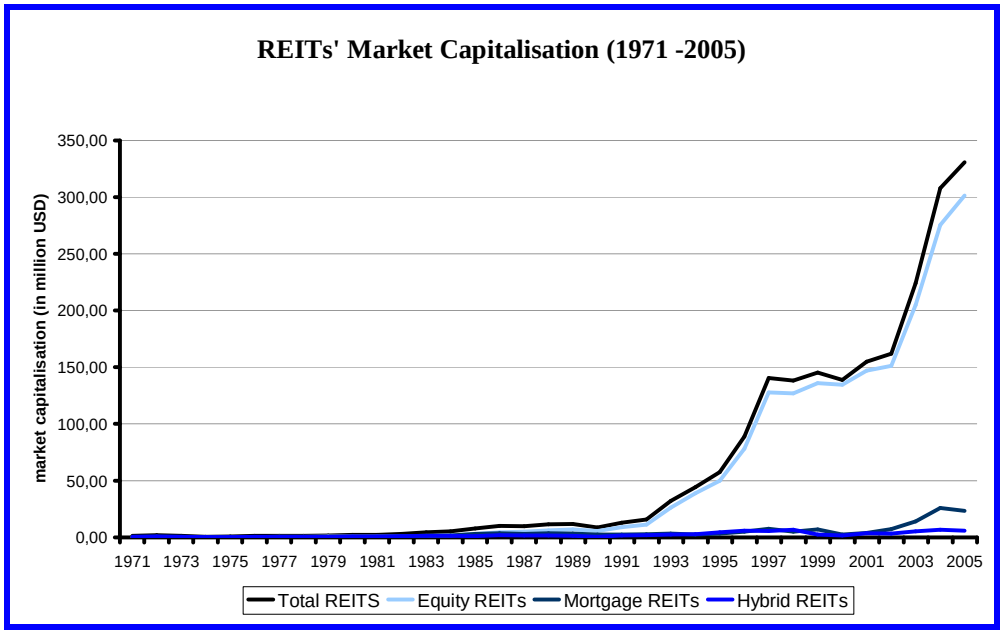
Figure 2.1

According to a NAREIT interview with Fraser Hughes, research director of the European Public Real Estate Association (EPRA) in 2003, discounts in net asset values (NAV) for publicly traded companies operating under non-REIT regimes are significantly greater than firms operating as REITs. For instance, the discount in NAVs for French companies was minus 26 percent for the 12-year period ending in 2002. Australian and U.S. firms, meanwhile, traded at premiums of 2 percent and 4 percent, respectively. New evidence comes from a working paper of Paris-Dauphine University's Centre de Recherches sur la Gestion. In their paper "The French REITs: First Facts about the SIIC Regime", the three scholars Laurent Batsch, Roland Chouillou and Phillippe Tannenbaum note that the discount of French property companies has disappeared since the introduction of the French REIT structure. Furthermore, they observed that daily trading volume of the stock has increased, which indicates that REITs also tend to be more liquid than property companies. However, the study period was too short to

[8] According to German tax law, private investors must pay tax on only 50 percent of their dividend payments. As a consequence, investors with a personal tax rate above 40% benefit from double taxation and investors with a personal tax rate below 40%, which is the major part of the population, suffer from double taxation.

draw any general conclusions. The observed development might just be the result of the current "REIT-Hype" in Europe.

2.2.3 Historical Performance of U.S.-REITs[9]



Source: NAREIT

Figure 2.2

Though REITs have proved to be a story of success today, this has not been true for all of the time since their introduction in 1960. As Figure 2.2 shows, their performance was rather poor until the mid of the 1980ies, although taxation remained approximately the same since then. Cadmus (2003) argues that this proves that the tax advantage[10] cannot solely explain the success of REITs. He states three reasons why the development of REITs significantly changed in the mid of the 1980ies.

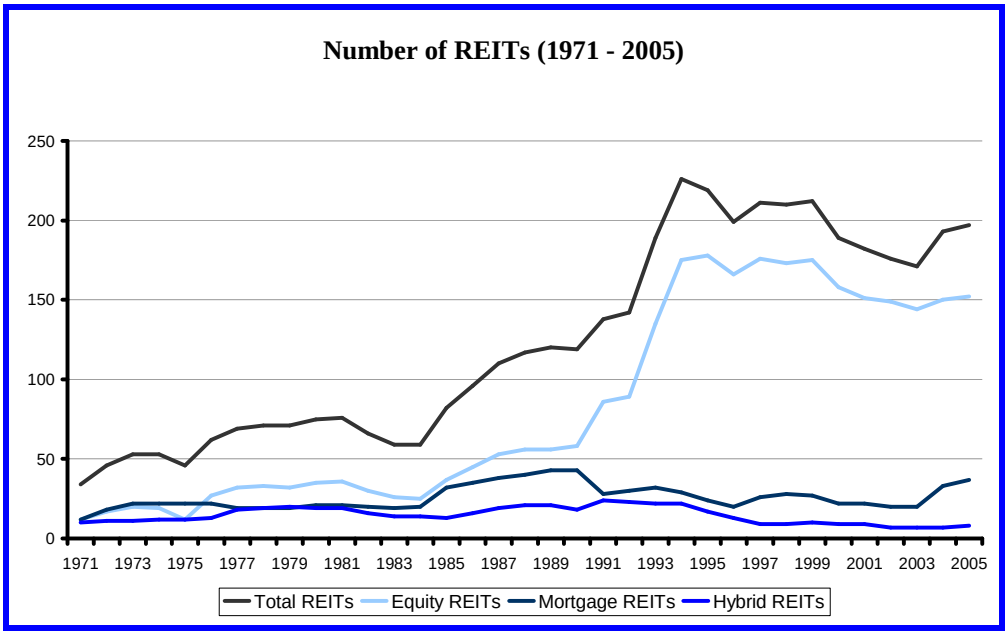
The first reason was the "Tax Reform Act" in 1986, where taxation of privately held properties was fundamentally changed. Until then, private investors were able to generate "virtual" losses by diminishing tax rates and the deductibility of mortgage interest rates, which could be offset with earnings from other income sources. As a consequence, real estate assets were mainly held due to tax reasons by primarily wealthy persons who had a lot of income to shield. These "tax shields" were almost completely abolished by the "Tax Reform Act" in 1986. Investors realized that property had to be judged in terms of profitability and for this purpose property companies were better suited as property funds or direct property investments.

A second reason for the subsequent boom of REITs was a change of REIT legislation in 1986 as well. Until then, REITs were not allowed to manage their property holdings by themselves, but, as Cadmus believes, efficient property management is usually key to a successful real estate investment. Block (2002) points out that most REITs were also managed by outside

[9] For a more detailed review of the history and performance of REITs see Block (2002).

[10] A tax advantage exists just in comparison to other businesses but not in terms of property investments. This fact is stressed by the German Association for Financial Analysis and Asset Management (DVFA, Deutsche Vereinigung für Finanzanalyse und Asset Management e.V.) in their comment on a possible REIT introduction in Germany. They state that there currently exists a "tax disadvantage" for investments in property companies due to double taxation which is one reason why the German market of listed property companies is comparatively underdeveloped.

advisors who were often affiliated with the property management companies, which presented an opportunity for significant conflicts of interest. The "Tax Reform Act" in 1986 repealed the restriction on active property management.



Source: NAREIT

Figure 2.3

The third reason for the positive development of REITs came a little bid later. As a consequence of the real estate crisis in the United States in the early 1990ies, Banks withdrew from real estate lending. This forced property companies and developers to turn to the capital markets in order to substitute missing debt by equity. At the same time, REITs were able to buy properties at bargain prices from banks that had foreclosed on billions of defaulted real estate loans. Overall, equity-financed property investments were pretty attractive. Figure 2.3 shows that the number of equity REITs approximately tripled in the beginning of the 1990ies. The declining number of equity REITs from 1995 to 2003 was mainly the result of an increased M&A activity within the sector.

Another reason for the considerable development of REITs frequently stated is the increasing share of institutional investors. According to Block, institutional investors have more and more come to the conclusion that the way to maximize the performance of their property investments is to invest a significant portion of their real estate funds in outstanding public property companies besides owning property directly.

The advantages of a REIT structure and their success in the 1990ies in the United States induced other governments to introduce similar property investment vehicles in their countries. The common characteristics of these vehicles are tax-transparency and an obligation to distribute the major part of their earnings as dividends. In Europe, the first REIT-like structure was already introduced in 1969 by the Netherlands with its FBIs (Fiscale Beleggingsinstelling). Australia followed with LPTs (Listed Property Trusts) in 1971.

However, according to a report of Prudential's subsidiary Pramerica Real Estate Investors, the real boom occurred in the last 10 years and stems from the confluence of powerful supply and demand forces. Short and Long-term demand for stable income-oriented investments has increased due to the demographic situation in most developed countries and due to the fact that investors are searching for alternative investments to corporate equity after the stock market crash in 2001. At the same time, the universe of real estate investment opportunities that offer relatively attractive yields and modest opportunities for capital growth has ex-

panded. According to the report, global listed property sector's equity grew since 1994 from $130bn to over $536bn late 2004.

In Asia, Japan and Korea introduced their REIT structures in 2001 followed by Singapore in 2003. The breakthrough in Europe came in 2003, when France as the first of the big nations established its SIICs (Sociétés d'Investissement Immobiliers Cotés) and prompted the United Kingdom and Germany to put REITs on their agenda as well. Appendix I provides a summary of the characteristics of several national REIT structures. Since real estate markets and institutional frameworks differ from country to country, the question now is what kind of benefits an introduction of REITs might have in case of Germany.

2.3 Why introducing REITs in Germany?

There have been a lot of discussions in the financial sector about potential benefits of an introduction of a REIT regime in Germany in the last few years. Several studies were carried out by professionals and academics. Since a deep analysis of this issue goes far beyond the scope of this thesis whose main focus is on the valuation of REITs, this section concentrates on summarizing the most important facts.

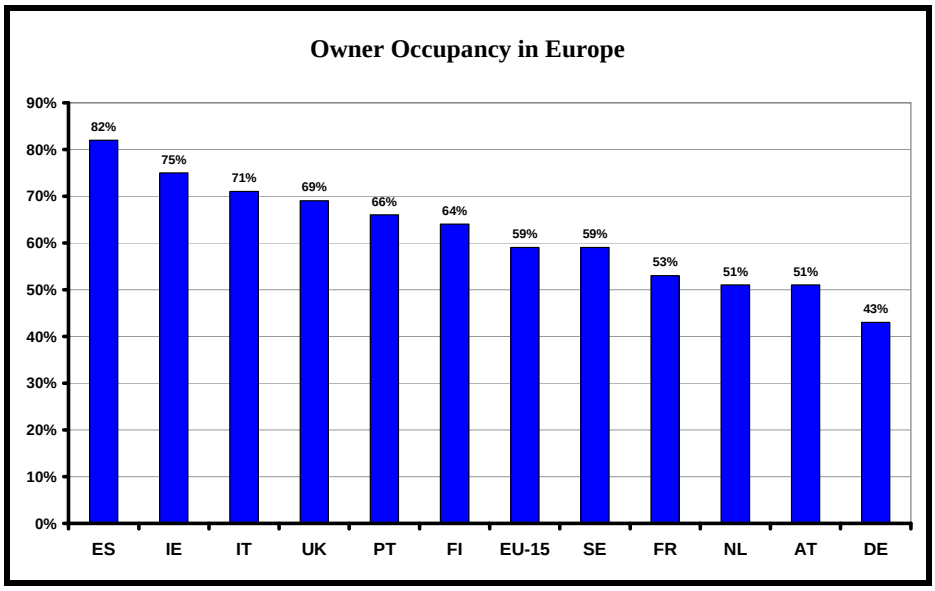
Table 2.3

Countries	Commercial Real Estate ($ billion)
Germany	**1,075**
United Kingdom	1,039
France	791
Italy	657
Spain	378
Netherlands	229
Switzerland	144
Belgium	137

Source: EPRA

In order to understand the potential impact of a REIT introduction in Germany, it is useful to start by looking at how the German real estate market is structured at present compared to other developed countries. Table 2.3 shows size estimates of the commercial real estate market for several European countries, calculated by the European Public Real Estate Association (EPRA)[11]. They reveal that Germany has probably the largest market for commercial real estate among the analysed countries. Since Germany has also the highest population in Europe, this figure is unlikely to change in relative terms for the overall property market. Furthermore, owner occupancy in the German residential property market is comparatively small (see Figure 2.4).

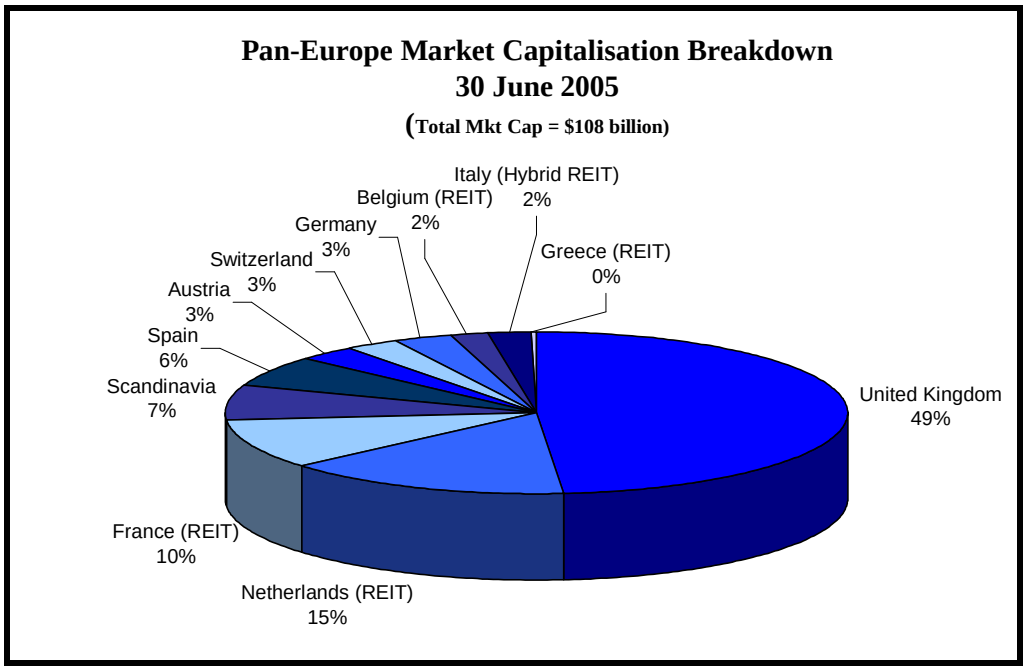
[11] A trade organisation for listed property companies in Europe



Source: Deutsche Bank Research

Figure 2.4

Thus, one might expect that German listed property companies do account for a large share of pan-European market capitalisation. But as Figure 2.5 depicts, that is not the case. The United Kingdom, the Netherlands and France account for the lion's share of listed property companies' market capitalisation in Europe and Germany only has a small share of approximately 3%[12]. There is wide consensus among the studies that the German market for listed property companies is rather underdeveloped compared to other industrialized nations. Only 0.49% of the country's real estate assets are listed compared to 7.18% in the United States, 4.59% in the UK, 3.47% in France, 9.90% in Sweden and 4.23% in Japan. In Australia even 30.24% of the country's real estate assets are listed (Source: EPRA).



Source: FTSE EPRA/NAREIT Global Real Estate Index (June 30th, 2005)

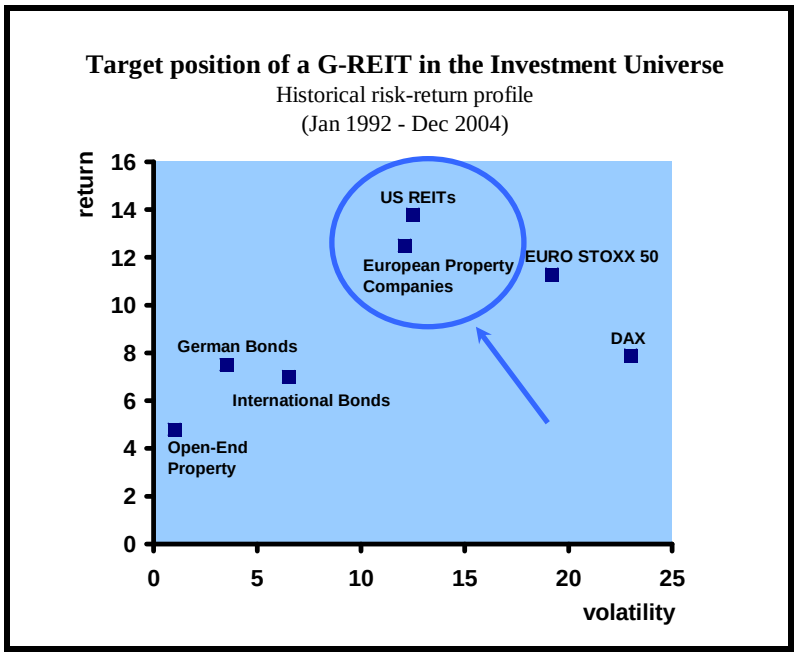
Figure 2.5

[12] One needs to be a little bid cautious with these figures, since the estimated market values for listed property companies are based on equity market capitalisation and hence do not state the company's total property holdings. Average leverage ratios between countries may vary significantly.

Frequently stated reasons for the underdeveloped market for listed property companies in Germany are high taxes on capital gains from which ordinary companies would suffer when they would dispose parts of their large property holdings and the tax disadvantage of investments into property companies compared to open-end property funds, due to double taxation. Additionally, many listed German property companies suffer from small free float, which leads to low liquidity of the companies' shares. This deters pension funds and other large investors, since they cannot invest in the companies without a substantial impact on the share price. Furthermore, the studies note that German listed property companies are less transparent than most of their European competitors.

Open-end property funds and closed-end property funds dominate public real estate investments in Germany. In the past, fund managers, mostly banks, did little to promote tax-transparent REIT structures that would compete with their products which generated considerable earnings due to their high upfront and management fees. But bribery allegations at a few of the very large and influential open-end funds and indication of an overvalued property stock in the recent past have raised questions about the transparency and valuation practices of these vehicles and led to massive capital outflows. As mentioned earlier, some open-end funds got in a tight liquidity positions and had to be closed or backed by their banks. In addition, they were forced to sell parts of their property stock. Overall, investor confidence in these vehicles has significantly decreased.

The studies state that a REIT introduction could help some of the funds with the problems in their domestic property portfolios by offering an alternative exit strategy and hopefully boost the weak German real estate market. It is argued that the higher transparency of REITs, their liquidity and real-time price information ease flexible portfolio strategies and hence fit much better to modern portfolio theory than open-end property funds. Investor surveys confirm the demand for a more flexible property investment vehicle. Although the studies expect investors to redirect capital to REITs, they stress that they will not substitute open-end property funds, since both have unique risk-return profiles that are quite different from each other (see Figure 2.6). REITs will increase the investment universe and help to increase investors' acceptance of property as an asset class.



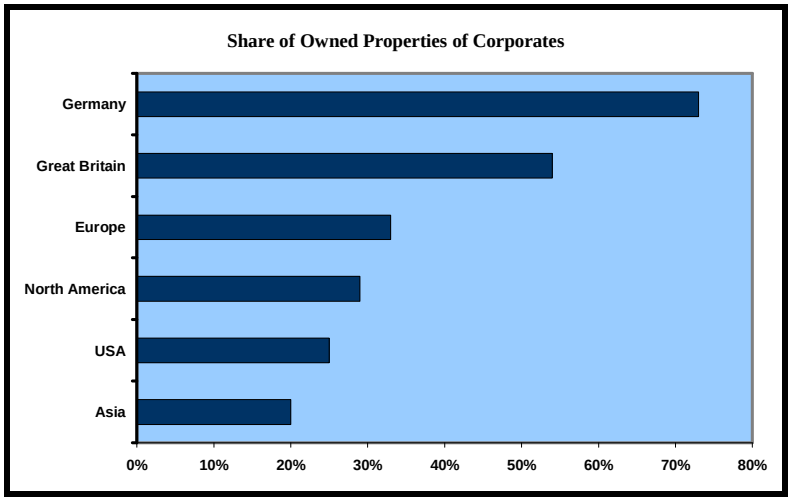
Source: Deutsche Bank Research

Figure 2.6

However, an important precondition is that REITs are less restricted than open-end property funds and that they are hence more flexible in their investment strategy. Moreover, a new industry for REIT-funds is expected to emerge, as some risk-averse investors want to diversify from the specific risks of single REIT investments. There is also evidence that capital allocation in countries with REIT structures tend to be more efficient, as DEGI, a company that manages several property funds, states. REITs might also be able to attract more foreign investors, as they are used to this kind of investment vehicle. Open-end property funds as a specific German investment vehicle found little acceptance among foreign investors so far. In general, the studies conclude that both the financial system and the property market in Germany will benefit from a REIT introduction.

Supply

The studies describe seven potential sources for REITs in Germany: corporate holdings of real estate, public real estate, open-end property funds, closed-end property funds, insurance companies, private holdings and property portfolios that were recently acquired by foreign opportunity funds.



Source: Corenet

Figure 2.7

Most analysts consider the large property holdings of German companies as the main source for REITs. As depicted in Figure 2.7, they own 73% of their properties compared to 20% in Asia, 25% in the United States, 29% in North America, 33% in Europe and 54% in Great Britain. These properties are often badly managed as companies concentrate on their core business. A partly sale of this stock could cut costs, if the properties are properly managed afterwards. Moreover, a sale will release equity capital that could be more efficiently used for the companies' core businesses. Furthermore, it would increase the companies' transparency and hence increase shareholder value. The potential size of this supply is significant. The Financial Centre Germany Initiative (IFD), an action group for the German financial sector, who is strongly in favour of a REIT introduction, estimates that about €30 billion in property assets could be outsourced until 2010 decreasing the share of properties that are owned by the companies themselves just to 71%. A survey carried out by I.C.M.E. Management Consultants among companies revealed that approximately 40% grade their willingness to outsource properties into a REIT in the next 4 years as high or very high.

Another source could be public housing associations. The public sector owns approximately €100 billion in residential real estate, according to Deutsche Bank Research. Since many municipalities have large budget deficits and the perception has spread that these real estate holdings could be more efficiently managed by private companies, their willingness to sell

has increased. Several portfolios were sold in the recent past, mostly to foreign private equity and opportunity funds. It is expected that municipalities and state governments will also look at the opportunity of REIT floatations as soon as such vehicles are introduced. IFD estimates that €20 billion of residential properties could be sold in the medium-term.

A third prospective channel for REITs could be open-end funds that would consider a conversion. An HSBC study states that this is unlikely to happen in the initial stage since the upfront fee of 5% charged at the time of investment into an open-end fund is too lucrative for the initiators to give up. But if competition with REITs leads to large capital outflows, they may decide to convert.

Closed-end property funds are expected to contribute only pools and not entirely converting into REITs. Insurance companies, in contrast, are expected to convert a lot of their current property holdings into indirect, listed REITs in order to gain liquidity in their investment. Allianz and Munich Re, the two biggest insurance companies in Germany, have invested approximately €20 billion in real estate each, of which about 75% are direct investments.

Furthermore, private property holdings are expected to contribute some stock, but on a comparatively low scale. Many analysts expect that opportunity funds that recently acquired large residential property portfolios in Germany will use REITs as a main exit strategy. However, there is scepticism about this point as well. Martin Braun, associate partner at Cushman & Wakefield Healey & Baker, believes that these portfolios will be primarily sold through a wholesale-retail strategy, i.e. buying large portfolios and selling them individually to sitting tenants or as smaller portfolios to third parties. The remainders will be very diverse and look like “Swiss cheese” what makes it difficult to sell them as a REIT on the market. Additionally, the market participants expect that some of the already listed property companies will decide to give up some of their flexibility and convert into a REIT in order to save corporate taxes. In total, forecasts predict 30 to 40 German REITs by 2010 and a market size between €50 billion and €130 billion.

Demand

On the buy-side, analysts expect that the demand for REITs will primarily come from insurance companies, mutual funds, pension funds and from investments which today is directed into closed and open-end funds. According to Wolfgang Schäfers, managing director at Sal. Oppenheim, insurance companies are likely to be the largest REIT investors. As stated above insurance companies have large direct property holdings, of which a large share is expected to be converted into REITs. Moreover, HSBC expects insurance companies to increase their allocations to this asset class in the near future.

Mutual funds should also play a major role as REIT investors. In the United States, 70%-80% of mutual funds invest in REITs. The studies expect a similar share for German mutual funds, in particular since REIT investments have a comparative advantage of untaxed dividends. Pension funds may also favour REITs over fixed-income investments, since in a mature stage they generally have high capital outflows and only low inflows and need a high and stable income. As the population in Germany is ageing, more and more pension funds will mature and be likely to invest in REITs.

In general, institutional investors’ allocation to real estate is forecasted to increase. Peter Hobbs of DB Real Estate expects a structural increase in global real estate allocations of €600 - €700 billion in the next five years. In addition to institutional investments, private investors are likely to provide funds as well and redirect capital from property funds. Government incentives for personal pension schemes should furthermore increase private investors’ demand for a relatively high and stable income return.

Risks

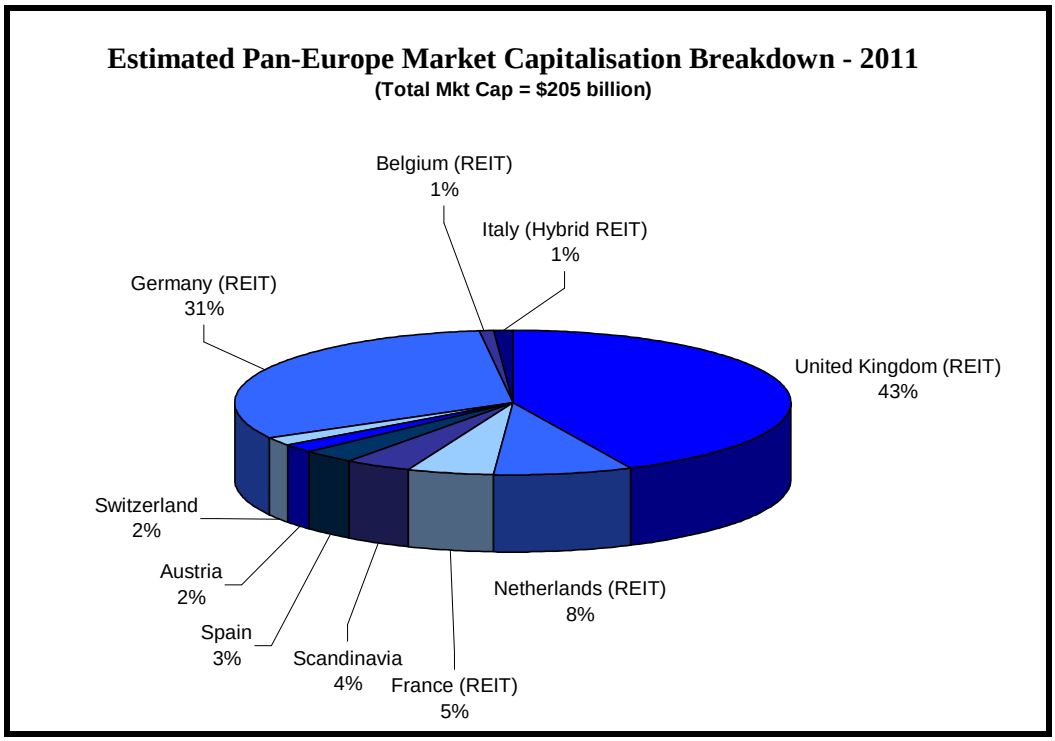
But despite all the chances and benefits, analysts note that success will not come automatically. The actual legal implementation will be crucial for a REIT success story. They highlight that one reason for the large property holdings of German companies are high taxes on capital gains. Analysts suggest a 50%-cut of these taxes in the first 5 years as an incentive for companies willing to outsource parts of their holdings into REITs in order to mobilize inefficiently managed corporate real estate. This has proved to work in France where REITs were introduced in 2003. A problem in doing so is the bad financial situation of the public sector that does not allow for any tax cuts as long as they are not offset by additional tax revenues from increased activity in the property market. If an appropriate solution for the exit tax is not found, one major source for REITs is likely to disappear.

There seems to be concerns as well about too rigid restrictions. Analysts point out that over-regulation makes REITs similar to open-end funds and, as investors are already able to invest in a similar product, REITs will find little attraction. In particular, in a global investment environment, where REITs are an established asset class, one must keep to international standards in order to attract foreign capital. Another crucial point is the quality of the property assets. Companies, funds, etc. must be willing to outsource good quality real estate. Using REITs as an opportunity to dispose poor quality real estate will lead to bad performance and damage their image.

As already mentioned, banks themselves might also play a crucial role. Every major banking group in Germany has its own investment company that manages property funds. But as they earn a lot of money by issuing and managing these funds, there might be little incentive to promote REIT investments, as they will compete for investor money, at least to a certain extent. On the other hand, this will probably just affect private investors. As stated above, institutional investors account for the lion's share of REIT investors in the U.S. Therefore, attracting institutional investors will be key to a REIT success story in Germany as well.

Another important aspect frequently mentioned is that REIT investments should be apportioned to the real estate quota of insurance companies and property funds and not to their equity quota. In the former case, REIT investments would squeeze out equity investments and consequently increase the defensive investment strategies which insurance companies are already obliged to. In case of property funds, REITs could provide the opportunity of taking higher risk/return positions and could increase flexible portfolio management.

Moreover, the success of a REIT regime will also depend on the companies themselves. Transparency is one of the key factors. In an article in the March/April 2004 issue of NAREIT's magazine *Real Estate Portfolio*, Hamid R. Moghadam, NAREIT Chair, Chairman and CEO of AMB Property Corporation, points out: *"Our businesses need to be on par from a reporting basis if we are to be seen as an investment alternative along with all other publicly traded equity"*. In addition, most market participants suggest that German REITs should be obliged to prepare their financial statements in accordance to International Financial Reporting Standards (IFRS) in order to increase their acceptance among foreign investors.



Source: FTSE EPRA/NAREIT Global Real Estate Index & UBS estimates

Figure 2.8

Outlook

As follow-up of the start of this section, Figure 2.8 shows the expected structure of the European market for listed property companies in 2011, as reported in an EPRA study. The study is based on the assumption that REITs will be introduced in Germany and the UK. The market capitalisation of German listed property companies is forecasted to grow from €3.2 billion in June 2005 to €63.6 billion in 2011 increasing their market share from 3% to 31%. Though the assumptions of the report are quite simplified[13], it indicates the huge impact that a REIT introduction on the German market for listed property companies might have in the coming years, if the provided legal framework meets international standards

[13] The study notes in its fine print that the projection is based on the assumption that the market capitalisation of listed property companies in all other countries will remain on their level on June 30, 2005.

3. Methodology and Limitations

The aim of the following chapters is to introduce the most important valuation methodologies currently applied in practice. Apart from tax-transparency and a few other regulations, equity REITs are companies like others. Thus, it is generally possible to value them in the same way as ordinary companies. Chapter 4 will start with the discounted-cash-flow methodology as the standard and most flexible approach to value businesses across industries. Subsequently, chapter 5 will introduce multiples as a short-cut valuation methodology based on market information which is frequently applied in practice. Chapter 6 will then explain the concept of net asset value (NAV). This concept is usually applied in the fund industry to estimate the "fair" value of a share in a fund with respect to the total market value of assets held. As REITs, or property companies in general, are similar in the way that intangible assets only account for a small fraction of total value, some analysts put much weight on NAV in estimating the "fair value" of property companies. Finally, chapter 7 will discuss the current state of the debate about which of the introduced approaches works best in valuing equity REITs.

In general, each of the chapters is organized as follows: The first part illustrates the underlying theory behind the methodology and explains the valuation process. The second part summarizes the associated strength and weaknesses. Finally, the third part tries to find out how important the approach is in practice.

Table 3.1

Analyst	***Company***
Craig Leupold	Green Street Advisors
Chris Lucas	Robert W. Baird & Co.
Anthony Paolone	JP MorganChase
Shant Poladian	Canaccord Capital Corporation
David Rodgers	McDonald Investments
Steve Sakwa	Merrill Lynch

The latter part is based on a questionnaire sent to U.S. REIT analysts of 30 different companies listed on the website www.investinreits.com, as of December 26, 2005 (the questionnaire can be found in the Appendix II). There were 6 analysts who completed the questionnaire, shown in Table 3.1. Some other analysts provided valuable information material about REITs and REIT valuation. In addition to the provided information, the author found useful material on the website of some of the companies. Table 3.2 depicts the additional material that has been used to gain insights into REIT valuation practice.

Table 3.2

Company	***Report***	***Date***
A.G. Edwards & Sons	"REIT Year in Review and 2006 Outlook"	January 12, 2006
Bear Stearns	"The Bear Stearns REIT Monitor - Fourth Quarter 2005"	January 2006
Deutsche Bank	"Company Bulletin - Boston Properties" *(analyst report)*	January 31, 2006
Green Street Advisors	"Federal Realty Investment Trust" *(analyst report)*	February 22, 2005
Merrill Lynch	"Global Research Highlights - The Merrill Lynch View"	May 21, 2004
Morgan Stanley	"REIT Teach-In 2006"	January 25, 2006
Morningstar	"A Better Way to Value REITs"	July 27, 2005
Raymond James	"Lodging - Industry Brief" *(analyst report)*	July 13, 2005
RBC Capital Markets	"Realty Income Corporation" *(analyst report)*	February 9, 2004
Stifel, Nicolaus & Co.	"Federal Realty Investment Trust" *(analyst report)*	August 1, 2005
Stifel, Nicolaus & Co.	"Amerivest Properties" *(analyst reports)*	August 8, 2005
Stifel, Nicolaus & Co.	"Research Monthly - January 2006"	January, 2006

Nevertheless, the outcome of this analysis and the conclusions which are drawn must be seen with caution. First, the results of the questionnaire are based on the opinions of only 6 companies or 20% of the originally intended addressees. This is certainly not a representative sample, especially not if one bears in mind that a company usually employs several REIT analysts who may not share the company's opinion as stated in the answers. Second, the questionnaire was only sent to U.S. REIT analysts. Investors, accounting firms or analysts of other countries may hold quite different views. Third, although the additional material which was used provided useful information, it was certainly not as valuable as the answers of a completed survey. Finally, questionnaires run always the risk that the addressee misunderstands some of the questions and/or the author misinterprets some of the answers.

Going Concern Value

Before introducing the different methodologies, it is important to mention that this thesis is focusing on a company's going-concern value, as there are different value definitions. A going concern value is the value of a business as assumed that the firm will continue as viable entity as it stands. This includes intangible assets, like goodwill. The liquidation value of a company, in contrast, is the net amount that will be realized if the firm is terminated, i.e. the assets will be sold and the liabilities will be satisfied.

4. Discounted Cash Flow Methodology (Dividend Discount Model)

The discounted cash flow (DCF) methodology is probably the most theoretically accepted method for valuing companies. However, its application is not limited to business valuation. It is a universal valuation methodology, which is used just as well in valuing single projects, investments or assets. The underlying idea of the DCF method is that the value of an asset is determined by its capability to generate cash flows in the future. According to the DCF methodology, the fair value of an asset is determined by the sum of future net cash flows to the owner discounted with their opportunity cost of capital. In case of business valuation, these net cash flows are also referred to as free cash flows, which are the amount of cash a company is able to pay out to investors after paying for all investments necessary for growth (including investments to offset depreciations) and taxes. These free cash flows might also be negative, when tax liabilities and total investments needed for future growth exceed the internal cash flow streams or if the internal cash flow itself is negative. If a company is listed, positive free cash flows equal dividend payments to shareholders and negative free cash flows result in capital dilution by issuing new shares (i.e. future dividends per share become smaller as the profit of the company is distributed among a higher number of shareholders). In this case, one sets up a so-called dividend discount model and the FCF_t terms in equation (4.1) are replaced by the corresponding dividend payments.

$$Business\ Value = Cash + \frac{FCF_1}{1+r_1} + \frac{FCF_2}{(1+r_2)^2} + \ldots + \frac{FCF_T}{(1+r_T)^T} + \frac{Horizon\ Value}{(1+r_T)^T} \qquad (4.1)$$

FCF_i = *forecasted free cash flow in period i*
r_i = *opportunity cost of capital for period i*

Since it is impossible to forecast free cash flows period by period to infinity, one computes the discounted value of free cash flows out to a valuation horizon T, which usually is set to 5 to 10 years. The actual determination of the valuation horizon T depends on the available information, in particular on how accurate future cash flows are predictable. Usually, it is set at the time when the growth of future free cash flows is assumed to stabilize. The values of all subsequent free cash flows are summed up to a horizon value in T. The sum of the discounted free cash flows out to T and the horizon value discounted back to present value then lead to the business value estimate.

Horizon Value

There are several formulas for estimating the horizon value of a business in T. One common method is to use Gordon's Growth Formula. The formula is based on the assumption that free cash flows will increase with a constant growth rate g in the future and that the opportunity cost of capital will remain constant. A major problem of the formula is that the resulting horizon value is quite sensitive to variations in the underlying variables. Small changes to the assumptions about free cash flows in period n+1, future growth rates and the opportunity cost of capital lead to significant changes in the horizon value estimate.

Gordon's Growth Formula:

$$Horizon\ Value = \frac{FCF_{T+1}}{r-g} \qquad (4.2)$$

FCF_{T+1} = *forecasted free cash flow in period T+1*
r = *average opportunity cost of capital for period T+1 onwards*
g = *average growth rate of free cash flows after period T+1*

A second method for calculating horizon values is to search for listed companies today that are comparable to the subject business at the valuation horizon T in terms of size, risk and growth prospects. If there are such comparables, the observed stock prices can be used to calculate their price-earnings ratios (P/E ratios) or other multiples and apply them to the business at hand to get a range of horizon value estimates. Afterwards the appraiser must apply professional judgement and use his knowledge about the case at hand to narrow the value indications to a most probable value. A deeper discussion of using P/E ratios and other multiples and their inherent problems are presented in Chapter 5 *"Earnings Multiples"*.

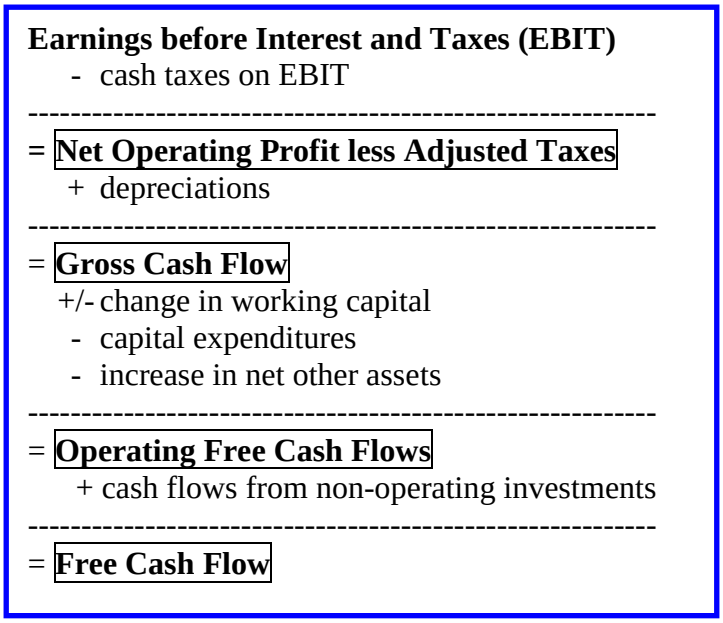
$$P/E\ Ratio = \frac{Share\ Price}{Earnings\ per\ Share} \tag{4.3}$$

Instead of using P/E ratios, market-to-book ratios might be applied as well. The application of this third approach is pretty similar to applying price-earning ratios. The decisive difference is book values are used as unit of comparison instead of earnings. A major problem with this approach is that book values and market values develop usually rather independent over time. The book values of many assets depend on historical acquisition costs and hence on the time of purchase. Furthermore, they are usually affected by accounting measures, like depreciation and impairment losses. As a consequence, identical assets acquired at the same time might differ in their book values. Therefore, the market-to-book ratio approach should only be applied in cases, where the general relationship between market and book values proves rather constant. As will be explained later on, this assumption does usually not hold for property companies or REITs.

$$Market\text{-}to\text{-}Book\ Ratio = \frac{Market\ Value\ of\ Equity_t}{Book\ Value\ of\ Equity_t} \tag{4.4}$$

All of presented methods are rules of thumb and suffer from there sensitivity to small changes to the underlying assumptions and forecasts. As the horizon value usually makes up a major part of business value, appraisers usually apply several methods in conjunction with each other and use their experience to reconcile the different value indications to a final value estimate.

In the DCF methodology, one distinguishes usually between two approaches: the equity and the entity method. Properly applied, both approaches lead to the same result. The difference is that in the former case the equity value is estimated directly by discounting the cash flows to the equityholders (flow-to-equity) whereas in the latter case one starts by calculating the enterprise value and subsequently subtracts the value of debt in order to obtain an estimate for the equity value of the company. Usually, appraisers distinguish between operating free cash flows and cash flows from non-operating investments and assess their values separately. This approach is useful, since the future development of these cash flows and the associated risks are usually independent of each other.



Source: Copeland, T. , Koller, T. & Mullin, J. (2000): „Valuation – Measuring and Managing the Value of Companies" (3rd ed.) New York: John Wiley & Sons
Figure 4.1

4.1 Entity Method

The entity method is usually applied for valuing big listed companies, in particular conglomerates. It starts by discounting operating free cash flows which are not adjusted for interest and amortization payments (see Figure 4.1[14]) and hence estimating the entire enterprise value including the firm's debt. The advantage of discounting total operating free cash flows is that it ignores side-effects resulting from a company's capital structure. In contrast to the flow-to-equity measure, operating free cash flows are more stable, transparent (interim reports often just state earnings from operations which can be used for checking past earnings estimates) and they reveal the earning power of the company's operating business. Moreover, they provide the opportunity to value a conglomerate as the sum of values of its business segments. Since in most cases conglomerates only disclose the earnings from operations of the individual business segments but not how the company's equity and debt is divided among them, a calculation of the flows-to-equity of the individual segments is not possible. To value single business segments instead of the entire conglomerate is often preferable, since the individual risks associated with each segment might be rather diverse.

[14] It is important to note that this scheme for calculating free cash flows is based on U.S. accounting standards and is not targeted at particular industries. In case of German companies, there are further adjustments, like changes in a company's reserves for pensions. Moreover, the scheme has shortcomings if applied to equity REITs or property investment companies that will be discussed later on in this chapter.

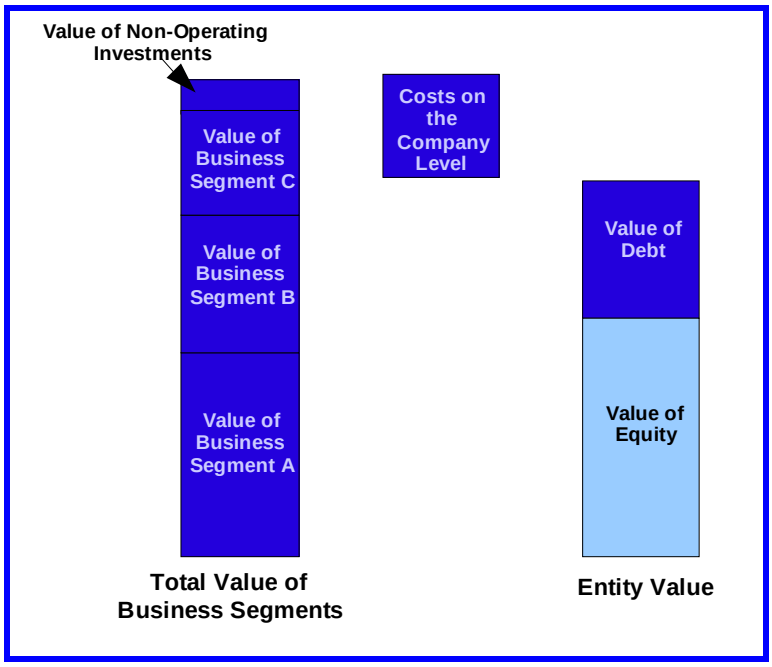


Figure 4.2

The entity method starts by capitalising operating cash flows, which are unaffected by the firm's financing decision. The total size of cash flows to debt- and equityholders, however, varies with the actual capital structure of the company, since interest payments are tax-deductible in most countries. Increasing the debt ratio shifts cash flows from the tax authorities to the equityholders and hence increases the company's entity value. However, in case of REITs, that point is less important, as they do not have to pay corporate taxes by definition. Nevertheless, the author briefly explains the three main approaches that have emerged to account for tax shields arising from debt financing. If properly applied, all will lead to the same result. They might be relevant in the case of REITs as well, if the actual legal implementation specifies certain types of earnings - like for example earnings from the sale of properties or retained earnings – that are not exempted from corporate taxes.

4.1.1 WACC Approach

According to Mandl and Rabel (2005), the WACC approach is the most frequently used entity method in practice. Operating free cash flows are calculated as if interest payments were not tax-deductible. Hence, cash taxes in Figure 4.1 equal taxes as if the company was totally equity financed. These "artificial" free cash flows to the debt- and equityholders are subsequently discounted by the company's Weighted Average Cost of Capital (WACC) which is a weighted average of the return on equity demanded by investors and the interest rate demanded by debtholders. The WACC formula accounts for the tax shields arising from debt financing by lowering the actual cost of debt r_d by a correction term $(1-t_c)$ where t_c refers to the corporate tax rate (see equation 4.6).

$$c_{WACC} = r_e * \frac{E}{V} + (1 - t_c) * r_d * \frac{D}{V} \qquad (4.6)$$

r_e = *expected return on equity*
r_d = *interest rate on debt*
t_c = *corporate tax rate*
E = *market value of equity*
D = *market value of debt*
V = *E + D = total market value of the company*

Using constant WACC implies that the capital structure of the company remains constant over time. In case of varying debt ratios, one needs to calculate different WACCs for every single period. This might be rather difficult in practice since it requires estimates for the cost of equity and debt for different debt ratios. Moreover, the approach assumes that there is enough income to shield. It will therefore overestimate the "real" value of the company, if the firm actually makes losses. For that reason, according to Seppelfricke (2005), the WACC approach is predominantly applied to mature and non-cyclical companies with positive earnings.

4.1.2 Total Cash Flow Approach

The total cash flow approach is pretty similar to the WACC approach. It starts by estimating the company's free cash flows to both debt- and equityholders. However, instead of applying "artificial" taxes as if the company was totally equity financed, operating free cash flows are calculated with respect to actual taxes that arise from the capital structure of the company. Consequently, the impact of tax shields on a firm's total value (debt + equity) is already taken into account in the free cash flow estimates. Therefore, the discount rate used for capitalizing these cash flows into an enterprise value estimate equals a simple weighted average of the expected return on equity and the interest rates demanded by debtholders (see equation 4.7). Sometimes this weighted average is also referred to as before-tax WACC which is somewhat misleading as in both cases tax payments are taken into account.

$$c_{TCF} = r_e * \frac{E}{V} + r_d * \frac{D}{V} \qquad (4.7)$$

r_e = *expected return on equity*
r_d = *interest rate on debt*
E = *market value of equity*
D = *market value of debt*
V = *E + D = total market value of the company*

In contrast to the WACC approach, the total cash flow approach provides a way to account for actual tax payments. For that reason, the approach is also applicable in case of negative earnings. However, cash flow projections require predictions about the development of the company's debt level and the resulting interest payments in order to estimate future tax payments. This is true as well, if one assumes a constant debt ratio, when the cash flows vary considerably over time. In addition, the approach is less useful in valuing single business segments of a conglomerate. As stated above, conglomerates do usually not disclose how their debt is spread between the individual business segments. Consequently, a proper allocation of tax shield is not possible. According to Seppelfricke and Mandl et al., the Total Cash Flow approach is rarely applied in practice.

4.1.3 APV Approach

The adjusted present value (APV) approach is based on a handy characteristic of the present value concept: the present value of a sum of cash flows equals the sum of present values of the individual cash flows. The APV approach is similar to the WACC approach as it starts by calculating operating free cash flows as if the company was totally equity financed. However, instead of capitalizing these cash flows with the company's WACC, they are capitalized with the return on equity r_{ue} demanded by investors in case of an unleveraged firm. The sum of the value of the operating cash flows and the value of non operating investments is then also referred to as "value of the unleveraged firm". The impact of debt financing on the entity value is calculated in a second step by adding the present value of the resulting tax shields.

$$Value\ of\ the\ Leveraged\ Firm = Value\ of\ the\ Unleveraged\ Firm + PV(Tax\ Shields) \qquad (4.8)$$

Unlike the WACC or total cash flow approach, the actual capital structure of the company at hand does not affect the discount factor used to capitalize operating free cash flows. The additional value which arises from debt financing is determined separately. For this reason, the APV approach is regularly applied in situations where the company's capital structure varies significantly over time. In such situations, an application of the WACC or Total Cash Flow approach would require varying discount rates. In particular, the approach proofs useful in valuing Leveraged-Buyouts, since it allows for flexible calculations of the effects of different financial scenarios. However, it presumes a proper estimation of the unleveraged return on equity r_{ue} which might be rather difficult in practice.

4.1.4 The Market Value of Debt

After an estimation of the entity value, one needs to deduct the market value of the company's debt in order to derive an estimate of its equity value. The valuation of debt works as the valuation of any other financial asset. The net cash flows received by the debtholder are simply discounted with their opportunity cost. In the valuation process, only present debt is taken into account. The underlying assumption is that future borrowing is done at market rates. Hence, its present value equals zero[15].

The company's debt, as it is used in the context of valuation, does not only include bonds and bank loans, but all kind of liabilities. In general, they comprise accounts payable, payments in advance, provisions, bonds, bank loans and any other forms of debt. Short-term liabilities, like accounts payable, short-term reserves and bank loans, can generally be assessed with their book values since the difference to their market values is usually rather small as the payment is made in the near future. Assessing the value of reserves for pensions is also rather easy. According to German accounting standards, book values of reserves for pensions must equal their present value. Hence, book and market values are the same. Long-term debt, however, has to be adjusted if the agreed interest rate deviates from the current interest rate paid on the market. As stated above, the market value of long-term debt is determined as the present value of its future cash flows streams (interest payments + repayment of the principal). As a consequence, the market value will be higher (lower) than the corresponding book value if the agreed interest rate is higher (lower) than the current interest rate on the market. A further exception is short-term non-interest-bearing debt. As long as these funds are a stable part of financing, it is not deducted at all. The reason for this treatment is rather obvious, since - as long as this non-interest bearing debt is permanently rolled over - the actual maturity is infinity and, as it is known, the present value of a cash flow at infinity is zero.

4.2 Equity Method

The equity method is also referred to as flow-to-equity method since the approach only considers cash flows to equityholders. Operating cash flows are therefore adjusted for taxes, interest and amortization payments. Consequently, cash flow projections require detailed forecasts of the future development of a company's debt level, in particular of the size of interest payments, the amortization schedule and the time and size of new borrowings. Since these cash flows belong solely to equity investors, they are capitalized by the return which these investors demand on their investment given a particular development of the debt ratio. This expected return on equity is usually derived from capital market models such as the capital asset pricing model (CAPM)[16] or the arbitrage pricing theory (APT)[17]. In case of listed

[15] The cash inflow associated with borrowing at a future point in time t will equal the future value of all subsequent interest and amortization payments in t.

[16] For a discussion of CAPM see: Sharpe, W. F. (1964): *"Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk"*, Journal of Finance 19, pp. 425-442 and Lintner (1965): *"The Valuation of Risk Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets"*, Review of Economics

companies, it is possible to compute the factors required by the models directly by looking at the historical performance of the traded shares and the development of the risk-free interest rate during that time period. If a business is not listed, the estimation of the opportunity costs of equity gets more difficult. In general, one has to search for comparable companies that are listed on the stock exchange and derive an estimate of their cost of equity. Finding companies that are similar with respect to size, business activity, operational risk, leverage ratio and long-term growth prospects is often difficult. If comparables can be found or if it is possible to adjust for differences, the computed costs of equity capital can be used to estimate the value of the company's operating business. Adding the value of non-operating investments leads finally to the company's equity value estimate. The equity method is frequently used for valuing banks and insurance companies.

4.3 Strengths and Weaknesses

The DCF methodology is based on a sound theoretical framework: the value of a company equals the cash flows to the owners discounted by their opportunity costs which account for the time value of money and the inherent risks. A further strength of the DCF methodology is its flexibility. Cash flow streams can be easily added or subtracted. Therefore, it provides a convenient way to run through different scenarios. A significant benefit is that during the process one gets to know the drivers and diminishers of a company's value which increases one's understanding of a business,

However, it has shortcomings as well. A DCF model requires a lot of assumptions about its input variables. Estimating the development of future cash flows and the company cost of capital can prove very difficult in practice. As for any other model, the "garbage in, garbage out" principle holds. If the model's assumptions are flawed, the results will be flawed as well. Therefore, the DCF approach works best if there is a high degree of confidence about the size of future cash flows and the company's cost of capital. In addition, it includes a latent danger of manipulation. It is easy to convince oneself of anything one wants.

Another drawback of the methodology is it does not account for managerial flexibility – often referred to as real options. This kind of flexibility has an intrinsic value. A management can alter a company's course of action over time when certain aspects of the uncertainty about the future become known. It can create, exercise and abandon strategic and flexible options. Undeveloped land is a rather typical example of a real option in case of property companies or REITs. If it generates no income, it will be worth zero according to the DCF approach[18]. However, vacant land provides a (real) option for developments, which can be very valuable in situations when property prices are high and hence acquisitions are pretty costly. Of course, this shortcoming can be eliminated by adding the values of a company's real options to the general DCF estimate. There is a valuation methodology for real options based on the general option pricing theory. Though quite interesting, the author decided to leave it out, since the underlying theory is pretty extensive and difficult to use in practice.

Another limitation of the DCF methodology is that it is solely based on cash flows and costs of capital. There are additional factors, like transparency, liquidity and the overall market

and Statistics 47, pp. 13-37; or Brealey, R. A. & Myers, S. C. (2003): *"Principles of Corporate Finance"*, chapter 8, New York: McGraw-Hill

[17] For an introduction to APT see: Ross, S. A. (1976): "The Arbitrage Theory of Capital Asset Pricing"; Journal of Economic Theory; 13:341-360; or Brealey, R. A. & Myers, S. C. (2003): *"Principles of Corporate Finance"*, chapter 8, New York: McGraw-Hill

[18] Of course, it is possible to include future developments in a DCF model. But that requires clear assumptions about the point in time when the land will be developed and about the size of the incremental cash flows. The additional value that results from the (fixed) future development will be the value of an all-or-nothing investment and will not account for any flexibility.

sentiment, which may have a significant impact on prices paid on the market. However, they are rather difficult to quantify in practice.

4.4 DCF in Practice

The survey among analysts revealed that although the DCF approach is probably the most accepted theoretical valuation methodology it is rarely applied in practice. Among the six respondents, only Craig Leopold from Green Street Advisors stated that they apply the DCF methodology (they use both the entity and the equity approach). However, Anthony Pallone from JP Morgan and Chris Lucas from Robert Baird & Co. pointed out that they use the dividend discount model as an additional valuation methodology. This was of course the result of an unclear formulation in the questionnaire as the author assumed that the DCF approach includes the dividend discount model. Nevertheless, the DCF method received also a significant lower score from the six respondents on the question how much weight they put on the individual approaches in their final value estimate. The average score was 2.83 on a scale of one (less important) to six (very important). The respective figures for earnings multiples and the NAV approach were 4.67 and 5.25.

The analyst reports and REIT material that was studied produced a similar result. The only company which explicitly pointed out that they apply the DCF approach for determining their REIT price targets was Morningstar. In addition, Morgan Stanley indicated the usefulness of a dividend discount model, though they do not apply one. They stressed that they continued to believe that the extent to which REITs dividends were likely to grow in the future was one of the most underappreciated attributes of REITs. However, they only account for dividend growth in a multiple approach called multiple-to-growth-rates (MPGR) which will be explained in the next chapter.

In an article of July 27th, 2005, Morningstar analyst Craig Worker writes that the company recently replaced its NAV model by a DCF model which they found out to perform much better in valuing REITs. The company believes it is the first independent research firm to use this approach as a primary tool for valuing REITs. Before applying the new model, Morningstar considered all 61 REITs it covered overvalued. According to Patrick Dorsey, director of stock analysis at Morningstar, the main shortcoming of the NAV approach is it does not account for the fact that a REIT management can add and destroy value by their actions.

Morningstar has identified five major ways a REIT management can boost the overall value of their company, and included them in their DCF model. First, it may be able to increase earnings from the existing portfolio. That includes charging higher rents for new leases and looking for high-margin revenue sources. Second, a REIT management might be able to acquire undervalued properties and develop or redevelop them into more productive assets. A third value creating strategy is expanding into asset management through joint ventures. In these arrangements, the REIT owns a property jointly with a partner, e.g. a pension fund. Usually, the REIT takes only a minority stake and is primarily responsible for the management of the property. Hence, it is able to earn steady high-margin fees with little capital requirements. A fourth way of boosting the overall value of the firm comprises all activities that are generally referred to as “financial engineering”. These activities include amongst others cutting cost of debt, searching for tax-free property exchanges and buying low-cost options in properties. The final way of increasing firm value is to retain earnings (e.g. by dividend reinvestment plans since REITs are required to pay out the major part of earnings as dividends) and reinvest them at a return above the company cost of capital. Mr. Worker admits that this is no simple task, but he believes investors can look at a management’s track record of investing in good projects above the company’s cost of capital as investors look at the track record of mutual fund managers in their investment decisions.

Although a DCF model requires significantly more work and although the value of management and other intangibles do only provide 15% to 25% to the overall value of the stock, which indicates the primary importance of the intrinsic value of a Refit's buildings, the added detail is pretty important for sound investment decisions. Morningstar believes cash flows and earnings ultimately drive the value of the stock in a real estate firm just as they drive the value of any other stock. However, their criticism of the NAV approach mainly results from a pretty strict NAV definition. Other analysts and investors realized as well that there are additional value drivers not covered by the NAV approach. However, they value them separately and then add them to or subtract them from the NAV in order to derive a final estimate of an equity Refit's fair value. Rejecting the NAV approach since the NAV figure does not cover all value drivers seems too strict. The issue is more about which approach is better capable of accounting for the additional factors.

However, it is important to keep in mind that the questionnaire was only sent to analysts and hence may be biased. Public accountants and M&A advisors have different valuation backgrounds and for that reason may put a greater emphasis on the DCF methodology and the dividend discount model.

5. Earnings Multiples

Another approach frequently applied in valuing businesses is the use of earnings multiples. The underlying idea is like in the DCF methodology that the value of a business is determined by its capability to generate future cash flows. However, in contrast to the DCF methodology, not the free cash flows of several years but only a single year's earnings are capitalised into a business value estimate. The discount factor or so-called multiple is derived from comparable companies, usually referred to as the "peer group", and the relationship between their market prices and expected earnings[19]. Applying multiples result therefore in relative valuations, i.e. the subject business is valued with respect to actual prices paid for other, comparable businesses. The implied assumption is that these prices are efficient.

$$Observed\ Stock\ \mathrm{Pr}ice = PV_0 = \frac{E_1}{r-g} \quad \Leftrightarrow \quad \frac{PV_0}{E_1} = \frac{1}{r-g} =: Earnings\ Multiple \qquad (5.1)$$

PV_0 = *present value of future earnings = observed prices*
E_1 = *expected earnings per share in the next period*

There are several different definitions for multiples. In general, one distinguishes between the type of value that is estimated, equity value or enterprise (entity) value, and the unit of comparison. A meaningful unit of comparison should be characterized by a rather stable relationship to the company's future free cash flows, as the major value determinant. Usually, different kinds of earnings measures are chosen. Nevertheless, in some cases other units of comparison prove quite useful, like sales, the number of costumers, or the lettable area. The manifold earnings definitions arise from rather simplified assumptions the methodology is based on. A closer look at the theoretical foundation (3.1) reveals that using earnings multiples implies that the risk profile and the growth prospects of the peer group are similar to the ones of the business at hand and that the used earnings measure is a good proxy for the company's free cash flows. This is a very strong precondition that is often not fulfilled in practice. As a consequence, adjustments to the earnings estimate and the corresponding multiples are necessary. As in the case of the DCF methodology, one of these adjustments includes separating earnings from non-operating investments. However, determining the size and scope of these adjustments is usually quite difficult in a complex business environment.

According to Seppelfricke, there are several cases where multiples prove pretty useful in practice. These include situations, when the available data does not allow for reasonable cash flow projections and consequently inhibits a detailed DCF analysis. This might be the case for a "sum-of-the-parts" valuation of conglomerates, when the necessary information about the individual business segments is not available. Different multiples for different business segments can provide an easy way for accounting for different growth prospects and risks. Furthermore, analysts are often required to quickly assess the effects resulting from new market developments. This does usually not allow for detailed cash flow forecasts. A third field where multiples are frequently applied are IPOs. The determination of the floatation price is mainly determined by the current sentiment and expectations of the market, which are usually reflected in actual market prices. Hence, applying multiples means applying current market sentiment and expectations. In addition, multiples are also regularly applied by M&A advisors in order to present a first value indication for a target business to prospective buyers.

[19] Some people use reported earnings instead of expected earnings in calculating multiples. Although this is flawed from a theoretical point of view, it might be valuable in practice if reported earnings are a meaningful proxy of expected earnings as it facilitates the calculation process.

5.1 Price - Earnings Ratio

A frequently applied equity value multiple is the price-earnings ratio (P/E ratio), which is defined as a company's share price divided by next period's expected earnings per share. In order to make sure that companies are comparable - at least to a certain extent - book earnings have to be adjusted for one-time events to reflect averaged operating income. In Germany, analysts apply frequently a so-called DVFA/SG earnings measure. The derivation of these normalised earnings from book earnings, are defined by Deutsche Vereinigung für Finanzanalyse & Asset Management (DVFA), a German society of investment professionals, which is a member of the Association of Certified International Investment Analysts (ACIIA), and Schmalenbach-Gesellschaft (SG), an esteemed non-profit organisation, which aims at linking theory and practice in business administration. According to the DVFA/SG standard, after-tax book earnings must be adjusted for one-time events, like for example the costs of an IPO or the costs related to the termination of a business unit. Additionally, the effects of calling upon voting rights in financial statements, as for instance certain additional capital allowances, have to be removed. The adjustments must include the effect on the company's tax liabilities as well. However, fluctuations in a firm's operating business and hence operating income should not be smoothed.

$$P/E-Ratio = \frac{P_0}{E_1} \qquad (5.2)$$

P_0 = *current share price*
E_1 = *expected earnings per share in the next period*

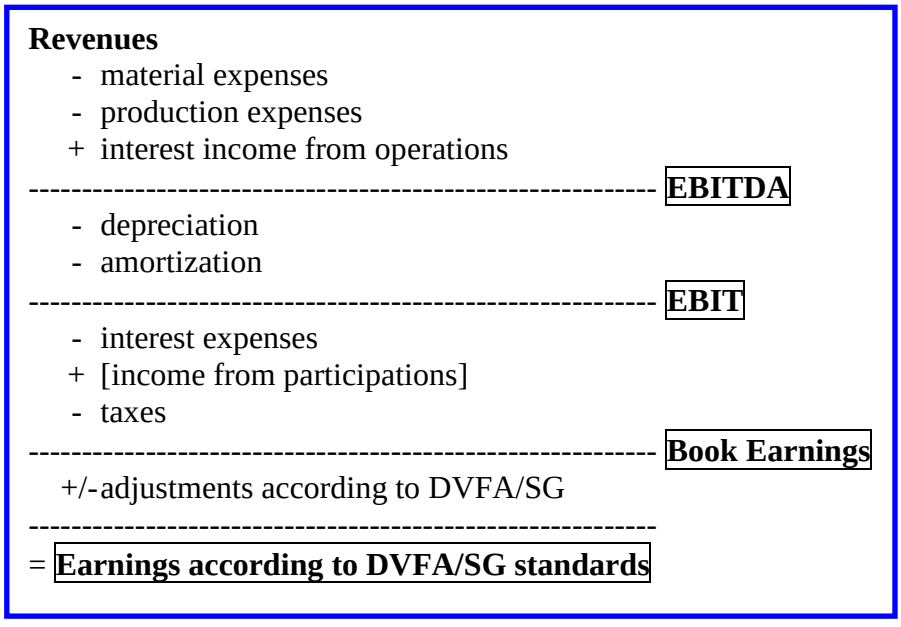
A peculiarity arises in the context of property investment companies and REITs. In case of ordinary businesses, capital gains from the sale of properties belong to earnings from unusual one-time activities mentioned above and hence should be adjusted for. But in case of property companies, at least some of these earnings belong to operating income. Property developers and traders receive the major part of their earnings from selling properties. Therefore, an adjustment for earnings from property sales makes no sense. The major source of income of property investment companies is rental revenues. Nevertheless, their core business does also involve a certain degree of portfolio management. The DVFA/SG standards suggest that earnings from capital gains should be included in the normalized earnings estimate as long as rental income remains the main income source, revenues from sales are regularly reinvested and the value of the sold properties is limited to 5% of total portfolio value. Additional income from property sales should be subtracted as unusual earnings as in the case of ordinary companies.

However, despite all these adjustments, P/E multiples still have weaknesses. Earnings are accounting figures and do not represent actual income to the shareholders. In Germany and the United States, where financial reporting regulations require properties to be valued at historical acquisition costs (plus capital expenditures, less depreciation), appreciations in property values are not accounted for. Moreover, though adjusted, earnings are not smoothed for operational fluctuations and hence may not represent a sustainable earnings estimate. The focus remains on one period. A further problem with using P/E-ratios as an earnings multiple for business valuations is that even if the comparable companies do have similar operational risks and growth prospects, their P/E ratios might be rather different, due to different levels of leverage. Investors demand usually a higher rate of return as their cash flows streams become riskier due to a higher debt-to-equity ratio (r↑ in (5.1)). Consequently P/E ratios for highly leveraged companies tend to be lower than those of companies with a small debt-to-equity ratio.

5.2 Enterprise Multiples

Due to the shortcomings of P/E ratios, alternative earnings measures were developed such as EBIT and EBITDA. Enterprise multiples foot on Modigliani's and Miller's (1959) famous proposition I:"The market value of any firm is independent of its capital structure." The underlying idea is that the value of a company is determined by the asset side of the balance sheet, on its capability to generate future cash flows and the associated operating risk. The right-hand side simply reveals the claims on these cash flows. A management cannot increase the enterprise value of their firm by apportioning operating cash flows between different types of claims as the total amount of cash flows and the total risk remain the same.

In order to estimate the value of a company's operating business and the associated risk, one needs to estimate the company cost of capital which includes, in addition to the cost of equity, the interest demanded by creditors. Therefore, the earnings measure used by calculating the multiple must include interest payments as well. However, although enterprise multiples eliminate the effects resulting from financial risk, they are based on the assumption that the enterprise value and hence the company cost of capital are independent from a company's capital structure, as stated above. However, this does only hold in Modigliani's and Miller's simplified world without taxes and costs of financial distress[20]. In practice, the enterprise value of a company is affected by its capital structure, as a result of changing tax shields and changing costs of financial distress. Enterprise multiples will therefore only work well when the comparable companies have similar capital structures and are liable to the same tax regulations.



Source: Krolle, S. (2003): „Bewertung der Immobilien-AG über das Unternehmensergebnis"; in Rehkugler, H. (2003): „Die Immobilien AG – Bewertung und Marktattraktivität"; Munich: Oldenbourg Wissenschaftsverlag

Figure 5.1

Figure 5.1 depicts the relationship between the different earnings measures. The definitions of EBIT and EBITDA are controversial in practice. The main controversies involve the treatment of interest income from operations (not including excess cash) and income from partici-

[20] The cost of financial distress accounts for the additional costs incurred when a company goes bankrupt (legal advisors, accountants, etc.) or is close to bankruptcy (suppliers backing out, since they fear that their bills will not be paid in the future, falling sales, since customers fear that their warranties and the customer service will become worthless, etc.).

pations. The figure shows the relationship between the different earning measures as it is proposed by DVFA. Anglo-Saxon countries usually set off interest income from operations with interest expenses from working capital. Consequently, these interest earnings are not included in their EBIT and EBITDA multiple measure. DVFA argues that such a treatment normally leads to flawed results from a valuation theoretical perspective (unfortunately it is not explicitly stated why). In case of participations, they recommend to value income from participations separately if the corresponding taxes, interest payments and depreciations are unknown or if the associated risk differs significantly from the risk of the holding company. However, they provide no general recommendation.

In order to derive the enterprise multiples for the comparables, one needs to determine their enterprise values. In general, this means determining the companies' market capitalisations, adding their debt and adjusting for the value of non-operating cash flows. Figure 5.2 depicts a calculation scheme as proposed by Seppelfricke. The actual adjustments will depend on which definitions are used for calculating EBIT and EBITDA. If for example lease payments resulting from financial leases are already taken as an expense in a company's income statement and therefore are not added back, adjustments for the present value of financial leasing obligations will not be required. They are already accounted for in reduced earnings.

Market Capitalisation
+ market value of interest-bearing debt
+ shares of third parties in subsidiaries
(+ present value of financial leasing obligations)
(+ increases in unfunded plans)
- market value of non-operating investments
(- present value of tax shields from accumulated deficits)

= **Enterprise Value (EV)**

Source: Seppelfricke, P. (2005): „Handbuch Aktien- und Unternehmensbewertung"; Stuttgart: Schäffel-Poeschel

Figure 5.2

In the same way as one derives the enterprise value of the comparables from their market capitalisation, one must eventually derive the equity value estimate of the subject business from its enterprise value estimate.

5.2.1 EBIT-Multiples

EBIT is defined as earnings before interest and taxes. The advantage of using a "gross earnings" measure is it focuses on a firm's operating business and ignores side effects from financing. For that reason, it is possible to compare companies with different leverage ratios. Tax payments are included as they depend on the level of debt financing as well. In most countries, interest payments decrease taxable income and hence lower tax liabilities. A further advantage of using a pre-tax figure is it allows for comparison between companies that are liable to different tax regulations, like companies from different countries.

$$EBIT - Multiple = \frac{EV_0}{EBIT_1} \qquad (5.3)$$

EV_0 = *current enterprise value (equity + debt)*
$EBIT_1$ = *normalized expected earnings before interest and tax in the next period*

Since EBIT multiples are also based on a single year's expected earnings, a normalized EBIT estimate is crucial. Consequently, book EBIT has to be adjusted for unusual one-time events as one adjusts book earnings in the P/E ratios. Although EBIT allows for the use of multiples in case of different leverage ratios, it does not solve all problems. Differences in the investment cycle and temporary differences in depreciations make a comparison of companies with similar operating risks more difficult. For that reason, the EBITDA earnings measure was developed.

5.2.2 EBITDA-Multiples

The EBITDA earnings measure is defined as EBIT before depreciations and amortizations. As a company's capital expenditures usually vary from year to year, earnings measures try to account for the longevity of these investments by artificially spreading the expenses as depreciations or amortizations over the years in which they will be used to generate value for the company. The difference between depreciations and amortizations is simply that former account for the loss in value of tangible assets whereas latter account for the loss in value of intangible assets, like trademarks or goodwill. For simplicity reasons, both terms will be referred to as depreciations as from now.

$$EBITDA - Multiple = \frac{EV_0}{EBITDA_1} \qquad (5.4)$$

EV_0 = *enterprise value (equity + debt)*

$EBITDA_1$ = *expected earnings before interest, taxes, depreciation and amortization in the next period*

EBITDA can be used to approximate the fundamental earning power of the company's operations. It is often seen as an approximate measure for the company's operating cash flow. Depreciations are accounting measures that do not correspond to actual cash outflows. They are deducted in earnings calculations in order to account for the loss in value of past capital expenditures during the accounting period. The advantage of taking EBITDA as unit of comparison is that it is not blurred by temporary differences in depreciations between the compared companies in the base year. These differences might result from varying national accounting standards or when the comparables are in a different phase of the investment cycle. For instance, if the subject REIT decides to invest in its property stock in order to increase its future earnings, applying an EBIT multiple will underestimate its fair value, since depreciations will decrease its EBIT[21]. A further advantage of the EBITDA multiple is that it can be computed even if a company is reporting net losses, since a firm's EBITDA is usually positive. For this reason, the multiple is frequently used to value new businesses. In leveraged buyouts, where the key factor is cash generated by the firm prior to all discretionary expenditures, EBITDA is the measure of operating cash flows that can be used to support debt payment at least in the short-term.

However, the EBITDA measure is an insufficient proxy for a company's operating free cash flows. It totally ignores cash outflows that result from capital expenditures. Warren Buffet, a famous investor, once said: *"Does management think the tooth fairy pays for capital expenditures."* Investors apply therefore EBITDA measures to approximate the fundamental earning power of the company's operations while separately factoring in the projected capital expenditures needed to maintain those operations. This is valuable because of the time value of money. Investors know that a large capital expenditure is less costly if it is made several years into the future as the firm can use the cash for that expenditure to generate income in other

[21] Of course, this only holds, if the comparables omit to do such investments as well and hence do not have the same kind of deprecations lowering their EBIT.

ways in the interim period. Therefore investors look at a "pure" measure of ongoing earning power and then make an educated assessment of the timing of significant capital expenditures.

5.3 Special Earnings and Cash Flow Measures Used to Analyse U.S.-REITs

As stated above, net income calculated using generally accepted accounting principles ("US-GAAP"), is not regarded as a meaningful indicator for the profitability of REITs and property companies. Therefore, special earnings and cash flow measures were developed in the United States to account for the peculiarities of these companies, similar to the DVFA/SG earnings measure proposed in Germany.

Net Income……...…….	**$x,xxx,xxx**
Adjustments:	
Depreciation of real estate assets……..…	$x,xxx,xxx
Amortization of tenant improvements and tenant allowances……	$xxx,xxx
Amortization of deferred leasing costs……	$xxx,xxx
Gains/losses from sale of depreciable real estate…….	$xxx,xxx
Gains/losses from sales of other real estate and securities……..	$xxx,xxx
Other items:	
Discontinued operations…….……..…	$xxx,xxx
Extraordinary items……..…	$xxx,xxx
Cumulative effect of accounting change…….	$xxx,xxx
Adjustments for minority interest – consolidated affiliates……...….	$xxx,xxx
Adjustments for unconsolidated affiliates……...….	$xxx,xxx
Funds From Operations……	**$x,xxx,xxx**

Source: NAREIT, National Policy Bulletin FFO White Paper Disclosure; February 2004
Figure 5.3

5.3.1 Funds From Operations

In 1991, NAREIT defined Funds From Operations (FFO), which has become a widely accepted industry standard, acknowledged by the Securities and Exchange Commission as well. Many analysts use this supplementary earnings measure as a starting point for analysing the historical and prospective profitability and value of companies in the industry. NAREIT has released a "White Paper on Funds from Operations" with a clear definition of FFO in order to promote a uniform industry standard (the definition was clarified in 1995, 1999 and 2002). The latest issue of the White Paper defines FFO in the following way:

> *FUNDS FROM OPERATIONS means net income (computed in accordance with generally accepted accounting principles), excluding gains (or losses) from sales of property, plus depreciation and amortization, and after adjustments for unconsolidated partnerships and joint ventures. Adjustments for unconsolidated partnerships and joint ventures will be calculated to reflect funds from operations on the same basis.*

According to the White Paper, the main intention of defining a supplemental earnings measure for REITs was the problem of historical cost accounting, which implicitly assumes that the value of property assets decreases predictably over time. This might be a reasonable assumption for the loss in value of other assets but the value of real estate assets rises and falls based on the market environment. Historical evidence suggests that overall real estate assets tend more to appreciate than to depreciate. The differences in depreciation rates among REITs and among individual REITs assets (new assets vs. old assets) make a comparison of their

financial performance based on net income more difficult. To address the depreciation problem, NAREIT created FFO as a supplement earnings measure of a REIT's operating performance.

There are other adjustments that should be made as well, such as subtracting any income recorded from the sale of properties. The reason for this is that a meaningful measure cannot ignore depreciation, which reduces the property cost on the balance sheet, and then includes the capital gain from selling the property above the price at which it has been carried. Further items that NAREIT suggests to be added back are: amortization of capitalized leasing expenses, such as commissions paid to agents when renting offices or other properties, and tenant allowances and tenant improvement, and there like.

Nevertheless, the White Paper notes that not all depreciations and amortizations should be added back. Depreciations of assets other than real estate are no less real when owned by a REIT or property company. Examples of items that should not be added back are amortizations of deferred financing costs, depreciation of computer software and company office improvements. Since an appropriate disclosure of a company's FFO calculations are crucial for understanding the profitability of REITs and property companies, NAREIT released some "best practice" recommendations. Figure 5.3 shows the FFO/net income reconciliation as it is proposed in NAREIT's National Policy Bulletin "FFO White Paper Disclosures" in February 2004.

However, some prepares and users of financial statements employ differing FFO definitions. Companies are generally free to publish any additional information, of which they think they might be useful for analysts and investors. Since FFO has no statutory definition, REITs cannot be enforced to publish FFO that comply with NAREIT's FFO definition. The ambiguous use was particularly severe in the past and was made worse by the fact that many companies used to publish FFO without showing how it was computed so that users of financial statements did not know whether the FFO measure complied with the NAREIT definition or not. This decreased the usefulness and effectiveness of FFO for comparing different companies. The calculation scheme depicted in Figure 5.3 was released by NAREIT's Best Financial Practices Council[22] in order to address the problem. Since the first clarifications about FFO and NAREIT's strong efforts to promote a uniform standard, many companies have adopted the NAREIT definition in their financial statements. According to Hamid Moghadam, NAREIT chair, compliance has increased to nearly 90% in 2004. Nevertheless, it must be stressed that there are still FFO measures published that considerably deviate from the NAREIT definition.

In the May/June 2001 issue of the NAREIT magazine "Real Estate Portfolio", David M. Taube and George L. Yungmann, director, financial standards, and vice-president, financial standards, respectively, of NAREIT, suspect that the most important reason for the inconsistent use is or was[23] a misunderstanding of the FFO measure. Adjustments are usually made under the notion that FFO should represent stabilized cash flows generated by operations rather than a supplemental measure of accrual, GAAP basis earnings. The adjustments made are usually appropriate to translate FFO in a cash flow measure but that was not the original intention of FFO. Taube et al. point out that it is clear from both the 1995 and 1999 versions of NAREIT's FFO White Paper that FFO is intended to be a supplemental accrual basis earnings measure and not a measure of cash flow or of a REIT's dividend paying capacity.

[22] The Best Financial Practices Council was formed in 1998 as an effort to enhance the quality and effectiveness of industry financial practices, including financial reporting, disclosure practices required by US-GAAP and practices related to FFO.

[23] Taube and Yungmann's article was published in 2001 when the use of deviating FFO definitions was more common than now and the latest issue of the White Paper and the National Policy Bulletin (see figure 3.2) were not published yet.

5.3.2 Adjusted Funds From Operations

Although the White Paper points out that "the original intent was that FFO be used for the sake of determining a supplemental capitalization multiple similar to a P/E ratio", the evidence that people tried and still try to adjust FFO indicates that it is probably an insufficient measure for valuing REITs. Alternative measures that are proposed by different authors and that are frequently used in practice are "adjusted funds from operations" (AFFO), "funds available for distribution" (FAD) and "cash available for distribution" (CAD).

For instance, adjustments to FFO include: accounting for recurring capital expenditures, like new carpeting and roof repairs, that are needed to maintain a REIT's properties and its revenue stream and that cannot be recovered from the tenants, and removing the effect of straight-lining rents. According to US GAAP, net income is normally determined after "straight lining", or smoothing out contractual rental income over the term of the lease[24]. However, in real life, rental income from a multi-year property lease is not smoothed out. It often starts low but rises from year to year. Figure 5.4 depicts frequent adjustments to FFO which are used to derive AFFO, FAD or CAD.

Frequent Adjustments to FFO

- Normalized recurring capital expenditures
- Straight-line rents in excess of (less than) contract rents
- Amortization of deferred financing costs
- Amortization of stock compensation
- Deferred taxes
- Deferred contingent rents
- Gains/(losses) on sales of securities or property included in FFO
- Other significant unusual and/or non-cash items

Figure 5.4

AFFO, FAD and CAD are cash flow measures that are intended to disclose stabilized cash flows generated by REITs and their capacity to pay dividends. They are better suited for valuations from a theoretical point of view, since in contrast to an earnings measure they are a proxy for a company's free cash flow (an example for an FFO/AFFO derivation can be found in Appendix III). However, there is no single generally accepted "cash flow measure". Though NAREIT recommends REITs to disclose additional information that could be used to develop an additional "stabilized cash flow / valuation metric", like AFFO, FAD or CAD, it does not promote a particular measure as it does in the case of FFO. In its White Paper, NAREIT points out that it believes that there is not adequate consensus among preparers and users of REITs' financial statements that would allow an agreement on a single definition of a cash flow measure. Moreover, NAREIT does not believe that a single definition would be consistently applicable to all REITs. In the remainder, the term AFFO will be used as a proxy for the three cash flow measures.

[24] Statement of Financial Accounting Standards („SFAS") No. 13, "Accounting for Leases", requires all REITs to straight-line rental revenue over the term of the leases and to record that amount each year as an operating revenue.

5.4 Selecting Comparable Companies

Selecting comparable companies is a crucial step in the multiple approaches. The companies included in the peer group should be characterized by a similar relationship between their value and the unit of comparison. In general, this holds for companies within the same industry. Since REITs are quite different from other companies in terms of business operations and the resulting cash flow patterns and the associated risk, their peer group should be limited to other REITs[25]. But as there is also considerable diversity within the industry itself, a further focus on property sectors might be necessary. Table 5.1 shows how NAREIT classifies U.S. equity REITs according to property sectors and subsectors. This classification scheme provides a basis for selecting comparables for U.S. equity REITS and may be applicable to German REITs as well.

Table 5.1

Property Sector and Subsector	Number
Industrial / Office	**37**
Office	(23)
Industrial	(7)
Mixed	(7)
Retail	**33**
Shopping Centres	(18)
Regional Malls	(9)
Free Standing	(6)
Residential	**27**
Apartments	(22)
Manufactured Homes	(5)
Diversified	**18**
Lodging / Resorts	**19**
Self Storage	**5**
Health Care	**14**
Specialty	**7**
Total	**160**

Source: NAREIT, October 31st, 2005

Seppelfricke specifies six criteria that comparables should fulfil to ensure a sound application of multiples. First, companies should be at a similar stage of their life cycle, since young companies are usually characterized by lower earnings and higher risk. Second, companies should have comparable business models. Firms that belong to the same industry may have different types of customers, different value chains or a different regional focus. Third, comparables should have similar leverage levels. As stated earlier, company costs of capital generally increase as a business's debt ratio increases. In particular, highly indebted firms tend to trade at significant discounts to their counterparts. Fourth, companies included in the peer group should have similar levels of diversification. In most cases, investors penalize conglomerates with a discount. As will be stated in the next chapter, this general observation holds also in case of diversified REITs. Fifth, comparables should be in the same stage of the market cycle. Multiples are based on a single year's earnings, which might significantly depend on the stage of the cycle. Sixth, companies which are included in the peer group should have similar strategies. A firm's strategy is an indicator for its long-term earning power and its risks. Since the strategy of a company is mainly determined by its management, its quality must be judged by its management as well. However, measuring the quality of a management is rather difficult in practice.

[25] In some cases, property investment companies might be appropriate as well.

In general, valuations which are based on multiples demand for a trade-off between the number of comparables and their comparability to the subject business. Since in most cases, the subject company and the peer group will not perfectly match up, analysts and investors must make appropriate adjustments based on professional judgement and their experience.

Selecting comparables also depends on the purpose of the valuation. For instance, investors tend to pay higher prices for publicly traded companies than they do for non-publicly traded companies. On the other hand, they are usually willing to pay control premiums when they acquire an entire company. In general, one distinguishes between three methods: the Initial Public Offering method, the Recent Acquisition method and the Similar Public Company method.

Initial Public Offerings Method

The first method is frequently applied in IPOs and is based on subscription prices paid for similar companies in the past. The drawback of the approach is a sound application requires a minimum number of similar IPOs in the "recent" past, which often proves quite difficult in practice.

Recent Acquisition Method

The recent acquisition method is targeted at determining reasonable purchase prices. In contrast to the first approach, multiples are not based on IPO but on transaction prices paid for similar companies in the past. As the IPO method, the Recent Acquisition method is less useful when there were too few similar transactions in the past or when they are too old to reveal actual market pricing. Moreover, information about recent transactions is often not publicly available.

Similar Public Company Method

According to Seppelfricke, the most frequently applied approach is the similar public company method. In contrast to the previous methods, multiples are based on the current share prices of similar publicly traded companies. For that reason, the approach is particularly suited for estimating the fair value of listed companies. The main advantage of the method is that share prices are publicly available and that a lot of additional information about the companies is disclosed which might prove very useful in the valuation process. Therefore, the similar public company method is also regularly applied for valuing IPOs or potential acquisition targets. However, since the purpose of the valuation differs, adjustments to the value estimate are necessary. This include amongst others a discount for not-listed companies to account for the limited fungibility of their shares, a discount for IPOs as an incentive for subscription and a control premium to account for the additional value of the opportunity to influence management.

5.5 Multiple Consolidation

The next step in a multiple valuation process is to derive a multiple from the peer group which will then be applied to the subject business. Seppelfricke describes three approaches which are regularly applied in practice. The first approach is to choose the mean of the peer group multiples. The shortcoming of this method is that means are generally distorted by extreme values. Since there are no multiples smaller than zero, means tend to overestimate the business value. A second approach is to choose the median of the peer group multiples. In contrast to the mean, the median is not affected by extreme values. A further benefit of the median is that it minimizes the absolute distances between the median and the comparables. This is valuable since the objective of the multiple approaches is to minimize the difference between the estimated and the actual market price. However, there is also a drawback. Extreme values reveal some market information which in case of a median is not taken into

account. A third approach is to apply a linear regression model. As stated above, the underlying assumption of the multiple method is that there is a linear relationship between the observed prices and the unit of comparison. For that reason, the final multiple could also be estimated by applying a linear regression to the peer group multiples

5.6 Strengths and Weaknesses

In contrast to the DCF methodology, a multiple-based valuation process does not only focus on the subject business. It takes also account of the information that is implied in observed market prices. As stated above, the DCF methodology focuses on future free cash flows and their opportunity cost but does not consider other factors which might affect the actual value of a firm, like the liquidity of shares, real options and principal-agent problems. The advantage of using multiples for valuations is that they are based on actual market prices which already account for these factors. Furthermore, multiples are comparatively easy to calculate. In particular, they do not require lengthy cash flow forecasts. The "simplicity" of multiples has another advantage. It leads in many cases to higher acceptance among the users of the valuation as they understand the underlying assumptions. The DCF model, in contrast, comes often across as a black box. A further benefit of the multiple approach is the required analysis of the competitors helps to understand the subject business's strengths and weaknesses. Moreover, multiples allow for historical comparisons. For instance, analysts and investors can look at past P/FFO ratios and compare them with current P/FFO ratios in the market in order to see whether the REIT sector is historically over- or undervalued.

Nevertheless, there are also drawbacks. Multiples are based on the economic principle that perfect substitutes should trade at same prices on a competitive market. However, in a complex business environment there are no perfect substitutes. The quality of the value estimate depends to a large extent on the existence and selection of comparable companies. The "simplicity" of multiples is not only one of its strengths but also one of its weaknesses. Small changes to the earnings estimate of the base year may have a significant impact on the final value estimate. In general, too many "subjective" adjustments in the selection of comparables and the smoothing of earnings undermine the objectivity and hence the strength of the multiple method. A further problem arises if the underlying assumption that observed market prices are efficient does not hold, due to for example low liquidity of the shares or an overoptimistic market. Valuing companies solely in terms of prices which were paid for other companies increases the risk of price bubbles as could be seen during the Dot-com Bubble in the end of the 1990ies. According to Seppelfricke, critics of the multiple approach frequently argue that the objective of business valuations is to determine the fundamental value of a company and not its price which might be "distorted" by market sentiments. However, some situations, like IPOs and Squeeze-outs, require current market prices.

5.7 Multiples in Practice

As stated in the beginning of the chapter, multiples are frequently applied in practice for estimating the value of a business in particular by analysts and investors who are concerned about the current pricing of the market. Therefore, it was no big surprise that the survey among REIT analysts revealed that five out of six respondents apply multiples in valuing equity REITs. Similarly, multiples received a pretty high score on the question how much weight the interviewees put on the individual approaches in their final value estimate. The average score was 4.67 on a scale of one (less important) to six (very important).

The results on the question whether the interviewee believes that multiples generally do better in valuing equity REITs than they do in valuing ordinary companies (due to higher transparency, easier cash flow projections, no tax effects of leverage etc.) were ambiguous. Three

respondents believed multiples are more valuable in case of equity REITs and the other three took the view that multiples perform approximately the same.

The survey corroborates as well what has been said about the theoretical strengths and weaknesses of the different types of multiples with respect to REIT valuations. None of the respondents applies P/E ratios and there is only one who uses EBIT multiples. In contrast, EBITDA multiples and FFO multiples are applied by four out of five interviewees who use multiples and AFFO multiples are used by all of them. The analyst reports and REIT material which was studied produced a similar result. Of the companies explicitly disclosing their valuation methodology, Morgan Stanley uses EBITDA, FFO and AFFO multiples, Bear Stearns discloses FFO and AFFO multiples and A.G. Edwards applies FFO multiples and reports AFFO projections. In the other analyst reports not explicitly disclosing their valuation methodology, Deutsche Bank publishes EBITDA and FFO multiples and additionally AFFO forecasts, Raymond James reports EBITDA and FFO multiples, RBC Capital discloses FFO and AFFO forecasts and Stifel Nicolaus FFO multiples. However, it is important to note that one cannot generalize that these companies do use the multiples in their valuations. For instance, analyst reports of Green Street Advisors report FFO and AFFO projections as well, but from Craig Leupolds answers in the questionnaire it became clear that Green Street Advisors rely on the DCF methodology and the NAV approach in their valuations.

Overall, the results suggest that P/E ratios and EBIT multiples do not play an important role in valuing REITs, probably, due to the problems associated with accounting depreciations in valuing property companies which were mentioned above. The majority of analysts seems to focus on EBITDA, FFO and AFFO multiples. The analyst reports indicate that the FFO multiple takes up the position that is traditionally occupied by the P/E ratio in other industries. All reports disclose FFO projections, whereas none of them published P/E ratios which is common practice in other industries. Evidence for this guess is provided by Stifel Nicolaus' *"Research Monthly"* (January 2006) which summarizes the key figures for all companies in their equity research universe. Where P/E ratios are stated for ordinary companies, the FFO multiples are used instead in case of REITs. However, FFO multiples alone do not seem to be a satisfactory measure for relative valuations. The frequent use of AFFO multiples gives support to the author's guess mentioned earlier in the chapter that although FFO has become an industry standard due to strong NAREIT support it is unsatisfactory for valuations. AFFO as a proxy for a company's cash flow is better suited to the theoretical requirements for a meaningful multiple. The frequent use of the EBITDA multiple may result from the fact that the AFFO measures takes only account of cash flows to the shareholder and hence leads to an equity value multiple which may be distorted by varying leverage ratios among the companies. The EBITDA measure as a "rough" estimate for the company's total cash flows to both shareholders and debtholders leads to an enterprise multiple and hence is able to account for different leverage ratios.

In addition to the multiples mentioned above, analysts occasionally apply further multiples. Anthony Paolone from JP Morgan answered that they use per-square-foot multiples as well where applicable. Unfortunately, he provided no further details about these kinds of situations. Whether these multiples can be applied or not depends probably on the comparability and homogeneity of the individual property portfolios. Per-square-foot multiples are also used by Morgan Stanley in addition to per-unit multiples. They are calculated by dividing the adjusted enterprise value of a company (enterprise value minus separately valued other income, non-core assets, and construction) by the period-end square footage (or units). Morgan Stanley argues that these multiples are useful in valuing REITs as they facilitate comparison between REITs and between private market transactions. They believe discrepancies are likely to be rectified over time.

In addition, Morgan Stanley deploys “multiple-to-growth-rates” (MPGR) and “multiple-to-growth-rates-plus-yield” (MPGRY). MPGR ratios are calculated by dividing each stock’s FFO or AFFO multiple by the expected annual per share growth. They use them since they believe in a group where growth rates can vary meaningfully among REITs multiples alone do not provide an accurate valuation picture. MPGR ratios reward companies for greater growth. As mentioned above, multiples implicitly assume that growth rates between the comparables and the subject company are similar. MPGR ratios are an easy to handle but mathematically imperfect approach to account for this problem. Morgan Stanley states the advantage of MPGR ratios are that they provide a more useful method of comparing various companies and different REIT asset classes. Moreover, comparing them for subsequent years gives them an idea of the rate of growth at different stages of the cycle. As a drawback of the methodology, they state the fact that it does not account for historical growth rates. However, the author does not understand why historical growth rates do matter in valuations as long as the future growth rates take into account all valuable information derived from the past.

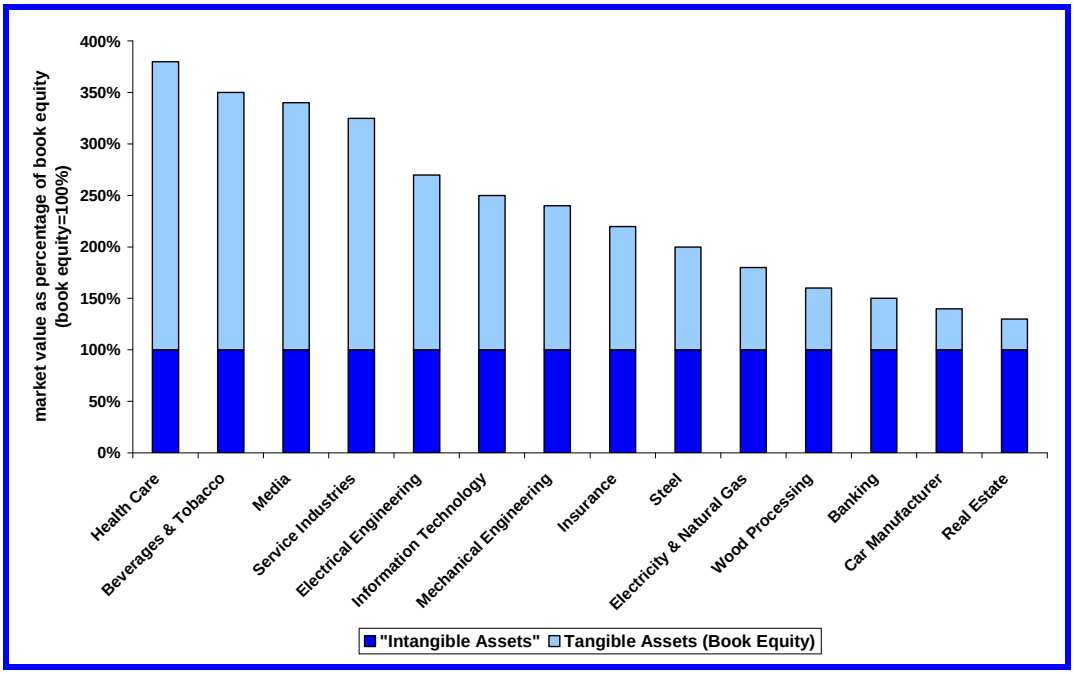
MPGRY ratios are compiled by dividing a REIT’s FFO or AFFO multiple by the sum of its dividend yield and its one year forward growth rates. Morgan Stanley uses this ratio as it believes in a group where dividend yield is an important component of total returns MPGRY ratios reward companies with the best combination of yield and growth. A drawback of this methodology is that high-yielding stocks often have significant “issues”.

6. Net Asset Value

The previous chapter illustrated that earnings multiples provide a more or less simple way to value businesses based on market information. However, it also revealed the methodology's limitations. A single year's reported earnings are distorted by one-time events and national accounting and tax regulations. In many cases ex-post adjustments of these distorting effects are impossible and hence a meaningful comparison between companies as well. These problems and the peculiarities of property investment companies with respect to accounting depreciations gave rise to alternative valuation methodologies. In particular, one approach found widespread acceptance, called net asset value (NAV).

6.1 Definition and Theoretical Foundation

A company's NAV is defined as the sum of market values of all its assets held less the sum of market values of its liabilities. This is a lucid definition which is consistent with valuation theory as the market values of the individual assets should depend on their ability to generate future cash-flows. A closer look at the definition, however, shows its shortcomings and why it is frequently applied in some industries and not in others. The problem is how to observe or assess the individual market values of assets. In particular intangible assets, like brands or a company's customer base, are difficult to value. In some industries, intangible assets account for a substantial part of total value. Enterprises of the New Economy, for instance, consisted predominantly of intangible assets. In contrast, the "theoretical value"[26] of closed-end funds is comparatively easy to determine. It is simply the sum of market values of the securities and cash held by the fund less its liabilities and overhead costs. This is the reason why NAV is a standard approach to value shares in closed-end funds whereas it is hardly applied to value internet companies.



Source: Sveiby , Morgan Stanley International World Index (Picot, Lecture at LMU Munich 1998)

Figure 6.1

[26] The term is emphasised since actual share prices of closed-end funds often deviate significantly from NAV per share. According to Gentry, Jones & Mayer (2004), a completely satisfying answer has not been found so far, although literature provides plenty of reasonable explanations. The time-variant deviations from NAV is one of the big puzzles in finance.

The value of a REIT, or a property investment company in general, is mainly determined by the cash flow generating capacity of its property stock. The value of a single property is in turn determined by its ability to generate future cash flows. It is rather unaffected of the other properties held by the company. For that reason, it is generally seen as a reasonable assumption that the value of a property portfolio equals approximately the sum of values of the individual properties. Moreover, the value of a property asset is much easier to determine as the value of some other infrequently traded assets, in particular as intangible assets[27]. Hence, calculating the NAV of a REIT to assess its value seems a sound approach. However, this does not mean that the value of a REIT must equal its NAV. There are reasons that justify considerable deviations from NAV, which will be discussed later in this chapter.

Since the different NAV definitions which the author found were rather general, he was not able to find a satisfying answer on the question whether NAV should include the value of intangible assets not listed on the balance sheet or not. However, at least in the case of REITs, there is reason to believe that NAV is limited to balance sheet assets. Most authors give reasons why the actual share prices must deviate from NAV per share. These reasons include intangible assets, like the quality of the management or brand name. If NAV should include the value of intangible assets not listed on the balance sheet, these reasonable deviations of NAV would be no deviations at all but simply the result of the value of intangible assets (either positive or negative). However, that is just a theoretical issue about the definition of NAV that does not matter on the final outcome of a NAV-based valuation approach, since the value of intangible assets is either taken into account in the NAV estimate or by calculating an appropriate deviation which is then used to derive the final value estimate from NAV. Thus, the results will eventually be the same.

6.2.1 NAV Calculation

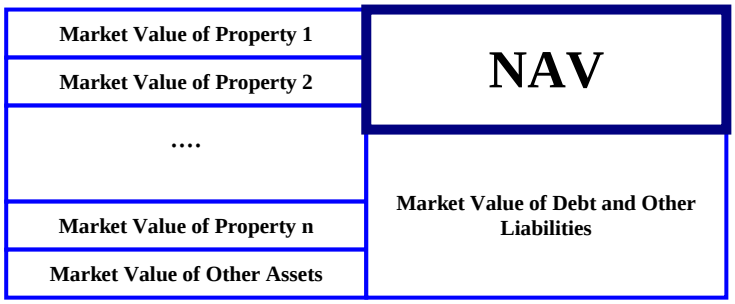


Figure 6.2

According to the definition above, the NAV of a REIT should be determined as the sum of market values of the individual properties plus the market values of other assets held by the company less the market value of its liabilities, as depicted in Figure 6.2. NAV is often calculated on a per common share basis in order to facilitate a comparison with actual stock prices. Usually, analysts and investors use the number of diluted common shares instead of the current number of common shares outstanding. The number of diluted shares takes into account the impact of executive stock options, warrants and convertible bonds that will increase the number of shares in the future if executed and hence dilute earnings per common share.

According to Nack, Rehkugler and Thomaschowski (2003), analysts do often prefer a second valuation scheme to estimate the value of a property investment company, which is depicted

[27] This does not mean that property appraisals are an easy task. But except from frequently traded assets, like many securities, were actual market prices are readily available, the appraisal of real estate seems comparatively easy, since their future cash flow streams are more predicable than, for instance, the future cash flows of an internet company.

in Figure 6.3. The advantage of this scheme is that it reveals the hidden reserves of the individual assets in the balance sheet which result from historical cost accounting. Hence, it facilitates calculating tax liabilities resulting from property sales. This scheme may prove valuable as well in case of German REITs, if the actual legal implementation requires REITs to pay taxes on income from property sales.

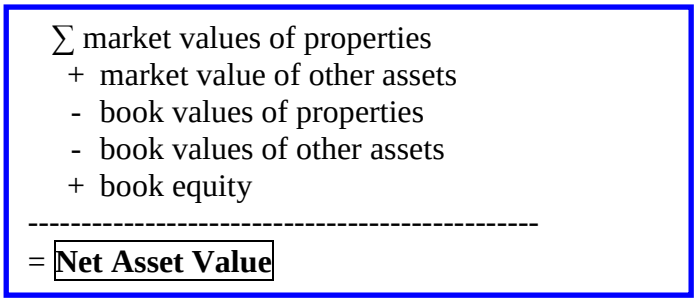


Figure 6.3

6.2.2 Market Value of the Property Stock

Since a REIT's property stock accounts for the lion's share of its assets, the estimation of its fair value is the crucial point in the NAV approach. Therefore, one problem is how to estimate this value. The solution depends very much on the available data. In general, there are two approaches: a bottom-up approach which derives the market value of the property stock directly from the market value of the individual properties and a top-down approach which estimates the market value of the property stock by capitalising net operating income generated by the consolidated property portfolio.

6.2.2.1 Bottom-Up Approach

In the bottom-up approach the value of the property stock is derived from the individual market values of the properties. Estimating these individual market values is, however, no easy task. One consideration is to take the book values of the individual properties.

Similar to US-GAAP regulations, German accounting principles require that book values of real estate assets are based on historical cost accounting. As already mentioned in chapter 5, accounting depreciations do usually not reflect the actual development of property values. Therefore, using book values as a proxy for the market values of the individual properties seems generally inappropriate. However, if a company prepares its financial statements in accordance to IFRS, book values might be appropriate[28]. According to IAS 40, investment properties should in general be assigned with their "fair values" in the financial statements after being initially valued with their historical costs. Investment properties are defined as properties (land or a building or part of a building or both) held to earn rental income or for capital appreciations or both. Owner-occupied properties, properties held for sale (including properties under construction) and properties used for production or administrative purposes are not included in this definition. Investment properties account for the major part of a REIT's assets. However, there is also an alternative accounting rule for investment properties, if a property's market value is not reliably measurable over time. In such cases historical cost accounting (cost less accumulated depreciations less accumulated impairment losses) will be applied and the sum of market values has to be disclosed in the notes. A careful analysis of financial statements is therefore crucial in case of IFRS as well.

[28] IFRS are a set of international accounting standards issued by the International Accounting Standards Board (IASB). IFRS are the successor of International Accounting Standards (IAS), which where issues by the International Accounting Standards Committee (IASC) between 1973 and 2001. Although no new IAS's are released, the old IAS's are still in effect unless replaced entirely or in part by an IFRS.

However, if a REIT does not prepare its financial statements in accordance to IFRS, detailed information about the individual properties will be required for a sound valuation. This information should include among others the location of the properties, usable floor space with respect to the different types of use and the individual lease terms. Unfortunately, REITs do usually not disclose such detailed information. If so, investors and analysts can use market reports to obtain market rents and cap rates and subsequently use this information to estimate the individual property values. However, if for example no information about the individual lease terms is given and the property market is quite volatile, this approach might lead to flawed results, if the rents agreed in the past deviate considerably from the current market rents. Therefore, a meaningful application of this approach requires REITs to publish detailed information about their properties. Moreover, the approach requires that "up-to-date" cap rates for the individual properties (markets) are available.

According to Nack et al., the bottom-up approach works best for REITs that publish the market values of their properties by themselves, either voluntarily or due to IFRS regulations. REITs have all information at hand that is needed for a sound valuation. However, since there is a conflict of interest to overstate the value of their properties, valuations should be carried out by independent appraisers on a regular basis in order to be trustworthy. Between two external appraisals, internal valuations are acceptable as long as the employees responsible for the calculations do have the required expertise.

Although REITs that publish the market values of their properties have to bear additional costs, there might be also monetary benefits of doing so. Published market values increase transparency and relieve analysts and investors of troublesome estimations and calculations. Investors and creditors demand therefore usually a lower rate on return on their investments if a company is transparent. Consequently, an increase in transparency should decrease a company's cost of capital.

The author is somewhat sceptical whether analysts will actually believe in disclosed market values. First, there is a conflict of interest. Both auditing firms and "independent" property appraisers are actually not independent since they will be paid for their appraisals by the REITs. Hence, there is certain risk that they tend to use the subjective scope existing in every valuation in favour of their client. Furthermore, the author believes that valuations carried out by auditing firms and independent property appraisers are more likely to suffer from appraisal smoothing than valuations carried out by analysts. Latter are not only keen to include all recent market developments but also to include expected future developments. Therefore, it might be more valuable to disclose detailed information about the individual property portfolio which allows analysts to calculate reliable NAV estimates by themselves than spending money on appraisals and disclose market value estimates.

6.2.2.2 Top-Down Approach

If the individual market values are not disclosed and if the publicly available data about the individual properties does not allow for a thorough valuation, investors and analysts have to rely on the top-down approach to calculate NAV. This approach is commonly used for valuing U.S. equity REITs, since, according to Block (2002), *"REITs themselves don't appraise the values of their properties, nor do they hire outside appraisers to do so, and very few provide an opinion as to their NAV. Net asset value is not a figure you will find in REITs' financial statements"*.

As stated above, the top-down approach estimates the market value of the property stock by capitalising expected net operating income generated by the consolidated property portfolio with an appropriate cap rate. Obviously, this is a very rough approach that only works well when the property stock is homogeneous. It is similar to the use of earnings multiples. How-

ever, a decisive difference is that cap rates are derived from past property transactions and not from current prices paid on capital markets. Like in the bottom-up approach, market reports can be used to obtain property cap rates. Nack et al. point out that one has to take into account that these cap rates are based on single property transactions. Bloc sales, in contrast, lead usually to lower prices. Since it is very unlikely that a REIT will sell all of its properties one by one, an adjustment of either the cap rate or the value of the property stock seems reasonable. The same logic should apply to the bottom-up approach as well. Examples of the top-down approach from Green Street Advisors and Stifel, Nicolaus & Company are included in the Appendix IV.

The top-down approach has several drawbacks. One of its weaknesses is it focuses on a single year's reported rental revenues. Like in the case of earnings multiples, the used rental revenues should represent sustainable income. A reported single year figure, however, may deviate substantially from sustainable rental revenues. If the vacancy rate, for example, is disproportionately high due to many tenant changes in the base year, the value of the property stock might be significantly understated. The same might be true, if the current rental contracts were made during a downturn in the property cycle. According to Yungman (2002), the net operating income used by U.S. REIT analysts and investors generally represents a 12-month-forward estimate, adjusted for portfolio occupancy normalization, as well as straight-line rents. Additional adjustments may reflect normalized capital expenditures, dispositions, acquisitions and developments added to the operating portfolio or other changes in net operating income from the existing portfolio.

Another weakness is choosing an appropriate cap rate in case of a diverse property stock. If the property stock consists of different property types in various geographical regions, determining a sound single cap rate that accounts for all heterogeneity is a difficult and often impossible task that can easily lead to flawed valuations. However, if company disclosure is sufficient, a combination of both approaches may be applicable. One may be able to break down net operating income into smaller groups on a quality, geographic and property type basis and then apply individual cap rates for these subgroups.

6.2.3 Market Value of Other Assets

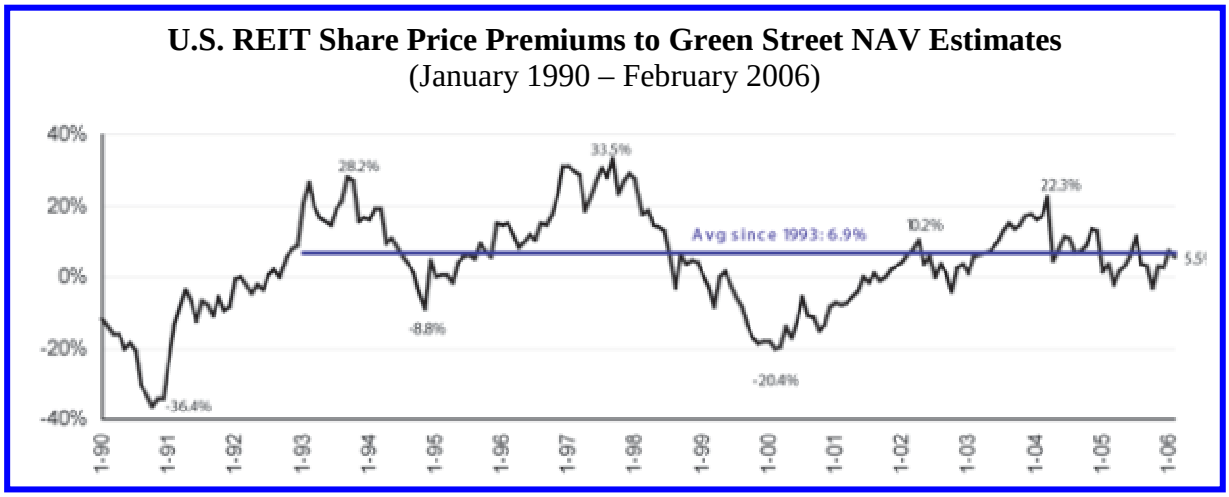
In general, all other assets held by the REIT should be valued with their individual market values as well. Cash, accounts receivable and inventories can usually be assessed with their book values as they generally do not deviate much from their market values. Participations and securities held by the REIT, however, should be treated differently, as their book values often deviate significantly from actual market values, due to historical cost accounting in German accounting standards. A reassessment of their values is therefore necessary. Properties that are occupied by the company itself and office equipment, in contrast, can be accounted for with their book values, according to Nach et al. Reasons why these properties can be treated differently from investment properties were not given. The valuation of ongoing developments is more difficult. Their book values equal accrued development costs. In theory, one should adjust these values by adding the proportional gains from a sale in order to obtain an estimate of their actual market values. In practice, however, estimating this future profit means estimating the additional development and marketing costs and the future sales price which is rather difficult. Although Nack et al. provide no solution to the problem, they recommend not using book values by default. Furthermore, the value of management and other fee income has to be determined, as another major source of income.

6.2.4 Market Value of Debt and Other Liabilities

The valuation of a REIT's debt works in the same way as in Chapter 4 "Discounted Cash Flow Methodology".

6.2 Net Asset Value vs. Actual Share Prices

Although there is a general orientation towards NAV, actual share prices of equity REITs or property investment companies deviate significantly from their NAV per share (see Figure 6.4). Some of them trade at a premium and some at a discount. The size and the type of deviation vary usually over time with periods when most equity REITs trade at premiums and periods when most of them trade at a discount. This has raised questions among academics and practitioners whether the deviations are just fluctuations around their fundamental value caused by investor sentiments or whether there are fundamental reasons why actual REIT values should deviate from their NAV.



Source: Green Street Advisors
Figure 6.4

A closer look at the valuation methodology reveals that there are several facts that justify adjustments to NAV. As stated in the introduction to this chapter, the value of an asset is determined as the sum of all future cash flow streams to the owner discounted by their opportunity costs. Rehkugler (2003) points out that NAV is based on the sum of separately valued assets and liabilities; but shareholders do not only own a collection of single properties, they actually own a business. The theoretical market value of a REIT will therefore only equal its NAV, when both the sum of single cash flows equals the cash flows to the shareholder and, at the same time, the discount factor used in the capital market equals the weighted average of the discount factors used to value the individual properties.

Rehkugler and Schulz-Wulkow give a number of reasons why this is rarely the case in practice. They distinguish between company, capital market and tax factors that cause market prices to deviate from NAV.

6.2.1 Company Factors

Company Size

The future development of a company depends amongst others things on its size. Small firms have problems in exploiting scale economies. Moreover, a low market capitalisation sparks little interest of institutional investors and analysts and hence usually increases the cost of capital. Rehkugler et al. state further that small companies are also less capable of identifying acquisition targets early, due to their limited market presence and a small market power. The author does not fully agree with the latter argument, as small firms that are focused on a particular geographic region might be very well able to identify “cheap” acquisition targets before their big competitors.

Agency Costs

Agency costs might arise due to a number of reasons. As in the case of any other public company, there is a general principal-agent problem between the shareholders of a company and its management. Although the main objective of a management is to increase shareholder value, at least according to financial theory, it might pursue some other personal goals such as expensive company cars, increasing free-time, empire-building[29] or pretty but unskilled secretaries due to lack of supervision (in technical terms: asymmetric information between shareholders and the management). Typical countermeasures include statuary audits of the company's financial statements as a way of monitoring and stock options to align shareholder and management interests. However, though these countermeasures are helpful in decreasing the principal-agent problem, they just do it at certain costs (agency costs).

Although statuary disclosure requirements decrease the information asymmetry between the management and the investors, they are usually unsatisfactory for a thorough business analysis. In absence of transparency, investors and debtholders have to obtain the information by themselves that is necessary for a sound analysis. Since this search is money and time-consuming, investors and debtholders respond by demanding a higher rate of return. It is therefore in the interest of the companies to increase transparency in order to reduce their cost of capital. Brounen, Cools and Schweitzer (2001) prove in a study that information transparency actually pays in case of European property companies.

A further problem occurs, if a property investment company or a REIT does direct or indirect business with its management or some of its major shareholders. That raises suspicion whether these "sweat heart deals" were made to the expense of the company and the other shareholders. Investors will therefore demand a higher return on their investment. For that reason the company will trade at a discount.

Another conflict of interest might emerge, if a company has a major shareholder who actually controls the firm and whose objectives are different from those of the rest of shareholders. This could be particularly important in case of REITs in Germany. As mentioned in chapter 2, corporations are supposed to be a major source of German REITs. If they want to retain control of their real estate assets and therefore decide to sell only parts of their shares to the public, the REIT management might be limited in pursuing an independent strategy. For instance, a REIT might be forced to lease properties to the corporation at below market rents to increase the corporation's operating income. Major shareholders might also impede an increase in equity capital (e.g. for external growth), though useful, if they do not have the necessary cash and fear to loose some of their influence in the company. Additionally, the existence of large shareholders leads usually to lower liquidity.[30]

A conflict of interest might also emerge when a company does not manage its properties by itself, as it was the case for U.S. REITs before 1986. The managing company is usually compensated by a management fee. This fee, however, is often based on the market value of the properties under management and not on share prices. Consequently, shareholder and management interests diverge. Rehkugler et al. point out that a common characteristic of all con-

[29] Empire-building means the act of attempting to increase the size and scope of an individual or organization's power and influence. In the corporate world, this is seen when managers or executives are more concerned with expanding their business units, their staffing levels and the dollar value of assets under their control than they are with developing and implementing decisions that best benefit shareholders. Empire-building is typically seen as unhealthy for a corporation, as managers will often become more concerned with acquiring greater resource control than optimally allocating resources. (www.thefreedictionary.com, retrieved 17.01.06)

[30] Major and minority shareholder prefer also quite often different dividend policies, as they are liable to different tax regulations. This, however, is less severe in case of REITs as their dividend policy is mainly determined by REIT regulations.

flicts of interest is that not the actual existence but already the possibility of a principal agent problem will lead to a discount.

Strategy

The business strategy of a company determines what kind of property investments it pursues and hence shows the risks and chances associated with its revenues. As investors want to know the risk/return profiles of their investments, a clear communication of a REITs' business strategy is crucial.

In general, one distinguishes between two types of strategies: focus on particular property types and/or geographic regions and diversification between different property types and/or geographic regions. The advantage of the latter strategy is a diversification of risks associated with the individual property types and regions. However, it is generally considered as an inferior strategy. Property markets are quite diverse and demand for local and property–type-specific knowledge. Diversification therefore takes up a lot of management capacity. Moreover, investors are able to diversify their property portfolios at lower cost by themselves and they can choose an individual risk/return profile by investing in different focused firms. However, there are also problems in case of geographic focus. Property companies which concentrate on a particular region are limited in their ability to grow. Consequently, they have problems to exploit scale economies.

Growth Opportunities

A REIT's fair value may also deviate from its net asset value due to growth opportunities, which are not taken into account in NAV calculations. The exploitation of growth opportunities depends to a large extent on the quality of its management. In general, one distinguishes between two types of growth: internal growth and external growth.

Internal growth opportunities arise from improving the management of the existing property stock. It could be either done by increasing rental revenues or by lowering operating and maintenance costs. This includes amongst other things improving the quality of the existing property stock (e.g. by refurbishments or by redevelopments of a property to its highest and best use), tenant upgrades (especially important in the retail sector) and, in case of a certain stock size, the use of scale economies.

External growth may arise from the restructuring of the existing portfolio, acquisitions of new properties or whole property companies and new developments. However, external growth will only increase the value of a REIT in case of "positive spread investing", a term often used in the industry, which is defined as the ability to raise funds (both equity and debt) at a nominal cost significantly less than the initial returns that can be obtained from real estate acquisitions. Negative spread investing, in contrast, will decrease firm value. Restructuring the existing portfolio will lead to positive spread investing if the net return on the purchased properties is higher than the net return on the sold properties (including transaction costs). A higher net return might solely arise since the new portfolio structure fits better to the firm's internal growth strategy, e.g. due to a more homogeneous stock.

Additional Costs on the Company Level

There are also additional costs which arise from the company structure and which are not accounted for in the calculations of the individual property values. These include one-time costs, such as the costs of forming a company and of an IPO, and recurring costs, like for example the costs of consultant services, investor relations and the preparation of financial statements. Nack et al. believe that these costs should be already accounted for in the NAV calculation (see adjusted NAV calculation scheme depicted in Figure 6.5). They note that this distinguishes the NAV calculation of REITs, or property investment companies in general,

from NAV calculations of open-end property funds were no such adjustments are made[31]. However, whether to include this additional cost already in the NAV estimate or later on in computing an appropriate deviation is just a theoretical debate about how NAV should be defined. Eventually, both techniques will lead to same company value estimate.

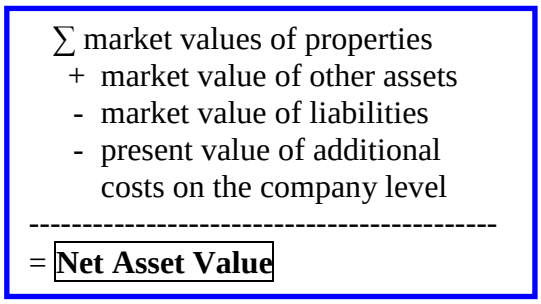


Figure 6.5

Inevitable Disinvestments

When a REIT is in a tight liquidity position, it might be forced to sell some of its property stock in the near future. Short marketing periods usually lead to sale prices which are below the corresponding market values of the properties. Therefore, a discount on NAV is reasonable if the market is aware of the fact that a REIT currently faces a tight liquidity position and has to sell parts of its property stock.

Financing and Capital Structure

In general, the market value of a property is calculated under the assumption that it is totally equity financed. This is rarely the case in practice. REITs like most other companies rely to a substantial extent on debt financing. The financing decision affects the value of a company usually for two reasons.

The first reason is tax shields that arise since tax authorities treat interest payments as costs. They reduce a firm's tax liabilities and hence – given a certain amount of net earnings - increase its total value (debt + equity). However, this rationale for using debt finance to increase business value does not work in case of REITs as they are tax transparent by definition and hence have no tax payments to shield against.

The second reason for using debt instead of equity is that debt is usually cheaper than equity. Consequently, a higher debt ratio will decrease a company's costs of capital, defined as the weighted average of the interest rate demanded from debtholders and the return on equity demanded from investors, as long as the interest rates and the return on equity remain constant. Since the value of a company is calculated by discounting its future free cash flows by the company cost of capital, lower company costs of capital will increase the value of the firm. However, as the debt ratio rises the risk of the cash flows to the shareholders does as well. Investors will therefore demand a higher return on equity to compensate for the increased risk. Similarly, debtholders will respond by demanding higher interest rates since the company's risk of default increases as well. As a result, the company cost of capital will start to rise again above a certain debt ratio. The goal of a company's financing strategy is therefore to minimize the average cost of capital. However, there is no general rule for determining an optimal capital structure which minimizes the company cost of capital.

[31] In case of open-end property funds, these costs are accounted for in the annual management fees and the issue surcharge which an investor has to pay.

$$r_{ccc} = \frac{V - D}{V} * r_e + \frac{D}{V} * r_d \qquad (3.11)$$

$$\Leftrightarrow r_e = r_{ccc} + (r_{ccc} - r_d) * \frac{D}{V - D} \qquad (3.12)$$

r_{ccc} = *company cost of capital* V = *total market value of the company*
r_e = *cost of equity* D = *market value of debt*
r_d = *cost of debt*

In the NAV approach, the value of a company's equity is calculated without explicitly using the return on equity demanded by investors. The market values of the individual assets are determined as they were totally equity financed. For that reason, the implicit company cost of capital used by determining the total market value of the company's assets equals the weighted average of the individual cap rates. The value of a company's equity is then determined as the difference between the market value of all company assets and its debt. This implies that the cost of equity fulfils equation (3.12). However, the implicit company cost of capital in the NAV approach are constant and independent of the firm's capital structure as the individual cap rates are. As stated above, this is rarely the case in practice. The company's costs of capital vary and depend as a weighted average on the capital structure and the resulting return requirements of investors and debtholders.

Rehkugler et al. point out that the contractual terms of debt matter as well. Debt can be short or long-term and interest rates might be fixed or they might vary with the general level of interest rates. Variable interest rates are often lower than fixed interest rates. However, they increase the volatility of the cash flows to the equityholders. In theory, investors will respond by demanding a higher return on equity, which will lead to a discount to NAV. Short-term debt is similar to variable interest rates. It can be advantageous, when interest rates go down, or disadvantageous, when interest rates rise. Frequent refinancing increases the volatility of interest payments and hence the volatility of the cash flows to the equityholders.

Table 6.1 ***"What do you consider as an appropriate leverage ratio for the following types of equity REITs?"***

	S. Sakwa	A. Paolone	C. Lucas	S. Poladian	C. Leupold	D. Rodgers
residential	30% - 35%	40% - 45%	50% - 60%	60% - 70%	45% - 55%	35% - 45%
office	35% - 40%	40% - 45%	40% - 50%	50% - 65%	45% - 55%	n/a
industrial	30% - 35%	40% - 45%	45% - 55%	50% - 65%	45% - 55%	n/a
retail	40% - 45%	45% - 50%	45% - 55%	55% - 65%	50% - 60%	n/a
diversified	40% - 45%	40% - 45%	40% - 55%	50% - 65%	n/a	n/a
health-care	n/a	35% - 40%	40% - 50%	50% - 60%	n/a	n/a
lodging / resorts	n/a	40% - 45%	35% - 50%	25% - 50%	n/a	n/a

In the questionnaire, analysts were asked what they consider as an appropriate leverage ratio for different types of REITs in order to get a feeling for capital market's opinion on optimal capital structures. The author presumed that optimal capital structures may differ considerably from one type of REIT to another due to different associated operating risks. The results are shown in Table 6.1. Excluding the view of Shant Poladian as he is primarily focusing on Canadian REITs, the results suggest that the optimal leverage ratio lies in a range of 35 to 55 percent. By looking at the opinion of a single analyst, there is some indication that retail REITs support slightly more and lodging and resorts REITs slightly less debt than the average REIT. However, the differences of appropriate leverage ratios between different types of REITs were relatively small and did not support the author's guess that optimal capital structures vary significantly.

Reputation

The extent to which investors will believe in a company's revenue and profit forecasts depends - apart from the data which an investor can check by himself – to some degree on the reputation of its management, in particular on its credibility and track record in the past. A good example from another industry that highlights the impact of even a single person on the value of a company is the case of Jürgen Schrempp, former CEO of DaimlerChrysler AG. Jürgen Schrempp became CEO of Daimler-Benz AG in 1995, a German industrial conglomerate that was involved in many different kinds of businesses at that time, including cars & trucks (Mercedes, Freightliner), trains (Adtranz), aerospace (Fokker, DASA [today part of EADS]) and information technology (Debis Systemhaus). He believed that he could increase shareholder value by concentrating on car and truck manufacturing and wanted to become the first really global car and truck manufacturer in the world. Therefore, he disposed non core-activities, like Adtranz, Fokker and Debis and merged Daimler-Benz AG with Chrysler in 1998, acquired the truck manufacturing operations from Ford and Mitsubishi, bought minority stakes in the car manufacturers Mitsubishi and Hyundai and formed a new car brand SMART which focused on small city automobiles. In the first years, when investors believed in his vision, the price of Daimler-Benz shares almost tripled and reached an all-time high of 102.26 Euros in 1998. However, after it became clear that his policy of expansion over the years had failed – in particular Chrysler, Mitsubishi and Smart proved to be cash burners instead of cash cows, the share price went down and reached a low of 23.94 Euros in 2003, only about two thirds of the share price, when he took over the company in 1995. Although most of this decline was a result of falling revenues, some part was related to Schrempp's bad reputation of misallocating capital and destroying shareholder value by spasmodically holding on his strategy. When he announced to step down as CEO in 2005, the share price rose approximately 8.7% at a single day, increasing shareholder value by about €3.7 billion[32]. The rest of the management team staid in charge, it was just the effect of a single man on a firm's value.

6.2.2 Capital Market Factors

Inefficient Capital Markets

Capital markets are not as efficient in practice as they are in theory. They sometimes tend to exaggerate positive and negative market movements based on irrational expectations of market participants. However, although this kind of inefficiency explains some of the observed deviations of market prices from NAV, it does not justify them as there are no fundamental underlying reasons.

Another inefficiency of capital markets concerns the liquidity of shares. Small listed companies and listed companies with a dominating shareholder suffer quite often from low trading volumes. Already small orders can lead to substantial adjustments in the stock price or might even be not executed if there is no counterparty. In general, investors therefore demand a liquidity premium as compensation for the additional risk resulting from the illiquidity of the shares. Institutional investors with large investment volumes do quite often not invest in such companies at all. According to Rehkugler et al., there is a clear negative correlation between the size of property investment companies in Germany and the liquidity of their shares and their discount to NAV.

Speed of Capital Market Reaction

Share prices in capital markets adjust every second and reveal all available information about the company at that time. The market value estimates of the individual properties in contrast are updated less frequently. For example, if a company discloses the market values of their

[32] Source: www.manager-magazin.de, retrieved January 24th, 2006

properties, they usually reassess them not more than once in year. As a result, the NAV estimates trail behind the share prices and are less volatile. The tendency is increased further as the estimates of property values are affected by appraisal smoothing. Share prices will instantly adjust in case of new developments in the property market whereas NAV estimates will remain constant until the next valuation of the property stock and then, when they adjust, they will be biased towards old valuations.

Discount Factor

The market capitalisation of a REIT will only equal its NAV if the discount rate used by the capital market equals the weighted average of the discount rates used to value its properties, the company's other assets and its debt. As already mentioned above, this is rarely the case. The market values of the properties are calculated under the assumption that they were totally equity financed. In practice, however, capital structure matters and affects the company cost of capital.

There is a second problem which arises as the discount rates used for valuing properties – at least in Germany - are based on a different theoretical foundation than the discount rates used in capital markets. Latter usually foot on the capital asset pricing model (CAPM) which state that investors only demand a risk premium for a company's systematic risk, i.e. risk that arise from general market movements and that cannot be eliminated by setting up a diversified portfolio. The discount factors used for valuing the individual properties, in contrast, are calculated with respect to the whole risk of the return on the property investments and hence include as well the risks associated with the individual properties (the unsystematic risk). The possibility of eliminating this unsystematic risk by setting up a portfolio of different properties is not accounted for in the calculation of these discount factors

6.2.3 Tax Factors

Taxes might also justify that share prices of REITs trade at a discount to NAV. However, a deeper discussion of the impact of taxes on share prices is beyond the scope of this thesis, since tax laws are rather complex including a lot of individual regulations (at least in Germany). Moreover, the actual legal implementation of REITs in Germany is unknown so far. A general description of tax effects is therefore impossible. Nonetheless, the author provides one example, which leads to discounts to NAV in case of German property companies, in order to illustrate potential tax effects.

When a property company sells one of its properties, it has to pay corporate taxes on the difference between the sale price and its current book value independent of how long the property has been held. Private investors, in contrast, do not have to pay taxes if the property is held for at least ten years. Since property multiples are based on private market transactions, they do generally not account for tax liabilities from property sales. As these multiples are then used to calculate the value of the property stock, the company's NAV does not account for any tax liabilities that may result from future property sales. This justifies a discount to NAV. However, calculating this discount is rather difficult, since it requires information about the timing of the sale in the future. A property company which holds its properties to "infinity", should theoretically not trade at a discount at all.

6.2.4 NAV Reversion

Although there are a lot of reasons why REIT share prices should deviate from NAV, there is also evidence that REIT share prices revert to NAV in the long-run. According to the NAREIT article *"An Inexact Science"* mentioned earlier on, average discounts and premiums in Green Street's coverage universe for the 11 years before 2002 have been about 0 percent. Figure 6.4 reveals a clear cyclical pattern. Further evidence comes from a study carried out by

three professors, William M. Gentry of Williams College, Charles M. Jones and Christopher J. Mayer of Columbia University's Graduate School of Business. In their article "REIT Reversion: Stock Price Adjustments to Fundamental Value", which was first published in 2003, the scholars found that a simple trading strategy based on Green Street's NAV estimates – buying at a discount and selling short at a premium – produced large positive excess returns of approximately 1.2 percent to 1.8 percent per month on a sample period from January, 1990, to September, 2002. Their study also suggests that trading costs and short sale constraints are not prohibitive. However, it reveals as well that some variation in P/NAV makes sense as premiums and discounts are related to recent and future NAV growth. Nevertheless, the study confirms that there is too much variation in P/NAV which allows for profitable trading strategies.

6.3 The Possible Impact of Premiums and Discounts on the German REIT Market

The existence of systematic premiums and discounts may have a substantial impact on the development of a German REIT market. The willingness of companies to spin off parts of their property holdings into REIT structures will increase if they expect to receive a premium on NAV. On the other hand, if they expect to receive only a discount, they will probably prefer a direct sale or a transfer into a property fund, which trades at NAV.

Trading at a premium to NAV creates a competitive advantage over non-listed companies and companies that trade at a discount. A premium results in comparatively low costs of equity. Hence, these companies can issue additional shares and use them for expanding their business by acquiring new property portfolios or even whole companies. Companies that trade at a discount, in contrast, must in general rely on debt financing for expanding their business. And as borrowing is usually limited to a certain extent thus is their ability for expansion. There is also a negative side effect that additional debt generally increases the risk for financial distress. This might lead to a higher interest rate burden for REITs.

A discount might also induce REITs to repurchase "undervalued" shares, as this will increase the company's NAV per share. This works, since the percentage decline in the number of shares outstanding will be higher than the percentage decline in NAV.

Example:

initial situation:	**situation after repurchasing 100,000 shares**
NAV: $100,000,000 equity: $ 80,000,000 shares outstanding: 800,000	NAV: $90,000,000 equity: $70,000,000 shares outstanding: 700,000
→ share price: $100 NAV/share: $125 discount: 20.0%	→ share price: $100 NAV/share: $128.57 discount: 22.2%

In theory, with respect to shareholder-value, a REIT that trades consistently at a discount has to be winded up. A sale of the property stock in the direct property market or maybe to a company that trades at a premium will increase shareholder value. However, there are also costs of winding-up a business, like lawyers and transaction costs. Moreover, bloc sales might lead to significantly lower prices than single unit sales.

6.4 Strengths and Weaknesses

An advantage of a NAV-based valuation approach is that it keeps investors from getting carried away by periods of impressive, but unsustainable, FFO growth that occurs from time to time. It provides a reality check which can be used to verify given REIT share prices. However, as stated above, a NAV-based valuation method does not solely focus on NAV but takes also into account other factors that justify discounts and premiums. Furthermore, a NAV model may keep investor from giving too much credit to a REIT whose fast growth is a result of excessive debt leverage; interest rates on debt are normally lower than cap rates on real estate, making it easy for a REIT to "buy" FFO growth by taking on more debt. Additionally, as in the case of other valuation methodologies, thinking about sustainable net operating income, proper cap rates and appropriate discounts or premiums is one of the merits of applying the approach, as it leads to a deeper understanding of the business and its drivers and diminishers of value.

Nevertheless, the NAV approach has also significant weaknesses. A reasonable application requires detailed information about the company's property stock in order to determine normalized net operating income and appropriate cap rates for the individual properties. If such information is not available, the outcome will likely be flawed. If it is available, the methodology works but is still time-consuming. When using the top-down approach, there is a further problem that the outcome of the approach depends solely on two figures, normalized net operating income and the cap rate. As in the case of multiples, small changes in these figures have a substantial impact on the NAV estimate. In particular, determining an appropriate cap rate for a heterogeneous portfolio is difficult. The problem is less severe in case of the bottom-up approach, as individual errors are likely to average out. Additionally, there is a debate whether "current" or "long-term" cap rates should be used for calculating the value of a company's real estate stock, which is still unsolved. In theory, current cap rates should incorporate all information about the future available at present and hence should be applied. However, when cap rates are historically high or low, as it is the case in many parts of the United States today, there is the question whether these rates are sustainable. If it is possible to get a reliable estimate for a company's real estate stock, there is still the problem to determine an appropriate premium or discount. Some of the factors that justify a deviation from NAV, like additional costs on the company level, are relatively easy to quantify whereas others, like impact of agency costs, are rather difficult to estimate. A further question is whether these factors are fully able to account for the fact that REITs are operating businesses and not just collections of real estate.

6.5 NAV in Practice

The results of the questionnaire corroborate the importance of NAV in valuing REITs. All six respondents pointed out that they apply the NAV approach in their valuations and assigned the highest score to the methodology on the question how much weight the interviewees put on the individual approaches in their final value estimate. The average score was 5.25 on a scale of one (less important) to six (very important). The respective figures for the DCF methodology and multiples were 2.83 and 4.67.

The studied analyst reports and REIT material showed similar results. All of the companies explicitly disclosing their valuation techniques (Morgan Stanley, Bear Stearns and A.G. Edwards) apply the NAV approach. Of the remaining companies, McDonald Investments, Raymond James & Associates and Stifel, Nicolaus & Company publish NAV figures, which the author believes is a rather good indication that they are using them as well in their valuations. In contrast to a REIT's FFO or AFFO multiples, which are comparatively easy to compute, NAV estimates entail time-consuming and thorough calculations and are therefore less likely

to be added just as additional information to an analyst report. The analyst reports of Deutsche Bank and RBC Capital included no NAV estimates. Furthermore, according to Hoesli et al., NAV is also widely used in the U.K. to value property companies.

A further question focused on whether the analysts calculate NAV estimates by themselves or whether they use NAV estimates disclosed by the REITs or by third parties. In the former case, it was additionally asked whether they use the bottom-up or top-down approach. The answers revealed that all six respondents use their own NAV estimates derived mainly from a top-down approach. The answer was no big surprise, since U.S. REITs are not obliged to, they generally do not disclose NAV estimates. Therefore, analysts have to rely on their own calculations. The reason why the respondents use predominately the top-down approach is probably related to the fact that, in most cases, disclosure about the individual properties is insufficient to allow for a reliable bottom-up calculation. The only comment on this issue came from Chris Lucas, analyst with Robert W. Baird & Co., who pointed out that it *"depends on the detail provided in disclosure"*. However, Shant Poladian from Canaccord Capital Corporation and Craig Leupold from Green Street Advisors stated they apply both approaches, which might be seen as an indication that they use the bottom-up approach if enough information is available and the top-down approach otherwise, since, on another question, what additional information they would like REITs to disclose, both wished more detailed property-by-property disclosure. However, it is important to mention that many REITs, like Archstone-Smith and ProLogis, disclose NOI, vacancy rates and lettable square feet for the individual property types and geographical markets which allows to apply the top-down approach on a more detailed level and hence eliminates some of the method's drawbacks. This might be Chris Lucas' intention when he stressed that segment disclosure is important in using the top-down approach. Further evidence comes from the article *"An Inexact Science"* published in the November/December 2002 issue of NAREIT's *"Real Estate Portfolio"* magazine. In the article, Karen Knudson, principal and portfolio manager at Deutsche Bank affiliate RREEF, notes that investors *"certainly want to group properties at least on a quality cut and geographic and submarket cuts if they are able to"*.

In addition, analysts were asked whether, in case German REITs would be obliged to publish the market values of their property portfolios, like German open-end funds are, they think that the benefits of higher transparency (lower cost of capital) will outweigh the increasing costs of annual appraisals. The respondents differed in their opinions. Craig Leupold, Shant Poladian and Steve Sakwa believed that there is a net benefit of disclosing annual market values whereas Chris Lucas, Anthony Paolone and David Rodgers did not believe in any net benefits. However, Craig Leupold pointed out that it depends on whether the appraised value truly reflects fair market value. His statement might be seen as support for the author's guess that the reliability of published market values is somewhat questionable. Additional support might also be Anthony Paolone's answer which stated that if the portfolio disclosure is sufficient, the market should be able to value the portfolio by itself.

Behar gives further support that disclosed market values may be less useful in practice. He cites an example of a U.K. property company that showed a NAV increase in a reporting period and its share price subsequently went up, as U.K. analysts were excited about the figure. However, he points out that a look at cash flows revealed that they actually went down and the increase in NAV was just the result that surveyors reduced the cap rate on the property portfolio. If one had already adjusted one's own cap rates, the results would not have been particularly strong. He notes that in the U.S. the company would probably had missed the FFO estimates and underperformed that day. Bihar points out that if one looks at NAV, one need to know what the sources of the cash flow analysis are. Therefore, using disclosed market values will only be useful to analysts and investors if the underlying assumptions and calculations are disclosed as well.

A further question in the survey asked how often analysts update their NAV estimates. Since the prices of REIT shares move up and down everyday as a result of investor's supply and demand, annual NAV calculations, like in the case of German open-end funds, seem to be insufficient. On the other hand, daily or weekly NAV updates are impractical as well since cap rates – at least published average cap rates - adjust more slowly. The majority of the respondents stated that they update their NAV estimates on a quarterly basis. The only exception was Chris Lucas who recalculates NAV solely event-driven, i.e. based on changes in property portfolio or new developments in the property market. Craig Leupold, David Rodgers and Shant Poladian update their NAV estimates both quarterly and event-driven. Quarterly updates are in line with the practice of brokerage firms, like CB Richard Ellis or Jones Lang LaSalle, to publish average cap rates for the major property markets every three month.

Furthermore, analysts were asked whether they devalue the total value of the property stock due to the fact that bloc sales usually lead to lower prices than single unit sales. As stated above, Nack et al. pointed out that one has to take into account that the cap rates used in the bottom-up or top-down approach are based on single property transactions. Bloc sales, in contrast, lead usually to lower prices. Therefore, an adjustment of either the cap rate or the value of the property stock seems reasonable. The answer was somewhat surprising as none of the respondents actually adjusts the value of the property portfolios. The statement of Nack et al. that bloc sales usually lead to lower prices that single unit sales seem to be too general or limited to the German property market. Shant Poladian pointed out that bloc sales usually lead to premiums in the Canadian property market. Similarly, Chris Lucas stated that portfolios may trade at a premium to individual asset sales depending upon property type.

Another question concerned the additional factors that the interviewees take into account when they derive their final value estimates from NAV. The author presented a list of ten potential factors that might affect the final value estimate and asked whether the interviewees account for these factors. If so, they were additionally asked how important these factors are on a scale of one (unimportant) to six (very important). The results are shown in Table 6.2. A number indicates the subjective ranking if a factor is taken into account, a minus indicates that a factor is not included in their final value estimates.

***Table 6.2** "Which of the following characteristics do you take into account when deriving your final value estimate of the equity REIT from NAV?*

	S. Sakwa	A. Paolone	C. Lucas	S. Poladian	C. Leupold	D. Rodgers
property type	6	6	6	6	3	6
geographical region	6	6	6	6	3	6
REIT size	- / (5) *	-	-	-	4	-
brand	-	-	5	- / (1) *	3	-
growth opportunities	6	2	6	3	6	Yes without rating
information policy	6	-	4	4	5	4
overhead costs	-	1	-	-	6	-
liquidity of shares	-	-	-	- / (2) *	5	-
institutional ownership	-	-	-	- / (1) *	2	-
management ownership	-	-	-	4	5	-

* *rated, but not taken into account*

The results reveal that analysts generally believe whether or not REITs focus on certain property types and/or a particular geographic region has a significant impact on their value. Furthermore, most analyst take also account of a REIT's growth opportunities and the quality of its information policy when using the NAV approach. On the contrary, the size of a REIT, its brand, overhead costs, the liquidity of shares and a high share of institutional and management ownership is considered to have less impact on the value of a REIT. An exception is Craig Leupold from Green Street Advisors who takes all factors into account and who places comparatively low emphasis on property and geographic focus. His answer is in line with

what has been said by his colleague Mike Kirby in the article "Heard on the beach" published on their website where he states that property and geographic focus are not as relevant anymore as they once were. The interviewees were also asked about additional factors they take into account in their final value estimate and how important these factors are. The answers included construction in progress (6), land available for future development (6), the quality of the property portfolio (6), the submarket location of the portfolio (6) and the quality of the management as demonstrated by their historical track record of creating shareholder value (not ranked).

Table 6.3 *"What do you consider as a 'typical' premium/discount for the following types of equity REITs?"*

	S. Sakwa	A. Paolone	C. Lucas	S. Poladian	C. Leupold	D. Rodgers
residential	10%	10%	10%-15%	10%	4%	10%
office	5%	5%	-5%	10%	4%	n/a
industrial	8%	5%	10%	10%	18%	n/a
retail	12%	-5%	0%	10%	8%	n/a
diversified	10%	-5%	-5%	10%	n/a	n/a
health-care	n/a	-10%	-10%	10%	n/a	n/a
lodging / resorts	n/a	0%	-10%	10%	n/a	n/a

The analysts were then asked what they consider as a "typical" premium or discount to NAV for certain types of REITs. Since the author presumed that some factors that justify deviations from NAV are more important for some REIT sectors than for others, he expected average premiums and discounts to vary among different REIT types. The results are shown in Table 6.3. Except Shant Poladian who assigned a 10 percent premium to all REIT types and David Rodgers who just provided an estimate for residential REITs, the results gave support to the author's guess that the size of a premium or discount depends to some extent on the type of REIT. However, analysts differ in their opinions about the typical size of a premium or discount for a particular REIT sector. The analysts' opinions differed most in case of retail REITs[33]. Steve Sakwa believed in a typical 12 percent premium whereas Anthony Paolone believed in an average 5 percent discount. On the one hand, the author expected differing opinions about the typical size of premiums and discounts for a particular REIT type since they depend on the underlying NAV estimates. Since NAV calculations are subject to personal judgements about cap rates, NOI adjustments etc., estimates usually differ between different analysts and hence their view on typical premiums and discounts. Estimates of NAV per share tend to fall in a range rather than being an absolute number as shown in Table 6.4. On the other hand, the author expected as well that relative premiums (discounts) between different types of REITs are similar among analysts. For instance, one might expect that premiums (discounts) of industrial REITs in general tend to be higher (lower) than premiums (discounts) of residential REITs. This presumption was not supported by the results of the survey. For instance, Steve Sakwa and Craig Leupold believed that retail REITs typically trade at slightly higher premiums than residential REITs (2 and 4 percentage points, respectively) whereas Anthony Paolone and Chris Lucas believed that their typical premium tend to be considerably lower than those of residential REITs (15 and 10 to 15 percentage points). Overall, "reasonable" deviations lied within a relatively small range of -10 to 18 percent. This could be seen as a general support for the usefulness of the NAV approach. In an article about the value of the NAV approach in NAREIT's online magazine "Real Estate Portfolio", Steve Brown, managing director and portfolio manager at Neuberger Berman Real Estate Funds, argued that NAV provides a reality check for REIT prices and believed that typical boundaries range between 80 and 120 percent of NAV.

[33] Shant Poladian's estimates where excluded from the comparison since he is focusing primarily on Canadian REITs. Due to different institutional settings, the sizes of his estimates are less meaningful. However, his estimates could be interpreted when comparing premiums and discounts between different REIT sectors.

***Table 6.4** "NAV estimates"*

REIT	Merrill Lynch	Banc of America	Bear Stearns	Green Street Advisors
Aimco	$44.61	$39.56	$46.00	$41.25
AvalonBay	$46.58	$46.32	$47.00	$47.50
Boston Properties	$43.65	$50.78	$46.70	$38.00
Equity Office	$32.04	$31.72	$35.46	$26.50
Equity Residential	$29.15	$27.48	$26.00	$25.75
Kimco	$28.17	$28.50	$28.69	$26.75
Mack-Cali	$37.23	$39.94	$38.51	$35.00
ProLogis	$23.91	$25.32	$25.26	$22.25
Simon Property	$33.64	$32.50	$38.60	$34.75
Weingarten Realty	$31.22	$34.50	$33.82	$31.25

Source: NAREIT, Real Estate Portfolio (November/December 2002) – "An Inexact Science"
(Data: Merrill Lynch, Banc of America Securities, Bear Stearns and Green Street Advisors Merrill Lynch's estimates of NAV are as of September 19th, 2002; Banc of America's estimates are as of September 26th, 2002; Bear Stearns' estimates are as of September 6th, 2002; Green Street Advisors' estimates are as of October 1st, 2002.)

Furthermore, analysts were asked about how much of the observed cyclical patterns in discounts and premiums of actual stock prices to NAV per share they would ascribe to psychological factors. Their estimates lie within a range of 0 to 25 percent[34], which indicates that analysts believe that the main part of this cyclical pattern is driven by fundamental information rather than exaggerating markets.

[34] Anthony Paolone supplied no answer and responded he did not agree the way the question was formed.

7. Discussion

The previous chapters introduced three different approaches to value equity REITs which are frequently applied in practice and explained their strengths and weaknesses. The remaining question is which methodology works best? This has been a controversial issue for decades which is still unsolved. In general, there are two opposing views which relate to the question what is the main value driver of a REIT: the buildings or the management. On the one hand, there are analysts and investors who strongly believe that it is the buildings and that there is only one best way to value REITs, namely NAV. On the other hand, there are investors, analysts and, especially, company executives who regard NAV as static, even backward looking approach and believe that REITs should be valued as other stocks.

NAREIT's online magazine *"Real Estate Portfolio"* summarized the current state of the debate in an article in its May/June 2005 issue. The first camp is led by Green Street Advisors who believe that REITs are basically a collection of buildings that has been securitized and management just adds a "nice kicker" to this value. Since real estate assets trade at real prices every day in large private markets, they argue it would be "foolhardy" not to base valuations on these "hard, market-based" data that is readily available to anyone willing to do the work.

Green Street Advisors back their approach with an impressive track record of their NAV-based buy-recommendations since 1993 which is available on their website[35]. Furthermore, they refer to the study of Gentry et al. mentioned earlier on in the chapter, which they believe proves that NAV actually matters. According to the NAREIT article, Green Street Advisors has been pretty successful in promoting their NAV-based approach over the last two decades and many industry figures concede that their view has gained dominance. The increasing use of NAV may also result from the fact that NAV calculations have become easier in recent years as REIT disclosure has grown and now includes average rents, vacancies and other details which allow for more reliable NAV estimates. Though not representative, the results of the survey were also in line with these figures. As stated in chapter 6, the NAV approach received the highest score on the question how much weight analysts put on the different valuation methodologies in their final value estimates. Among the supporters of the NAV approach is also Rehkugler who believes that it is the best valuation methodology for valuing German property companies.

However, as reported in the article as well, there are still a considerable number of REIT analysts, investors and company executives who do not share this view. They argue that the NAV approach is backward looking and does not fully account for the value-creating power that management provides. Consequently, it understates the value of, especially, dynamic companies. They often cite as evidence REITs, like the industrial developer CenterPoint Properties or the active apartment developer AvalonBay Communities Inc., which "aggressively" manage their assets to add value. CenterPoint Properties, for instance, has been trading at large premiums to NAV estimate for years. Therefore, Green Street has been recommending to sell the company since 2001. Nevertheless, its share price nearly doubled over the next three and a half years and reached premiums up to 49%. The opponents of the NAV approach therefore believe that REITs should be predominately valued as operating businesses, like any other company, that create value through buying, selling, developing and redeveloping. Therefore, they generally prefer the DCF methodology.

In practice, the debate is not black and white. Most analysts and investors apply several valuation methodologies and are cautious against relying too much on a single approach, as pointed out by Ross Smotrich, analyst with Bear Stearns & Co in the NAREIT article. Even Green

[35] http://www.greenstreetadvisors.com/ourperf.html

Street Advisors perform detailed DCF analysis on each company in their coverage universe. Moreover, their NAV-based approach is not a NAV-only methodology, as Craig Leupold pointed out in the questionnaire. Though putting a great emphasis on the methodology, Green Street uses NAV just as a starting point and then adjusts it by a premium or discount depending on whether the management and the company structure add or detract from real estate value. Similarly, opponents of the NAV approach concede it does a fairly good job in setting outer limits where a stock should trade. As pointed out by Steve Brown, managing director and portfolio manager at Neuberger Berman Real Estate Funds, in the NAREIT article, it provides a "reality check that separates what's really happing from the noise of what people are yelling at you". He believes that the boundaries typically range between 80 and 120 percent of NAV. There are also some market participants who think that NAV is more useful some times (e.g. bear markets) than at other times (e.g. bull markets). One of them is William E. Hauser, portfolio manager at HVB Capital Management. He believes that, in a bear market, the value-creating talent of the management is less of a factor than the asset value which could be considered as a "safety net".

The cautiousness to rely too much on a single approach is also supported by the survey. All respondents apply at least two different methodologies. However, some take up clear positions in one of the two camps. Craig Leupold from Green Street Advisors, of course, is a follower of the NAV approach. He stated that a main difference between valuing REITs and ordinary companies is that hard assets have a more identifiable value. Therefore, their preferred valuation methodology is the NAV approach. However, as mentioned above, it is only used a starting point which is then adjusted by a premium or discount based on whether the management and the company structure add or detract from the real estate value. The NAV camp is joined by Steve Sakwa from Merrill Lynch who stated that, though it has its limitations, NAV is their preferred valuation method as well since it allows them to adjust for asset quality. Nevertheless, he acknowledged that there are also some merits to some other approaches such as the DCF methodology.

Anthony Paolone from JP Morgan joins the second camp. He considers NAV as a decent starting point for a rough value estimate but not what moves the share price day-to-day or quarter-to-quarter. He stressed that he strongly believes that REITs are stocks and not real estate and hence could trade far above and below their NAV. Therefore, valuation methods for REITs should not differ from those of other companies. His preferred valuation approach is multiples and ascertaining how the group fits into the broader market. For instance, if people want growth they are likely to sell REITs, if they want value they are likely to buy REITs. This sentiment is used as a starting point for the valuation of the group. Individual company analysis and property type analysis provides then the premium or discount to the group.

The remaining analysts, Chris Lucas, Shant Poladian and David Rodgers took a middle-of-the-road view. They apply several methodologies and stated no preference to one of them. When they were asked about the main difference between valuing a REIT and other listed companies, they responded that it is the tangible nature of their assets, which provides a strong valuation support, especially, in a liquidation scenario, and it is the additional information that U.S. REITs usually provide compared to other companies.

Moreover, analysts were asked about the main difficulties encountered in valuing REITs. The results suggest that there are three major problems. First, company disclosure is inconsistent and often insufficient. This complicates a calculation of reliable business values and their comparability. In particular, analysts would like to have additional information on capital expenditure, tenant improvements and leasing costs, preferably on a property-by-property level. The second problem concerns the determination of cap rates and hence primarily the applicability of the NAV approach. Determining cap rates for heterogeneous property portfolios is to some extent more art than science. Since even small changes in cap rates can have a

significant impact on the final value estimate, Steve Sakwa concedes that, although NAV is their preferred valuation approach, it is inherently a subjective measure. A third problem results from the fact that the share of transactional profits and management fees in a REIT's FFO is increasing. This complicates FFO projections and the comparability of income measures since transaction timing may have a significant impact on quarterly results.

8. Concluding Comments

The final purpose of this thesis was to find out whether there is something as a superior valuation methodology for REITs or not. Due to the frequent use of both the discounted cash flow method and multiples, it seemed clear that a superior valuation technique does not exist in case of ordinary businesses. However, the specific characteristics of real estate assets in conjunction with the concept of NAV were somewhat promising in case of REITs.

Unfortunately, as in working on this thesis became clear: there is also no "Holy Grail" of REIT valuation. Although a lot of practitioners claim that a NAV-based valuation approach works best, there is no general consensus on this issue. As Green Street put it, "*the results of the debates on the relevance of NAV have been about as satisfying as trying to reconcile different views on religion: opinions are formed and consensus remains elusive. Believers have trouble in understanding what they view as the obvious common sense of their case*".

In general, it seems as if the passionate debate results from different perceptions of the NAV approach. The result of a "pure" NAV approach is likely to be flawed, since there are several "value-driving" factors that are not captured by the metric, like a REIT's growth opportunities and the effect of property and geographic focus. A NAV-based approach which adjusts the pure NAV estimate for such additional factors, however, can lead to sound value estimates. The problem of measuring the impact of these factors is not unique to the NAV approach but arises as well in case of other methodologies. Therefore, the issue is rather which methodology is better able to handle these factors.

Due to the particular characteristics of REITs, a NAV-based valuation approach is generally valuable. Whether it should be used as "the main approach" or just as an additional valuation metric will depend on the individual situation at hand. If sufficient information about the company is available to the public and if the REIT follows a rather defensive business strategy, i.e. it receives the main part of its revenues from rental income and management fees and not from developments or actively selling and buying properties, a NAV-based model will work quite well. If not, the results will be less meaningful. Nevertheless, they will provide a reality check to the results of other valuation methodologies, especially, in bear-markets, since share prices tend to lie in a range between 80% and 120% of NAV.

Multiples present another relative valuation methodology. Their strength is that they are based on actual prices paid on the capital market and their comparatively handy application. Actual market prices account already for factors, such as the liquidity of shares and principal-agent problems, which are often difficult to quantify in an explicit model. However, multiples incorporate also current investor sentiment. Although this may be quite useful in some situations, it generally increases the risk of exaggerations. On the other hand, multiples can be also used to compare current market prices with historical prices, which should reduce latter risk. This, however, depends on whether market participants are able to correctly assess whether the current situation justifies historical deviations or not.

One of the major problems in using multiples - the availability of comparable companies - is likely to become less severe in the future, especially in case of Europe. Domestic financial reporting standards, tax regulations and corporate laws are more and more converging to a single European standard and hence facilitate a pan-European comparison of companies. Furthermore, the introduction of new REIT regimes across Europe should significantly increase the total number of listed property companies, in particular in Germany. As the comparable universe expands, the importance of multiples is likely to grow.

Both multiples and NAV are relative valuation approaches which are based on the assumption that the underlying prices are efficient. When the assumption does not hold and the underly-

ing prices either in the capital market or the property market are distorted, they will lead to flawed results. In such cases, a discounted cash flow approach or a dividend discount model may prove quite useful. An advantage of this approach is its flexibility. It provides an easy way to run through different market, business as well as financial scenarios, by simply adding and subtracting additional cash flow streams. There are however also weaknesses. It does not account for the value of managerial flexibility. In addition, the impact of some value drivers may be difficult to quantify in terms of cash flows or the opportunity cost of capital. Furthermore, although it is generally regarded as an absolute valuation approach, the determination of an appropriate discount rate often involves information derived from current market pricing as well.

The quality of the individual valuation methodologies in case of German REITs will also depend on publicly available information. Each approach demands for detailed company disclosure. If REIT disclosure is insufficient, the results will likely be flawed independent from the valuation methodology applied. The applicability of the NAV approach will additionally depend on the availability of reliable information about the property market, like up-to-date cap rates for different geographic regions and property segments. As mentioned in Chapter 2, the German property market is rather underdeveloped and opaque so far. However, the availability of reliable information is improving significantly.

Moreover, it is important to mention that there are further metrics which are frequently used for valuing REITs. In particular retail investors focus very much on a REIT's dividend yield, as pointed out by Mary Hogan, senior portfolio manager with ABP Investments, in the article "Investor Roundtable" in the January/February 2005 issue of NAREIT's magazine *"Real Estate Portfolio"*.

In general, it is always advisable to apply the valuation approaches in conjunction with one another and REIT analysts actually do. Each technique has its own merits and leads to valuable insights into the company and its drivers and diminishers of value not gained by others. A thorough understanding of the strengths and weaknesses of the individual approaches will then help to reconcile the different value indications into a final value estimate and will lead to additional insights into a REIT's relative investment strengths and weaknesses and historical and prospective ranges of fair pricing. However, valuations will always be – at least to a certain extent – more art than science and professional experience will be crucial.

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APPENDIX I

"Summary of REIT Characteristics by Country"

Country	No. of REITs*	Mgmt Type	Investment Activity	Foreign Investment
United States	146	Internal	Development allowed	Foreign assets allowed
Canada	24	Internal/external	Development allowed	Foreign assets allowed
France	9	Internal	Development allowed	Foreign assets allowed but may be taxed at source
Netherlands	9	Internal	Development prohibited	Foreign assets allowed but may be taxed at source
Belgium	10	Internal / external	Development allowed but restricted	Foreign assets allowed but may be taxed at source
Australia	29	Historically external– shifting towards internal mgmt.	Development allowed	Foreign assets allowed
Japan	14	External	Development allowed but >50% of assets must be income producing	Foreign assets allowed
Hong Kong	0	Internal / External	Development prohibited	Foreign assets prohibited
Singapore	4	External	Development allowed up to 20% of total assets	Foreign assets allowed

Country	Sector Investment	Minimum Dividend Payout	Leverage Restrictions	Conversion Tax	Other Comments
United States	Specialized. All property sectors represented	90% after depr	None	None with UPREIT	Firmly established/mature
Canada	Specialized	Up to 100% after depr	None	24.3% capital gains tax	Developing. Only modest size companies
France	Cover three sectors but Paris office and French retail account for 90%. Also includes residential	85% after depr + 50% sales gain	None	16.5% exit tax	Established. Liberal structure
Netherlands	Heavily weighted towards retail vs office. the remainder being domestic office/other. Largely pan-European	100% after depr	Limited to 60% of book value	34.5% exit tax	Firmly established. Strong investor interest
Belgium	Diversified	80%. no depr	Limited to 50% of asset value	20.1% exit tax	Established. Not more than 20% of assets can be invested in one single property
Australia	Some specialized. some diversified. Primarily retail. office. & industrial. Concentrated in Melbourne and Sydney	95% no depr	None	30.0% capital gains tax	Firmly established. Currently experiencing considerable m&a activity
Japan	The introduction of J-REITs has led to increased portfolio specialization. Largest REITs focused on mainly Tokyo office. retail & residential	90% after depr + 100% sales gain	None	42.1% capital gains tax	Established. Sector has grown rapidly
Hong Kong	Retail. residential & office	90% after tax. no depr	Limited to 35% of total assets	None	Currently no companies have elected REIT status due to lack of tax transparency & overly restrictive limitations on geography and leverage
Singapore	Diversified portfolios. Office. retail & residential	100%. do depr	Limited to 35% of total assets	None	Established

Source: CRA RogersCasey
** Numbers as of August, 2004*

APPENDIX II

"Questionnaire"
"Valuation of equity REITs"

Personal Questions:

1) What is your academic background?

- answer -

2) How long have you been REIT analyst?

- answer -

3) What kind of analyst are you?

[ ] buy-side analyst [ ] sell-side analyst

4) How long has the company you are working for analysed REITs?

- answer -

Valuation Questions:

5) Which of the following methods do you use in valuing equity REITs?

[ ] Discounted Cash-Flow

if yes: [ ] entity method [ ] equity method

[ ] Multiples

if yes: [ ] P/E ratios [ ] enterprise value/EBIT [ ] enterprise value/EBITDA

[ ] P/FFO [ ] P/AFFO (or FAD or CAD)

other: - answer -

[ ] Net Asset Value

[ ] Other methodology (e.g. option valuation methodology)

if yes, which: - answer -

6) How much weight do you put on the results of the individual approaches in your final value estimate?

	unimportant					very important
Discounted Cash Flow:	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Multiples:	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Net Asset Value	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Other Methodology	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

[ ] depends very much on the individual equity REIT

7) In general, do you think that multiples work better in valuing equity REITs than they do in valuing ordinary companies (high transparency, relatively stable cash flow streams, no tax effects of leverage, etc.)?

[ ] better [ ] worse [ ] approx. the same

Comment: Questions 8 to 13 must only be answered if you use a NAV approach!

8) If you use a NAV approach, how do you obtain the market value of the REIT's real estate stock?

[ ] published by the REIT

[ ] own estimates

if yes: [ ] estimating the individual property values and summing them up

[ ] capitalizing total rental revenues published by the REIT

other: - answer -

[ ] third party estimates

9) If you use a NAV approach, do you devalue the total value of the property stock due to the fact that bloc sales usually lead to lower prices than single unit sales?

[ ] yes [ ] no

if yes: How much on average? ____%

10) If you use the NAV approach, how often do you "update" your NAV estimates?

[ ] annually [ ] semi-annually [ ] quarterly

[ ] event-driven (acquisitions, sales, etc.)

other: - answer -

11) If you use the NAV approach, which of the following characteristics do you take into account when deriving your final value estimate of the equity REIT from NAV?

Focus on property type: [ ] yes [ ] no

if yes:

unimportant very important

[ ] [ ] [ ] [ ] [ ] [ ]

Focus on geographic region: [ ] yes [ ] no

if yes:

unimportant very important

[ ] [ ] [ ] [ ] [ ] [ ]

REIT size: [ ] yes [ ] no

if yes:

unimportant very important

[ ] [ ] [ ] [ ] [ ] [ ]

Brand: [ ] yes [ ] no

if yes:

unimportant very important

[ ] [ ] [ ] [ ] [ ] [ ]

Growth opportunities: [ ] yes [ ] no

if yes:

unimportant very important
[ ] [ ] [ ] [ ] [ ] [ ]

Quality of the information policy: [ ] yes [ ] no

if yes:

unimportant very important
[ ] [ ] [ ] [ ] [ ] [ ]

Overhead costs on the REIT level: [ ] yes [ ] no

if yes:

unimportant very important
[ ] [ ] [ ] [ ] [ ] [ ]

Liquidity of the stock: [ ] yes [ ] no

if yes:

unimportant very important
[ ] [ ] [ ] [ ] [ ] [ ]

High share of institutional ownership: [ ] yes [ ] no

if yes:

unimportant very important
[ ] [ ] [ ] [ ] [ ] [ ]

High share of management ownership: [ ] yes [ ] no

if yes:

unimportant very important
[ ] [ ] [ ] [ ] [ ] [ ]

12) Which other factors do you take into account and how important are they (same scale as in question 12: {1,…,6})?

- answer -

13) What do you consider as a "typical" premium/discount for the following types of equity REITs?

Residential:	___%	[ ] premium	[ ] discount
Office:	___%	[ ] premium	[ ] discount
Industrial:	___%	[ ] premium	[ ] discount
Retail:	___%	[ ] premium	[ ] discount
Diversified:	___%	[ ] premium	[ ] discount
Health-care:	___%	[ ] premium	[ ] discount
Lodging / Resorts:	___%	[ ] premium	[ ] discount

14) REIT stock prices have shown considerable deviations from NAV in the past. Since these deviations revealed cyclical patterns, there have been questions whether fundamental factors can solely explain the varying premiums and discounts. How much of the observed cyclical pattern would you ascribe to psychological factors? (Just a rough estimate)

___ - ___%

15) There is evidence that average discounts (premiums) on NAV are significantly lower (higher) in countries with REIT regimes than in countries without. How would you rate the following frequently stated reasons?

	no impact					large impact
Tax transparency	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Increased transparency	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Increased liquidity of the shares	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Increased liquidity of the underlying property market	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

16) What is your personal opinion of NAV in valuing equity REITs?

- answer -

17) What do you consider as an appropriate leverage ratio for the following types of equity REITs?

Residential:	___ - ___%
Office:	___ - ___%
Industrial:	___ - ___%
Retail:	___ - ___%
Diversified:	___ - ___%
Health-care:	___ - ___%
Lodging / Resorts:	___ - ___%

18) What are the main difficulties encountered in valuing REITs?

- answer -

19) What kind of additional information would you like U.S.-REITs to disclose that would make your work much easier without imposing too high costs on them?

- answer -

20) Some people demand that it should be mandatory for German equity REITs to publish the actual market values of their properties each year, like German open-end funds have to do. Do you think the benefits of higher transparency (lower cost of capital) will outweigh the increasing costs resulting from annual appraisals?

[ ] yes [ ] no

21) What are the main differences between valuing a REIT and valuing other listed companies?

- answer -

22) Summing up, what is your preferred approach to value REITs?

- answer -

APPENDIX III

"Example of a FFO/AFFO Calculation Scheme"

	2002				
Fiscal Year - December	Q1A	Q2A	Q3A	Q4A	Year
Revenue					
Rental	$32,842	$32,724	$34,863	$36,188	$136,617
Gain on sales of real estate acquired for resale	365	1,126	969	1,035	3,495
Interest and other	31	51	223	41	346
	33,238	**33,901**	**36,055**	**37,264**	**140,458**
Expenses					
Interest	5,605	5,803	5,919	6,209	23,536
Depreciation and amortization	7,321	7,421	7,920	8,097	30,759
General and administrative	2,389	2,348	2,313	2,405	9,455
Property	616	622	754	699	2,691
Income taxes	288	0	0	0	288
Other	0	598	503	354	1,455
Provision for impairment loss	0	0	0	0	0
	16,219	**16,792**	**17,409**	**17,764**	**68,184**
Net operating income	**32,226**	**32,102**	**34,109**	**35,489**	**133,926**
Income from operations	17,019	17,109	18,646	19,500	72,274
Gain on sales of investment properties	340	0	0	0	340
Income from continuing operations	17,359	17,109	18,646	19,500	72,614
Income (loss) from discontinued operations	935	1,336	3,174	607	6,052
Net income	18,294	18,445	21,820	20,107	78,666
Preferred stock dividends	(2,428)	(2,428)	(2,428)	(2,428)	(9,712)
Net income available to common stockholders	15,866	16,017	19,392	17,679	68,954
Reconciliation of net income to FFO:					
Net income	15,866	16,017	19,392	17,679	68,954
Depreciation and amortization:					
Continuing operations	7,321	7,421	7,920	8,097	30,759
Discontinued operations	183	218	44	23	468
Depreciation of furniture, fixtures and equipment	(33)	(34)	(37)	(32)	(136)
Provision for impairment losses:					
Discontinued operations	160	670	150	340	1,320
Gain on sales of investment properties:					
Continuing operations	(340)	0	0	0	(340)
Discontinued operations	(774)	(1,305)	(3,066)	(813)	(5,958)
Funds from operations	**22,383**	**22,987**	**24,403**	**25,294**	**95,067**
Reconciliation of FFO to AFFO:					
Provision for impairment losses	0	0	0	0	0
Amort. of settlements on treasury lock agreements	189	189	189	189	756
Amort. of deferred financing costs	238	242	145	(46)	579
Amort. of stock compensation	131	152	155	157	595
Capitalized leasing costs and expenditures	(154)	(76)	(45)	(102)	(377)
Capitalized building improvements	(22)	(405)	(78)	(137)	(642)
Straight-line rents	(397)	(21)	287	(15)	(146)
AFFO	**22,368**	**23,068**	**25,056**	**25,340**	**95,832**
Per share:					
Net income	$0.48	$0.48	$0.56	$0.51	$2.03
Diluted FFO	**$0.68**	**$0.69**	**$0.71**	**$0.72**	**$2.80**
Diluted AFFO	$0.68	$0.69	$0.73	$0.73	$2.82
Weighted average shares outstanding:					
Basic	33,044	33,310	34,483	34,871	33,927
Diluted	33,092	33,368	34,538	34,928	33,982
Distributions per common share	$0.57	$0.57	$0.58	$0.58	$2.30
FFO payout ratio	83.8%	83.2%	81.4%	80.3%	82.1%
AFFO payout ratio	84.3%	83.0%	79.7%	79.7%	81.6%

Source: RBC Capital Markets

APPENDIX IV

"Examples of NAV Calculation Schemes"

Estimate of Current Value of FRT's Operating Real Estate

	12/31/2004
LTM real estate revenues	$391,841
Less straight-line rents and SFAS 141	($5,200)
Revenues	$386,641
Real estate operating expenses	$131,041
NOI	$255,600
NOI margin	*66.1%*
Mid-period activity adjustment (1)	$2,047
Internal growth at 3.4%	$8,582
Pro rata share of JV NOI	$577
Minority interest in NOI	($4,800)
Discontinued operations NOI	$2,068
Total forward-look NOI	**$264,074**

Asset type	%NOI	NOI	"Cap ex" Percent	"Cap ex" Amount	Economic NOI	Economic Cap Rate	Nominal Cap Rate	Real Estate Value
Strip center	95.7%	$252,719	11.1%	$28,052	$224,667	5.63%	6.33%	$3,990,533
Residential	4.3%	$11,355	11.0%	$1,249	$10,106	5.40%	6.07%	$187,150
Total	100.0%	$264,074	11.1%	$29,301	$234,773	5.62%	6.32%	$4,177,683

FRT NAV Estimate

Assets	12/31/2004
Operating real estate	$4,177,684
Construction in progress at 110% of book	$37,070
Land held for development (2)	$35,000
Cash	$30,475
Mortgage notes receivable	$42,909
Tenant and other receivables (3)	$16,051
Value from condo conversion (4)	$45,844
Other real estate investments	$9,631
Other assets	$17,500
Total assets	$4,412,164

Liabilities	
Mortgage and notes payable	$1,304,057
Pro rata share of JV debt	$14,200
Less minority interest share of debt	$0
Value of mark-to-market debt	$161,078
AP and other liabilities	$153,351
Total liabilities	$1,632,686
% if assets	37.0%
Total preferred stock @ market value	$144,612
% if assets	3.3%
Total liabilities and preferred stock	$1,777,298
% if assets	40.3%
Current Value of Equity	**$2,634,866**
Shares outstanding	52,137
Units outstanding	449
Options dilution	631
Total shares/units outstanding	53,217
Diluted NAV/sh	**$49.51**

(1) Reflects NOI impact of acquisitions, developments, and dispositions over the last 12 months.
(2) Reflects entitled 18-acre land parcel at Santana Row.
(3) Less estimate for straight-line rent equal to 6.5% of annualized base rent.
(4) Incremental value created by the conversion of 219 Santana Row apartment units to condominiums

Source: Green Street Advisors

Adjusted 12-month Forward NAV Calculation Current Operating Portfolio and Estimate Re-Development Portfolio ($$$ in 000)

Operating Portfolio	
Annual estimated 3Q 2006 revenues	$108,630
less annual estimated 3Q 2006 operating expenses	$32,342
equals Annualized 2Q 2006 NOI estimate	$305,149
divided by Cap rate assumption	7.00%
equals Estimated portfolio value	$4,359,278
plus annualized fees capped at 11%	$9,091
plus Cash and other assets	151,371
equals Total assets	$4,519,739
minus debt and preferred	1,619,462
estimated NAV	$2,900,278
divided by shares outstanding	53,483
equals Estimated Forward NAV per share of CURRENT OPERATING PORTFOLIO	**$54.23**
Est. Re-development Portfolio 2007-2009 (assumed financing is 50% debt and 50% equity)	
Value added re-development Cost (est. redevelopment 2007-2009)	$300,000
multiplied by estimated return on re-developments	12%
equals Estimated Revenues	$36,000
Estimated NOI	$27,360
divide by cap rate assumption	7.00%
equals Gross Real Estate Value	$390,857
less Debt financing	$150,000
equals Net equity	$240,857
divided by Shares outstanding (assumes an additional 2.1M shares issued at $70)	57,154
equals Net asset value (NAV) per share estimate of development portfolio	**$4.21**
NAV after discounted back at 10%	**$3.48**
Aggregate NAV Estimate of Federal Realty Portfolio	
NAV Estimate of CURRENT OPERATING PORTFOLIO	$54.23
NAV estimate of RE-DEVELOPMENT PORTFOLIO	$3.48
Adjusted 12-month forward NAV estimate	**$57.71**
plus a 15% premium due to niche business model, irreplaceable assets and relative FFO and dividend growth.	$7.87
Adjusted 12-month forward NAV estimate	**$65.58**

Source: Stifel, Nikolaus & Company

Amerivest Properties
Net Asset Valuation at Various Capitalization Rates

Value of occupied portfolio		
Annualized 2006 estimated NOI	$29,000	$29,000
Assumed Cap Rate	**8.50%**	**9.25%**
Gross Real Estate Value	$341,176	$313,514
plus Current Assets	$15.863	$15.863
equals Total Assets	$357,039	$329,377
minus Debt & Preferred	$235.677	$235.677
equals Net asset Value	$121,362	$93,700
divided by Shares Outstanding	24,093	24,093
equals Net Asset Value per Share of OCCUPIED SPACE	**$5.04**	**$3.89**
Value of a portion of AMV's vacant space. Assumes portfolio is 91% occupied vs. 88% currently.		
Square feet (represents 3% of AMV's vacant space)	75	75
Gross rent per foot assumption	$19.25	$19.25
Gross rent	$1,444	$1,444
Valuation cap rate assumption	10.00%	10.00%
Gross real estate value	$14,438	$14,438
Cap ex and leasing commission assumption ($30 per foot)	$2,460	$2,460
NAV	$11,978	$11,978
NAV per share of UNOCCUPIED SPACE	**$0.50**	**$0.50**
NAV of OCCUPIED SPACE	$5.04	$3.89
NAV of portion of UNOCCUPIED SPACE	$0.50	$0.50
Aggregate NAV estimate	**$5.53**	**$4.39**

Source: Stifel, Nikolaus & Company