The globalization of real estate markets - effects on efficiency and liquidity by an introduction of REITs in Sweden

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ABSTRACT

During the last decades, the features of capital markets have changed significantly where an increased globalization has led the creation of a more integrated and global market. Likewise, property investment has changed significantly with an enlarged integration with other investment classes and a broader and more international market for investments.

The introduction of real estate investment trusts (REITs) has both made property markets more competitive and comparable to other main investment classes. Consequently, as more countries introduce REIT-like structures, the pressure among other countries to initiate similar structures (to take advantages of the same benefits) increases. This study consequently illustrates some of the benefits of introducing REITs.

In the study, we demonstrate that liquidity of REIT-like structures has grown significantly and is frequently superior in comparison to ordinary real estate companies with similar market capitalization. Further, both efficiency tests and an observed reduction in the traditional discount to net asset value, indicates that REITs markets are more efficient and transparent. Third, the inclusion of European REITs in a mixed asset portfolio results in an outward bend in the efficient frontier, indicating an enhanced risk/return relationship. Finally we argue for an introduction of REITs in Sweden.
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1. INTRODUCTION

1.1 PROBLEM DISCUSSION

During the last decades, the features of capital markets have changed significantly. Globalization, the issue of international economic integration of national economies into larger transnational markets, has led the creation of a more integrated and global capital market. International capital markets have enlarged investment opportunities and investors have become more willing to invest internationally.1

Likewise, property investment has changed notably during the last decades. With the increasing integration between national markets and an increased integration with other main investment classes, property has expanded from the selection of individual buildings to include a more extensive portfolio perspective. Analyses and methods have been developed to consider property more explicitly in the wider context of capital markets and overall economies.

Property is today one of the main investment classes, and a historical strong performance of real estate has increased the interest in real estate as an asset class.2 In comparison to traditional asset classes, property have been found to offer an attractive risk-return relationship combined with low correlation to other asset classes, which makes property to an attractive selection in mix-asset diversified portfolios.3

Nevertheless, direct property investments suffer from a number of characteristics which limit the attractiveness. These characteristics include features as (1) the lack of a central market for property, (2) illiquidity, (3) high unit values of property investments and (4) management requirements. Also, high transaction costs or the need for local market knowledge may also constitute a barrier to entering the direct property market for both domestic and foreign investors.4

In order to ease the drawbacks of direct property investments, various types of indirect property vehicles have been developed. The fundamental idea of these indirect investments is to pool property assets and by purchasing shares of these pools, an investor can indirectly hold property assets. A real estate investment trust (REIT) is an example of such indirect

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1 O’Brien, R. 1992
2 Bennet, Hammond, Hobbs and Hughes, 2005
3 Hoesli, M, and MacGregor, B. D, 2000
4 ibid
investment vehicle and were defined and authorized by the US congress, in the Real Estate Investment Trust Act of 1960. The legislation allowed individual US investors to group their investments and form special purpose companies who invested in real estate in order to benefit from the same opportunities as direct real estate owners. This resulted in a large number of US REITs (currently over 200 publicity traded), which hold assets over $500 billion.5

In Europe, REIT-like structures have so far been rare, but are likely to become more common in the future. REIT-like structures now exists in European countries such as Netherlands, Belgium and France, and due to successful results in those countries, an introduction is today also discussed in several other European countries such as the UK, Germany, Spain, Finland and Italy.6 Motives for introducing REIT-like structures includes further development of national market by additional domestic capital, and the possibility to attract foreign capital from nearby countries that lacks similar investment vehicles. An interesting issue is to examine the effects of a possible introduction of REITs in Sweden.

As mentioned, real estate is associated with several characteristics, which may limit the attractiveness of investments. A major issue is the illiquidity of real estate, which is a crucial stake for investors (reselling illiquid securities may result in significant losses) and affects the effectiveness of the market and the risk premium. The liquidity and availability offered by REITs mitigates some of these aspects of real estate investment. This invites the question of REIT efficiency, and accordingly how the real estate market in Sweden would be affected by the introduction of REITs in terms of efficiency and liquidity.

Another aspect of real estate investment trusts is that they offer an interesting alternative to the traditional asset classes. With stable returns, low volatility due to transparency and low correlation with other assets, investing in REITs can enhance portfolio performances, which makes it interesting to study the effects of including REITs into a mix-asset diversified portfolio.

1.2 PROBLEM SUMMARY

The main objective of the study is to examine and analyze the effects of a possible introduction of REITs in Sweden, in comparison to the ongoing introduction of REITs in Europe. The study seeks to answer how the real estate market in Sweden is affected by the

5 Block, R. L. 2002
6 Deutsche Bank Research, 2004
introduction of REITs in terms of efficiency, liquidity and availability. The study also illustrates the general benefits of including REITs into a mix-asset diversified portfolio.

1.3 DEMARCATIONS OF THE STUDY

There are three main types of REITs: equity REITs, mortgage REITs and hybrid REITs. An Equity REIT is a publicly-traded company that manages, maintains, sells, acquires and frequently develops properties. A mortgage REIT is a REIT that makes and holds loans and other obligations secured by real estate, while a hybrid REIT is a combination of equity REITs and mortgage REITs. Although mortgage REITs can deliver spectacular investment returns, equity REITs are less vulnerable to changes in interest rates and have historically provided better long-term total returns, more stable market-price performance, lower risk and greater liquidity.7 Due to the uncomplicated characteristics of equity REITs, the study focuses solely on equity REITs.

While it is interesting to compare a possible introduction of REITs in Sweden with REIT structures all over the world, it is more meaningful to compare countries with similar characteristics. The focus of this study is therefore chosen to study a selection of similar European countries. The literature used in the study is concentrated to a selection of reference material and previous studies. We have neither chosen to study all legal aspects of REITs.

1.4 APPROACH

The thesis is based upon a description of the development of European REITs, where the prerequisites for an introduction of REITs in Sweden are examined in accordance to the European results. Also, the effect of REITs in terms of market efficiency and liquidity are studied quantitatively. The analysis is extended with qualitative interviews.

1.5 ORGANIZATION OF THE PAPER

The paper is organized as follows: In the first section, REITs characteristics and their relation to other asset classes is presented, as well as the development of European REIT structures. In the following section, the relation between real estate and REITs on market efficiency is illustrated. The methodology chapter explains the methodology used to conduct the study and the data used in the study is presented. The final section contains the results, analysis and the main conclusions of the study.

7 Block, R. L. 2002
2. REIT CHARACTERISTICS

2.1 REAL ESTATE INVESTMENT TRUSTS

A REIT is a real estate company or trust that has elected to qualify under certain tax provisions to become a pass-through entity that distributes to its shareholders almost all of its earnings and capital gains generated from the disposition of its properties. The REIT does not pay tax on its earnings if it distributes all otherwise taxable income as dividends, but the distributed earnings do represent dividend income to its shareholders and are taxed accordingly.

A REIT is overseen by financially skilled management teams that handle all types of real estate operations such as acquisitions and sales of properties, property management and leasing, property rehabilitation and repositioning and property development.

To qualify as a U.S. REIT for tax purposes, the trust must although strictly satisfy certain asset/income/and distribution requirements:

- A REIT must distribute at least 90 percent of its annual taxable income, excluding capital gains, as dividends to its shareholders.
- The REIT must have at least 75 percent of its assets invested in real estate, mortgage loans and shares in other REITs, cash or government securities.
- The REIT must derive at least 75 percent of its gross income from rents, mortgage interest, or gains from the sale of real property. At least 95 percent must come from these sources, together with dividends, interest, and gains from securities sales.
- The REIT must have at least 100 shareholders and must have less than 50 percent of the outstanding shares concentrated in the hands of five or fewer shareholders.

REITs are also attractive additions to diversified investment portfolios because of a relatively low correlation between REIT and publicly traded real estate stock returns and the returns of other market sectors. According to the US’ National Association of REIT (NAREIT), REIT stocks’ correlation with the S&P 500 during the period from January 1993 through October 2001 was only 0.24, and over the last 30 years the correlation of REIT returns to the returns of other stocks and bonds has declined significantly.

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8 Hoesli, M, and MacGregor, B. D, 2000
9 ibid
10 Block, R. L. 2002
"The goal of diversification is to lower the risk of a portfolio for a given level of return. Because of their declining correlations with other types of investments, REITs offer a significant source of portfolio diversification."  

- Michael C. Henkel, President, Ibbotson Associates

REITs also have fairly transparent assets where almost the entire share consists of tangible assets. Because the predictability and steadiness of REITs’ rental revenues, occupancy rates and real estate operating costs, it is normally possible to forecast yearly results in detail. The predictability and steadiness affect the volatility of REITs and create less concern about major fluctuations in share prices. This makes the valuation process transparent, which reduces the variability in returns.

Further advantages with high-yielding investments such as REITs, is that REITs provide a steady income even during the occasional bear market. This can prevent investor from becoming discouraged to sell out as market downturns. The high-yield of REITs acts as a hedge against market fluctuations and price declines. As a consequence, the shareholder can use the returns occurring from dividends according to their own preferences (a decision between reinvest or to withdraw/invest the funds elsewhere).

REITs also tend to reduce the discount to net asset value, normally related to real estate companies. Nevertheless, REITs are not immune to trading at a discount, but the discounts are significantly lower than what is historically observed in non-REIT real estate companies. REITs also offer the liquidity of being publicity traded and are consequently an easy way for individuals to own commercial real estate. Investing in REITs hence combines the possibility to benefit from the real estate asset class and enjoying significant tax benefits, also avoiding the work and risk that derives from trading and managing private and commercial real estate.

2.2 REITs ADVANTAGES IN COMPARISON TO OTHER ASSET CLASSES

Over reasonably long time periods, assets total over $500 billion the total returns of REITs have been fairly competitive with those provided by the broader asset market. During the period 1981-2001, equity REITs has delivered an average annual total return of 12.6 percent to their investors (including both stock price appreciation and dividends).

11 Block, R. L. 2002
12 ibid
13 ibid
The statistics below (table 1) are derived from analysis of the monthly total returns of government bonds, preferred stocks, corporate bonds, REITs and the broader equities market during the period January 1992–March 2004\textsuperscript{14}.

<table>
<thead>
<tr>
<th></th>
<th>Return Total Annual Returns</th>
<th>Correlation Between Government Bonds and:</th>
<th>Volatility Standard Deviation of Monthly Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Bonds</td>
<td>7.75%</td>
<td>-</td>
<td>1.73%</td>
</tr>
<tr>
<td>Preferred Stocks</td>
<td>8.17%</td>
<td>0.55</td>
<td>1.11%</td>
</tr>
<tr>
<td>Corporate Bonds</td>
<td>7.33%</td>
<td>0.96</td>
<td>1.11%</td>
</tr>
<tr>
<td>NAREIT Composite</td>
<td>13.32%</td>
<td>0.03</td>
<td>3.37%</td>
</tr>
<tr>
<td>S&amp;P 500</td>
<td>10.60%</td>
<td>-0.05</td>
<td>4.20%</td>
</tr>
</tbody>
</table>

Source: Kensington Investment Group

Observably, investing in REITs offers a possible way to realize the economic benefits of real estate, obtaining stable, consistent income and long-term growth, while increasing portfolio diversification (normally beyond what other common stocks and fixed income securities can offer - see Appendix A for more information).

### 2.3 REITs - DISADVANTAGES

Despite several long-term advantages of owning REITs, REITs are also subject to some major threats, including the attractiveness of alternative investments, and especially the behaviour of the underlying real estate. As a high-yield investment, a REIT can also be expected to exhibit sensitivity to interest changes. Normally there exists a strong inverse relationship between REIT prices and interest rates. When interest rates rise, cost increases which eventually can reduce the growth of a REIT. Rising interest may also slow the economy, which in turn is likely to reduce return for rental space and affects the results of REITs. Furthermore, rising interest rates can have implications for REIT stock pricing when other investments become relatively more attractive.\textsuperscript{15}

\textsuperscript{14} Kensington Investment Group. Performance of preferred stocks measured by the Merrill Lynch Preferred Index, corporate bonds by the Solomon Brothers Broad Index, and government bonds by the Bloomberg/EFFAS 7–10 Yr. Bond Index, monthly returns for the period 1992–2004

\textsuperscript{15} Block, R. L. 2002
It is also important to point out that the long-term advantages of REIT stocks ownership are not enjoyed every year, and REIT stocks can also be subject to the trends prevailing in the broad equity markets from time to time.\textsuperscript{16}

2.4 RESULTS OF THE INTRODUCTION REITs IN EUROPE

In Europe, REIT-like structures have for long time been rare, but due to an increased interest of REITs in several countries, REITs are likely to become more common in the future. REIT-like structures currently exists in the Netherlands, Belgium and France and an introduction is today also discussed in several other European countries such as the UK, Germany, Spain, Finland and Italy.\textsuperscript{17}

In the Netherlands, a REIT-like structure was introduced as early as 1969 with the intention to provide for a vehicle through which individual investors could pool their investments. Dutch real estate structures are today amongst the largest institutional real estate investors in Europe, partly because of favorable tax legislation related to the structures (the vehicle bring its investors into the same after tax position they would be in if holding the investment directly).\textsuperscript{18}

In Belgium, SICAFI (Société d’investissement à capital fixe en immobilière), a new form of real estate investment vehicle was introduced 1995, which also were subject to a favorable tax system with the purpose to: (1) raise the expansion of Belgian real estate, and (2) to extend the possibilities to cooperatively invest in real estate and (3) to compete with the similar vehicles in the Netherlands. The SICAFI is a listed property fund with a fixed amount of corporate share capital whose function is to offer tax neutrality for assembling and distributing the rental income as dividends.\textsuperscript{19}

In 2003, France introduced the SIIC (Sociétés d’investissements immobiliers cotées), a property investment vehicle intended to: (1) promote the development of domestic property funds and to (2) attempt to compete with the more attractive tax regimes for property investment in the Netherlands and Belgium, and (3) to produce non-recurring budget resources to help reduce the French deficit.\textsuperscript{20} Both the French and Belgium version of REITs were initiated to develop the national market, but also to compete with other nations about capital invested in real estate (a fact, which is submitted to a more profound analysis in the

\textsuperscript{16} Block, R. L. 2002
\textsuperscript{17} Deutsche Bank Research, 2004
\textsuperscript{18} Loyens & Loeff, 2005
\textsuperscript{19} ibid
\textsuperscript{20} Loyens & Loeff, 2005
conclusion of this paper). Since the introduction, the French listed real estate sector has benefited significantly and the EPRA/NAREIT France Index has returned approximately 130% since 2003. The take-up in France was significant and all former listed French property companies today chosen to become SIICs.21

The effect on values has been remarkable - the shares of French real estate companies were in the second half of 2004 traded at an 8 percent premium to net asset value (30 percent premium in the Netherlands), as opposed to a historical average since 1990 of a 26 percent discount to net asset value in France.22 This could to large extent be explained by the introduction of REITs on the market. Also, the market capitalization has grown from €10 to €25 billion23 and the daily volumes exchanged have increased for almost all property companies.

Batch, Chouillou and Tannenbaum (2005) presents how the traded value in France, as a proxy for liquidity, has rose by 244 percent since the start in December 200224. This effect is both due to higher price in the securities but foremost due to an increase in the number of trades. Several French property companies are relatively small and the number of exchanged securities per day was before the introduction relatively low. But due to the increased interest of investors, the market liquidity has increased accordingly.

Beside the effect on liquidity, the observed phenomenon also indicates a more efficient market where prices of the securities better reflect the underlying value. The increase liquidity offers an improved visibility to real estate companies, which results in improved and more accurate values. As a result of the adoption of SIIC status, French property companies have grown significant in value and size, often outperforming their European competitors.25

The success of the REIT-like structures in France, Belgium and the Netherlands has also prompted other major EU economies to consider the adoption of a similar investment vehicle. In Germany, which by far has the largest real estate reservoir in Europe, the German Ministry of Finance in January 2005 announced its intention to introduce German REITs. The legal structure and taxation issues of German REITs are currently discussed, and an introduction of is expected earliest in the end of 2006.26 In the UK, the government has stated aim to introduce an UK REIT regime, 2006 or 2007 at the earliest.

21 Fraser, Hudges and Jorrit, Arissen, 2005
22 Arumi, C, and Ivinson, J, 2005
23 Fraser, Hudges and Jorrit, Arissen, 2005
24 Batsch, Chouillou and Tannenbaum, 2005
25 ibid
26 Just, Kemper, Schulte-Hillen and Van Kann, 2005
In Italy, a REIT-regime does not form part of the legal system, but the Italian legal system does provide for a favorable tax-exempt regime for portfolio/real estate investments, called *fondi di investimento immobiliare* (real estate investment funds). The regime is a transparent fund investing exclusively or predominantly in immovable assets and shareholdings in real estate companies.27

### 2.5 REITs IN SWEDEN

The Swedish real estate market is to a large extent characterized of high/medium quality properties with good market liquidity and competitive level of yields (which in many areas faces downward pressure due to a high demand for properties, high transparency and low rents)28. In terms of office volume, Stockholm is Europe's tenth largest property market. There is also substantial office and commercial stock in the other metropolitan areas, such as Gothenburg and Malmö/Lund.29

Listed companies, insurance companies, state-owned companies and foreign owned companies primarily own commercial properties, while the municipal companies primarily own residential. Private companies own a mixture of commercial and residential real estate. Almost two thirds of commercial property assets were 2004 owned by a mix of institutional investors (47%) and listed real estate companies (17%).30

The inflow of foreign capital has been significant during the latest years, contributing to Sweden's position as Europe's sixth largest investment market for real estate. Investors that have entered Sweden span the full investor spectrum, including US- and UK-based property investment funds, public German real estate funds, pan-European property investment companies and Norwegian and Danish investors.31 By the end of 2004 foreign investors owned real estate assets in Sweden valued at 131 billion SEK, equivalent to 21.3% of the estimated total market value of 614 billion SEK.32

The new investors are of significant importance for the liquidity of the market. Since 2002, the total value of the yearly property transactions in Sweden has risen from 40 billion SEK to over 100 billion SEK 2005,33 to a large degree because of the high liquidity on the Swedish

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27 Loyens & Loeff, 2005
28 Nordic City Report, Autumn 2005
29 Sweden’s leading property owners 2003-2004
30 Invest in Sweden – Real Estate, 2005 edition
31 ibid
32 Invest in Sweden – Real Estate, 2005 edition
33 Andersson, Klas - SvD Näringsliv 19 December 2005
market. Demand exceeds supply and consequently the market is becoming more liquid.\(^\text{34}\)

Further factors that are of importance are the limited bureaucracy in Sweden, high transparency, the ease of doing businesses and the historical low interest rates.

"In terms of liquidity, transparency and ease of doing business, Sweden is one of Europe’s most highly developed markets for real estate."

- Philippe Camu, Managing Director, Goldman Sachs\(^\text{35}\)

Together with the UK, France, Netherlands and Germany, Sweden ranks as one of Europe’s most attractive real estate investment markets\(^\text{36}\), and figures from IPD, Investment Property Databank, placed Sweden third among Europe’s most liquid real estate markets in 2003.

In 1996, the study “A revitalized property market as a result of a new vehicle for property investment”\(^\text{37}\) analyzed the characteristics of the Swedish real estate market with the aim to come up with a new vehicle of investing in real estate based on REIT foundations. The idea with the vehicle, denominated FIB (fastighetsinvesteringsbolag) was to attract more capital to the market and to improve the market liquidity and market efficiency.

FIBs were intended to be an engine, which could attract additional equity capital and improve the market liquidity. FIBs would provide an attractive form of investment for many categories of investors because shares in FIBs would offer the advantages of direct investments without the disadvantages in the form of illiquidity and high unit values.\(^\text{38}\) FIBs would also give small investors a possibility to pool their investments and to invest directly in large properties and property portfolios via an untaxed intermediary.

FIB would also provide opportunities to improve overall portfolio performance, as portfolio managers would have better opportunities to diversify in the property sector as the FIBs would have clear profiles regarding the type of property, location and the yield and risk characteristics.\(^\text{39}\) The balance between property investment and investments in other types of assets would be easier to achieve in a varied and liquid market with many buyers than in a market restricted to a small number of buyers.

\(^{34}\) Nordic City Report, Autumn 2005
\(^{35}\) Invest in Sweden – Real Estate, 2005 edition
\(^{36}\) ibid
\(^{37}\) Vinell, L, 1996
\(^{38}\) ibid
\(^{39}\) ibid
In June 1998, a proposal based upon the study was sent to the Swedish ministry of finance by a group of institutional investors and the Swedish Aktiefrämjandet, with the purpose of initiating a tax-reform through FIBs with tax-exempt dividends. According to the proposal, the motive was to create a more stable and effective real estate market in Sweden.\(^{40}\) The Ministry of Finance and the Swedish parliament noticed the requirement of new investment vehicles for real estate (especially for investors which are to small to invest in direct real estate), but rejected the proposition with the argument that (1) the Swedish real estate market were already stable, and (2) because the government did not want to favour any particular industry more than other industries with the introduction of a more favourable tax-legislation.\(^{41}\)

According to Olle Halldorf, at the Swedish Ministry of Finance, the proposal was prepared at a time when the real estate industry was recovering from a deep recession, but when the actual proposition was made the market was already reasonable stable, which consequently made the need of FIB’s less urgent. The Swedish law also imposes that the tax system shall be equal to all businesses, and both dividends and returns on capital shall be taxed at once.\(^{42}\)

For the subject to be discussed once more, a prerequisite is that a new proposal in comparison to the previous proposal gets some new actuality, but due to a current low political interest of REITs in Sweden, such a debate/proposition is at present not likely to come up for discussion within the forthcoming years.\(^{43}\)

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\(^{40}\) Skatteutskottets betänkande 2001/02:SkU15 (motioner om företags- och kapitalbeskattning)

\(^{41}\) ibid

\(^{42}\) Interview with Olle Halldorf, Ministry of Finance, 2005-12-20

\(^{43}\) Interview with Johan Temse, DTZ Sweden, 2005-12-19
3. THEORETICAL FRAMEWORK

3.1 MARKET EFFICIENCY AND REAL ESTATE

The Efficient Market Hypothesis evolved in the 1960s by Eugene Fama, which made the argument that in an active market, which includes many well-informed and rational investors, securities will be appropriately priced and reflect all available information. If a market is efficient, all relevant information about an asset is reflected in its price and no information or analysis can be expected to result in out-performance of a suitable benchmark.\textsuperscript{44} As the random walk theory suggest, deviations from this relation continually arise. Dependent on the traded asset these deviations occur more frequently and for a longer time periods. Nonetheless, these deviations are randomly distributed (both positive and negative) why the main implication of an efficient market is that investors are unable to consistently earn abnormal returns. This means that information or analysis cannot be expected to result in out-performance of a suitable benchmark.\textsuperscript{45}

The real estate market has generally been linked with the weak or semi-strong form of market efficiency, which requires that all past market prices is incorporated into today’s prices (weak form) or market prices fully reflect all the relevant publicly available information (semi-strong form).\textsuperscript{46} Implicitly this means that investors theoretically are unable to form a buy and sell strategy, based on historical performance to consistently earn abnormal returns.

Related research, for example Blundell and Ward (1987), MacGregor and Nanthakumaran, (1992), and Barkham and Geltner, (1994)\textsuperscript{47} provides some insight into market efficiency by examining whether past values of prices and other variables can be used to forecast future returns. Property returns, as proxied by valuations, have been consistently shown to exhibit serial correlation (where returns in one period are correlated with those in previous periods), which violates the weak and semi-strong form efficiency. Clayton (1998),\textsuperscript{48} finds significant evidence for inefficiency in residential properties. Both past price movements and the ratio of current rents to house prices have some power to forecast future price movements. On average, negative returns from two years ago are correlated with positive ones today. Consequently, knowledge of past returns can help forecast future returns.

\textsuperscript{44} Fama, E., 1965
\textsuperscript{45} Damodaran, 2005
\textsuperscript{46} Hoesli, M, and MacGregor, B. D, 2000
\textsuperscript{47} Blundell and Ward, 1987, MacGregor and Nanthakumaran, 1992, Barkham and Geltner, 1994
\textsuperscript{48} Clayton, 1998
Although many studies indicate that real estate markets do share characteristics linked with weak form of efficiency, very few actually present a viable model for exploring those inefficiencies.\textsuperscript{49} One reason is the characteristics related to real estate that complicates the buy and sells strategy, especially the liquidity, transparency and the lack of a central marketplace etcetera. Furthermore, most transactions of real estate are associated with high transaction costs and substantial capital investment and therefore restricted to a certain group of investors. As a consequence of these special characteristics, prices differ from the “fair” value and the real estate market often become inefficient.

3.2 LIQUIDITY AND REITS

The illiquidity of the real estate market depends of a number of reasons. For example real estate owners normally own and manage properties on a long-term basis, which reduces the liquidity of the asset. High transaction costs combined with high unit values of real estate that restricts investment in real estate for smaller investors, also reduces the liquidity and thus increase the risk premium.\textsuperscript{50}

The discussion about liquidity and REITs is divided into two main areas: (1) the effect that capital flows from REIT investments have on the direct property market - will more capital increase the liquidity and reduce the observed discount to net asset value when selling property? (2) Are REITs themselves a liquid form of investment, i.e. do shareholder of REITs has to offer a discount when selling shares? Other areas of interest directly related to efficiency in market prices are whether past REIT returns can explain future returns.

The discount to net asset value, at which many real estate companies historically have been trading as previously discussed, has been significantly reduced or totally eliminated in many of the countries who have adopted the REITs. Clayton and MacKinnon (2002)\textsuperscript{51} confirms that US REITs on average trades on a premium relative their net asset value and also that the size of the premium depends on the variation in REIT sector growth opportunities and the value investors place on REIT liquidity. They find evidence of a significant liquidity premium in REIT prices relative to property net asset value that varies systematically with the liquidity of real estate.

\textsuperscript{49} Jirasakuldech and Knight, 2005  
\textsuperscript{50} Vinell, 1996  
\textsuperscript{51} Clayton, J and MacKinnon, G, 2002
Bhasin, V., R. Cole and J. Kiely (1997)\textsuperscript{52} later use a model on data from 1990-94 and finds that return variance and share price are the primary determinants of percentage spreads. Greater variance gives rise to wider spreads, while higher share prices give rise to lower spreads. The results suggest that the liquidity of REIT securities is similar to other common stocks with similar prices and return variance.

On the other hand, Ghosh, Miles and Sirmans (1996) find that REIT liquidity may not be as large as comparably sized non-REIT stocks. Clayton and MacKinnon (2000)\textsuperscript{53} used a market depth approach and found that self-advised, self-managed REITs exhibited an increasing liquidity from 1993 an onwards. Their results suggest a decline in asymmetric information that market-makers face in the weak or semi-strong form of market efficiency of real estate markets (and also a greater knowledge of REIT fundamentals among traders), which in turn should reduce their bid-ask spread.

\textit{Batch, Chouillou and Tannenbaum} (2005) presents how the traded value in France, as a proxy for liquidity, has rose since the introduction of REITs in France.\textsuperscript{54} The observed phenomena indicate that beside the liquidity effect, a more efficient market where prices of the securities better reflect the true value has been developed. This is also confirmed by calculations that indicate that the French real estate sector has gone from trading at a discount to net asset value to trading at a premium.

REIT has also had a significant effect in terms of market capitalization. In the US, the market has according to NAREIT, grown by more than 5600 percent during the last decade\textsuperscript{55} This is also true for Europe where for example France SIIC market cap have risen significantly since introduction in 2003, demonstrating the improved ability to trade the stock in the market. Introducing REITs may accordingly have a considerable effect on the efficiency and liquidity of markets.

\begin{enumerate}
\item Bhasin, V., R. Cole and J. Kiely, 1997
\item Clayton and MacKinnon, 2000
\item Batsch, Chouillou and Tannenbaum, 2005
\item The National Association of Real Estate Investment Trusts (NAREIT), 2005 - the market capitalization has risen from $5.5 billion in 1990 to $316 billion in November 2005.
\end{enumerate}
4. METHODOLOGY

4.1 QUALITATIVE SURVEY

The qualitative survey is based upon eight interviews (see interview references) with different respondents representing major real estate consultancies/investors represented in Sweden and one Swedish real estate investment fund, plus Olle Halldorf - special adviser at the Ministry of Finance and Lars Vinell, the author of the study “A revitalized property market as a result of a new vehicle for property investment,” from 1996.56 The interviews have been made in Stockholm during December 2005 through personal and/or telephone interviews (see interview guide in Appendix 4. The main conclusions of the interviews are briefly presented in the results.

4.2 PORTFOLIO EFFECTS

The modern portfolio theory is a standard tool for examining the importance of certain assets in a mix- and or multi-asset portfolio. It can be used to locate the optimal portfolio-mix of assets with the highest level of return for a given level of risk. Such portfolios are described as “efficient”, and rational investor would choose such portfolios. The performance of the portfolio not only depends on the risk and return of single assets, but also the correlation between them. Property returns, which have a low correlation with other assets, constitute an excellent opportunity in a portfolio to obtain better performance.

As mentioned, one of the aims of this study is also to illustrate the general benefits of including REITs into a mix-asset diversified portfolio. By forming an efficient portfolio of all assets, excluding REITs based on European data, it is possible to observe how the performance of the portfolio changes when REITs are introduced. The results on the European markets will lay the foundation for a discussion about Sweden, based on the changes in performance when REITs are introduced.

However, it is important to impose certain restrictions to the allocations. Excessive results may arise when an optimising model is applied to a multi-asset portfolio including real estate, i.e. some assets have zero allocations while others have very large allocations57. Although the resulting portfolios are statistically optimal, the results would be unacceptable to any wise

56 Vinell, 1996
57 Black and Litterman refers to those as corner solutions
To solve this issue we have chosen maximum weights that we consider relevant for a well-diversified portfolio. The weights are as follows:

- Gov bonds 0-0.3
- corp. bonds 0-0.3
- t-bills 0-0.5
- EPRA 0-0.2
- RE 0-0.2
- world stocks 0-0.4
- emerging markets 0-0.2
- nat index (BEL 20, CAC 40 and AEX 30) 0-0.4

4.3 EFFICIENCY AND LIQUIDITY

The test for liquidity and efficiency is divided into two parts. First, this study tries to identify whether REITs are a liquid form of investment, following the steps of Batch, Chouillou & Tannenbaum (2005) for France, using the traded volumes for different securities to calculate the time it takes to liquidate an €1.5 million position today and how it could have been done five or ten years ago. Secondly, to test for efficiency, we perform tests to see whether past returns can explain future ones. The tests are described below and are conducted with data from the European market.

I. RUN TEST

The run test, which is a non-parametric test, can be used when testing returns, which may be non-normally, and non-stationary distributed. The runs test examines a series of price changes, and designates each change as a (+), (-) or (0). A run occurs when consecutive positive or consecutive negative price changes occur more than once, and when the price changes to a different sign, the run is completed and a new run is started. The expected number of runs can be written as follows:

\[ E = \frac{1}{3}(2n - 1) \]

where:

- \( E \) is the expected number of runs
- \( n \) is the number of observations.

If there are excessively many or excessively few runs in the price series, then the series is not random, and it would then be possible for investors to predict future prices by means of a trading rule. Excessively few runs may infer that security price changes respond rather slowly with regard to the infusion of new information in the market or that a trend exists. Excessively many runs may indicate that prices over adjust when new information is made available to investors and/or that they are price reverting.

58 Batsch, Chouillou and Tannenbaum, 2005
In order to determine if the actual number of runs is significantly different than the expected number of runs, a test statistic (z-value) is calculated and compared to the predetermined alpha values. This study will use an alpha value of .05, which indicates with 95% accuracy that the observed value is not statistically different from the expected value. The z-value, which has an approximate normal distribution for large number of observations, can be written as follows:\(^{59}\):

\[ Z = \frac{(C - E[C])}{\sqrt{\text{var}(C)}} \]

where:

- \(C\) = total number of runs
- \(E[C]\) = expected number of runs

Using the 95% interval, any observed value outside the absolute critical value (1.96) would indicate some form of inefficiency. The test will be applied to 23 different REIT-like securities from Netherlands, Belgium and France.

A possible weakness associated with this test is when it’s applied to securities with infrequent trading (low liquidity) because of the likelihood of many consecutive zero returns. This would reduce the number of runs below the expected and indicate inefficiency although no serial correlation between prices exists. Some of the tested securities could demonstrate this type of characteristics.

II. SERIAL CORRELATION TEST

The serial correlation test is a parametric test that examines daily price data (of different REITs in or study), and it tests for significant positive or negative serial correlation in price changes over time. To determine whether a price series is random, the autocorrelation function examines the series of first differences in each security’s price. Given a series of data denominated, \(Y_1, Y_2... Y_N\) at time \(X_1, X_2... X_N\), the lag \(k\) autocorrelation function is defined as:

\[ R_k = \frac{\sum_{i=1}^{N-k} (Y_i - \bar{Y})(Y_{i+k} - \bar{Y})}{\sum_{i=1}^{N} (Y_i - \bar{Y})^2} \]

\(^{59}\) Taylor, Stephen J., 2005
Autocorrelation is a correlation coefficient. However, instead of correlation between two different variables, the correlation is between two values of the same variable at times $X_i$ and $X_{i+k}$. When applied here, the test will determine if the price change on day $t$ is correlated with the price change on day $t-1$, $t-2$, $t-3$, etc. through twenty-four time periods. Each of the time periods, also referred to as lags, will be analysed for price correlations or dependence. Insignificant serial correlations between all such lags will suggest price independence and validate the random walk theory. When conducting a parametric test it is important to be aware of the possible heteroskedasticity. A way to correct for this is to build in the standard errors of the test into the test statistics\textsuperscript{60}. Following the steps of Box and Jenkins (1970) this study will consider the serial correlation for any given lag to be significant if the absolute value of the estimated autocorrelation value is at least twice as large as the standard error for the test.\textsuperscript{61} Hence, if the absolute value of the estimated autocorrelation value is less for all lags, then price independence will be confirmed for that security and the random walk theory will be accepted.

Although signs of inefficiencies evidence would be generated, they have to be analysed in conjunction with the trading costs in mind. Even if signs exists which indicate inefficiency, that could allow a trading strategy to be formed, trading costs could widely exceed the benefits.

4.4 QUANTITATIVE DATA

The monthly data used to create the efficient frontiers were collected using the database EcoWin. Government and corporate bonds, t-bills, international stock (MSCI), emerging stock, direct property investments, leading local indices (CAC 40, AEX 30 and BEL 20) and EPRA (European Real Estate Association) for every respective country (proxy for REIT-like structures) were included to derive each efficient frontier. EPRA does however not perfectly represent the REIT-like structures, as it exclude small cap REITs but it work as a proxy. Also, no REIT-like security figures in any of the local indices, so autocorrelation is avoided. The data reaches from 1960 until today depending on the asset class, but every national time series is equally long within its asset class. All annualised returns, standard deviations and correlations of every asset class are presented in Appendix B. For the liquidity and efficiency tests, daily prices and volumes of every individual security were collected from EuroNext\textsuperscript{62} and Yahoo Finance (France). The data period stretches from 1995 (Netherlands) and 2000 (Belgium) until December 2005.

\textsuperscript{60} Taylor, Stephen J., 2005
\textsuperscript{61} Box and Jenkins, 1970
\textsuperscript{62} www.euronext.com
5. RESULTS

5.1 SUMMARY - INTERVIEWS

The interview summary is based upon a selection of the answers given by the respondents. Relevant issues have been how the real estate market in Sweden would be affected by an introduction of REITs in terms of efficiency and liquidity, and the effects of a possible introduction of REITs in Sweden, in comparison to the ongoing introduction of REITs in Europe.

According to Paul Kivimets - head of Research, Jones Lang LaSalle an introduction of Swedish REITs should most likely lead to a further improved liquidity and an increased demand for real estate. This could, in the current market-situation (“bull” market with fairly high liquidity), result in positive and negative consequences (for example overheating). The liquidity on the Swedish real estate market is currently good, but since it is not accessible for private investors through direct investments, REIT-like structures may be of interest.\textsuperscript{63}

An introduction of FIB would accord Lars Vinell lead to more modern and effective real estate market.\textsuperscript{64} Vinell indicates that the good/competitive liquidity is mainly a phenomenon in the major cities, and the liquidity is still lower in many smaller cities and less central areas. So, the difficulty with low/medium liquidity in Sweden in general still remains in many areas. Further, good liquidity is historically not the normality in Sweden, why the competitive liquidity seen for example on the Stockholm market, may diminish in the future.\textsuperscript{65}

Jan Wejdmark - CEO, NewSec investor services means that the liquidity is high today but that the liquidity isn’t of a crucial importance. Instead, if there are tax advantages (as in REITs) there is a naturally interest to invest.\textsuperscript{66} At presence, according to Jon Lekander - head of Investment Strategy, Aberdeen Property Investors, an introduction of REITs in Sweden would however not be totally favorable. Listed Swedish real estate companies are as well highly liquid, why it already is possible for private investors and institutions to own indirect real estate (through shares) and benefit from the liquidity seen on the real estate market today.\textsuperscript{67}

\textsuperscript{63} Interview with Paul Kivimets, 2005-12-19
\textsuperscript{64} Interview with Lars Vinell, 2005-12-19
\textsuperscript{65} Interview with Lars Vinell, 2005-12-19
\textsuperscript{66} Interview with Jan Wejdmark, 2005-12-20
\textsuperscript{67} Interview with Jon Lekander, 2005-12-19 and 2005-12-20
Today it is also often favorable to introduce a real estate company on the stock exchange, says Johan Temse - head of research, DTZ Sweden.68

Nonetheless, Sven Dahlin - head of Analysis and Strategy, Leimdörfer, means that many listed real estate companies have a tax-disadvantage (double-taxation) in comparison with unlisted real estate companies (which can reduce tax through acquisitions etcetera). Large, listed companies also have stipulated rules of certain levels of solidity, which further increases the tax-disadvantages. REITs hence facilitate investments in real estate companies through a competitive tax-legislation.69 However, as Olle Halldorf, says, the Swedish law impose that the tax system shall be equal to all businesses, and both dividends and returns on capital shall be taxed at once.70

The interest for REITs in Sweden has so far been low, but as more countries in Europe introduce REIT-like structures, the pressure increases on Sweden to introduce REITs. But according to Johan Temse, Sweden will probably be among the last countries in Europe to introduce REITs.71 In the long run, the situation may change if Finland should introduce REITs.72 At the moment, the main problem is according to Jan Wejdmark political, and an early introduction in Sweden will probably require the issue to turn out to be a future EU-topic.73

“A collective tax-legislation is necessary for a globalisation of REIT-markets in Europe”.74

-Lars Vinell

According to Sven Dahlin, none expects REITs today, but as more other European countries introduce REITs, the more reasons for also introducing REITs in Sweden.75 If UK, Germany and Finland etcetera would introduce REIT-like structures, the buy-outs of Swedish real estate companies by foreign investors would probably increase, due to the comparative advantages and more favorable tax-legislation offered by the REIT-structures in those countries, says Jon Lekander.76

However, Jon Lekander also points out that REITs may not be the optimal solution for investing in and owning real estate. The tendency is that REITs focuses too strongly on

68 Interview with Johan Temse, 2005-12-19
69 Interview with Sven Dahlin, 2005-12-21
70 Interview with Olle Halldorf, 2005-12-20
71 Interview with Johan Temse, 2005-12-19
72 Interview with Karin Witalis, 2005-12-19
73 Interview with Jan Wejdmark, 2005-12-20
74 Interview with Lars Vinell, 2005-12-19
75 Interview with Sven Dahlin, 2005-12-21
76 Interview with Jon Lekander, 2005-12-19 and 2005-12-20
management-properties and too little on development projects. In the US, REITs were introduced on the 1960’s, but it took more than 30 years before the market really started to grow, i.e. REITs does not necessary have to attract capital. However, as Karin Witalis says, REITs are generally positively as it offers yet another alternative to invest in real estate.

5.2 RESULTS - EFFICIENT FRONTIER

When adding REITs into a mix-asset portfolio we find an outward bend in the efficient frontier, due to the low correlation of real estate with other asset classes so that a higher return can be gained to the same level of risk. Our efficient frontiers are to a large extent national, and more international mix-asset portfolios could probably yield even further improved results (a more international approach could provide exposure to different real estate markets that are positioned in different phases of the real estate cycle). Below we will make a presentation of the three countries results and discuss some issues regarding special circumstances.

In Belgium, the inclusion of REITs doesn’t improve the efficient frontier significantly. It should however be stated that Belgium SICAFI has the most rigid REIT-legislation, and also other national property investments (direct investments) has earned remarkable returns during the examined period. The possibility to invest in direct real estate is however limited and it is currently an alternative only to large institutions or large investors.

Figure 1. Efficient frontier - Belgium

Source: own calculations

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77 Interview with Jon Lekander, 2005-12-19 and 2005-12-20
78 Interview with Karin Witalis, 2005-12-19
The situation differs slightly when introducing REITs in a portfolio in Netherlands. The relationship risk/return enhances below the 6 % expected return, thus indicating a low correlation/risk but not very high returns for Netherlands REITs. As for Belgium, Netherlands has enjoyed high returns on the direct property market.

*Figure 2. Efficient frontier - Netherlands*

![Efficient Frontier - Netherlands](https://via.placeholder.com/150)

*Source: own calculations*

In France we find the most remarkable results. With an average return spread of 2,5% between a non-SIIC and SIIC portfolio with the same standard deviation, the contribution of SIIC as an asset class enhances the portfolio characteristics dramatically. However, the return pattern for the period (three years) that SIICs been established on the market (with an annual return of 27,8%) is not likely to be sustainable in the long run. Thus, these results have to be interpreted with caution.

*Figure 3. Efficient frontier - France*

![Efficient Frontier - France](https://via.placeholder.com/150)

*Source: own calculations*
5.3 RESULTS - HOW LIQUID AND EFFICIENT ARE REIT SHARES?

According to our results, the time it takes to liquidate a position of €1,5 M in Netherlands and Belgium has improved on average by 592% and 815% during the test periods (from 1995-2005, Netherlands and 2000-2005, Belgium). This dramatic change is due to both higher share price but foremost increasing trading volumes as can be seen in the tables in AppendixB. These results can for example be result of a decline in the asymmetric information but also a greater knowledge about the REIT-like companies, which contributes to more efficient markets.

Table 2. Days to liquidate a € 1,5 M position

<table>
<thead>
<tr>
<th></th>
<th>Sweden</th>
<th></th>
<th>Belgium</th>
<th></th>
<th>Netherlands</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All</td>
<td>Six largest</td>
<td>All</td>
<td>Six largest</td>
<td>All</td>
</tr>
<tr>
<td>2005</td>
<td>33,2</td>
<td>4,1</td>
<td>82,3</td>
<td>29,9</td>
<td>130,3</td>
</tr>
<tr>
<td>2000</td>
<td>-</td>
<td>-</td>
<td>245,4</td>
<td>198,2</td>
<td>-</td>
</tr>
<tr>
<td>1995</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>370,7</td>
</tr>
</tbody>
</table>

Source: Own calculations

In the Netherlands, on average (two smallest companies excluded) it takes approximately 2,2 days to buy or sell shares worth €1,5M. The results for Swedish listed real estate companies with similar market caps are 4,1 day, thus indicating a more liquid market for Netherlands REITs. The same is also true for France where the average number of days is 3,2 days. For Belgium the results are not so impressive; the average time is 29,9 days. However, only testing the results for the largest four companies’ results in 11,1 day on average. One explanation to this fact is the smaller market cap for all Belgium companies which naturally impose a longer period to cancel out the position. The results are in line with the French sector described earlier. Having in mind that these countries REIT-sectors are relatively new and still doesn’t have the same advantages as US-REITs further improvements can probably be achieved.

The effectiveness in the REIT pricing according to the runs test is very high in both France and Netherlands, where only one security examined significant more/less runs than expected. On the other hand, results from Belgium showed the exact opposite; all but one had statistically more runs than expected. This could indicate a mean price reverting behavior or an over adjustment with respect to new information.
The results generated by the serial correlation test\textsuperscript{79} for Netherlands and France confirm the indications from the runs test. Only two French companies show some negative and/or positive autocorrelation (around 0.07 - 0.15) for lags one, three, nine and twelve. For Netherlands the same is true with two exceptions which both indicate autocorrelation on lags one, four, eight and 19-24. Among the tested companies, only the smallest ones exhibited tendencies of inefficient pricing. These values are anyhow small for all lags ($\leq 0.2$) and to form a trading strategy must be a very difficult task.

The Belgium case demonstrates significant autocorrelation (around -0.25) for all securities on the first lag but none on any other lag. This result could eventually be used to form a day-trading strategy using the fact that the negative autocorrelation indicate a potential “buy-signal” when the security had a negative return the day before and vice versa. However, the negative correlation is only 0.25 (in a time period of one day) which requires a large number of stocks to realize profits. Further, transaction fees reduce the potential gain.

\textsuperscript{79} See Appendix B for the complete results on all securities
6. ANALYSIS

REIT structures are intended to attract more capital to real estate markets as investors become attracted with the advantages of direct investments in real estate without the disadvantages normally associated with real estate. High and stable dividends and increasing value further increases the attractiveness of investing in REITs. REIT structures in Europe also make direct and indirect investment in real estate more comparable, offering investors from REIT countries as USA, vehicles that they are familiar with. This may attract more capital to the market and consequently improve market liquidity. The globalization of REIT markets will hence create worldwide opportunities for investors, as globalization portends unlimited movement of capital among a wider range of geographic regions.

A set of European REIT structures is also an important first step towards an integrated European REIT market, allowing for greater liquidity and thus lower risk premium. However, the introduction of REITs in Europe has just started and first mover-advantages and competition between countries to introduce the most attractive REIT structure may be fierce, as countries tend to compete to attract more capital. An introduction of REITs in Sweden would subsequently attract more capital to the real estate market, but the extent of inflow of capital depends to a large extent of how attractive the Swedish market is in a European comparison.

Today, the Swedish market is Europe's sixth largest investment market for real estate with stable level of yields, high transparency, good market liquidity and a large inflow of foreign capital. Listed real estate companies has during the latest years already experienced significant increases in value, why REITs currently would have a smaller effect on the capital efficiency and the competitiveness of such companies. However, the situation may change in the future if foreign investors decide to leave the Swedish market as a consequence of declining yields (and consequently weakened liquidity). This situation is, from a historic point of view, rare and high liquidity hasn’t been observed in Sweden during the last decades. The competitive liquidity seen today may hence, weaken in the future. Investments in REITs may then be an alternative to increase investments and to improve the liquidity again. Furthermore, even though our calculations indicate a good liquidity in the largest Swedish real estate companies, both France and the Netherlands have a higher liquidity for companies with similar market capitalization. This fact indicates that a further increase in liquidity could be achieved by a REIT-like structure.

80 Interview with Lars Vinell, 2005-12-19
Further, Sweden is at present characterized by a high liquidity in the major cities, but also suffers from lower liquidity outside the main cities and in less central areas. An introduction of REITs on the Swedish market could therefore possibly increase the inflow of capital to these areas (as REITs facilitates investments on less liquid markets).

With stable returns, low volatility due to transparency and low correlation with other assets, investing in REITs can moreover enhance portfolio performances, making it interesting to include REITs into a mix-asset diversified portfolio. Our results indicate that the inclusion of REITs in a mix-asset portfolio enhances the risk/return relationship (in both France and the Netherlands, while Belgium has more moderate changes). An introduction of REIT would also provide opportunities to improve overall portfolio planning as the balance and transparency between property investment and investment in other types of assets would be easier to achieve.

The effects of efficiency by an introduction of REITs in Sweden can be studied in comparison to the ongoing introduction of REITs in Europe. In all of the countries where REITs has been introduced, the discount to the net asset value has been reduced or transformed into a premium, indicating more efficient pricing, to a large extent because of taxation advantages for companies and the fact that markets has become more liquid. However for the first time in very long time, listed Swedish real estate companies currently trade at a premium relative their net asset value. This change, is partly due to the unusual high risk premium investors place on real estate (even though its normally viewed as a relatively safe asset) in comparison with other asset classes (where the premium on riskier assets has gone down, indicating an opposite relation with real estate securities). The prevalent low interest rate and the recent buy-outs and mergers, creating more focused companies, have also contributed to the situation. This situation is however unusual as Leimdörfer indicates and a realistic assumption would be that it would not endure in the future.

Regarding efficiency in REIT pricing, our results from Belgium, France and the Netherlands, presents hardly any traces of inefficiencies with exception for smaller companies. This indicates a transparent and well-informed market in these REIT specific markets. Accordingly, a switch in Sweden from today’ real estate structure would therefore not comprise an efficiency problem, as similar Swedish companies also are of equal size / large enough.

\[81\] Leimdörfer, 2005
A general tendency has during the latest years been several buy-outs of listed real estate companies in Sweden in combination with a high presence of foreign investors. This tendency has further limited the possibilities for Swedish investors to invest indirectly in real estate as the number of listed companies’ declines. According to Jon Lekander, the buy-outs of Swedish real estate companies by foreign investors would probably increase as more countries in Europe introduces REIT-like structures due to the comparative advantages and more favorable tax-legislation for REIT-structures in those countries. Today, only 17% of the commercial property assets in Sweden are at present owned by listed real estate companies, excluding private and smaller investors from investing in large part of the real estate market. A REIT would undoubtedly increase the possibility for private and smaller investors to invest in real estate as the market capitalization increases. Consequently, as long as Sweden chooses not to introduce a REIT-legislation, the opportunity for Swedish investors to invest indirectly in real estate maintain limited.

The previous proposal of the introduction of FIB did not receive a warm welcome. The legislator meant that no need for such a vehicle existed as the property market already was stable and foremost no industry should receive a tax advantage structure to gain advantage over others. Another possible explanation for the low interest could bee the potential loss in tax revenues that the government foresaw. In France, the French Ministry of Finance resolved the issue by mandating an upfront payment of the latent tax debt, which every real estate company who applied for SIIC status, had due. An introduction of REITs should further attract more capital to real estate markets which both increases the liquidity, the total market size and lead to higher prices. The effect would consequently be that yearly property taxes and capital gains taxes increases, which partly would counteract the loss from the tax relief REITs would enjoy.

As we have indicated along this study, there are many potential benefits of introducing a REIT-like structure. Why shouldn’t Sweden introduce this vehicle to further develop the national real estate market? Jan Wejdmark at NewSec provided us with one answer “The question is not on the political agenda because of the lack of interest among small investors”. Therefore, for REIT-vehicles to be successful in Sweden it is necessary increase the interest for REITs among institutions and individual investors (which today are unable or reluctant to invest in direct real estate). Also, as more European countries introduce REIT-like structures, the relatively liquid and available Swedish market, which small and large scale

82 Interview with Jon Lekander, 2005-12-19 and 2005-12-20
83 Invest in Sweden – Real Estate, 2005 edition
84 Interview with Jan Wejdmark, 2005-12-20
investors today can use for exposure to real estate, may be reduced significantly by competition along with more buy-outs. This puts the pressure on Sweden to introduce REITs as the comparative advantages for investing in other countries increases.

The international globalization and development of the REIT-industry have consequently placed Sweden in a new capital context, where the increased international integration has led to a more global market for real estate investments. Therefore, the competition for investments has increased, why it will be essential for Sweden to adapt to new forms of investing and to revitalize its property market, to maintain its competitiveness and to be able to attract more capital in the future.
7. CONCLUSIONS

The main conclusions of the study are as follows: First, globalisation of real estate markets has led to a broader and more international market for investments. An introduction of REITs in Sweden would subsequently attract more capital to the real estate market, but the extent of inflow of capital depends to a large extent of how attractive the Swedish market is in a European comparison. Therefore, it will be essential for Sweden to adapt to new forms of investing and to revitalize its property market, to maintain its competiveness and to be able to attract more capital in the future. In Sweden however, an introduction is according to several real estate professionals not likely within the forthcoming years due to a low political interest of REITs, but the situation may change as more countries in Europe introduce REIT-like structures (or if the issue would become EU-topic).

Secondly, the effects of efficiency by an introduction of REITs in Sweden can be studied in comparison to the ongoing introduction of REITs in Europe. In all of the countries were REITs has been introduced, the discount to the net asset value has been reduced or transformed into a premium, indicating more efficient pricing, to a large extent because of taxation advantages for companies and the fact markets has become more liquid. Our results also indicate that REIT markets are both transparent and well-informed. Accordingly, a switch to REITs in Sweden could consequently improve market efficiency if the present situation (companies trades at a premium relative their asset values) is changed.

Third, even though our calculations indicate a good liquidity in the largest Swedish real estate companies, both France and the Netherlands have a higher liquidity for companies with similar market capitalization. This fact indicates that a further increase in liquidity could be achieved by an adoption of REIT-like structures in Sweden. Also, with stable returns, low volatility due to transparency and low correlation with other assets, investing in REITs can moreover enhance portfolio performances, making it interesting to include REITs into a mix-asset diversified portfolio. Our results indicate that the inclusion of REITs in a mix-asset portfolio can enhance the risk/return relationship.
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APPENDIX A. PORTFOLIO THEORY

The benefit of including REITs into a mix-asset diversified portfolio is illustrated in table 3. When measured by the Sharpe ratio and the portfolio variance (here noted as risk) US REITs provide a portfolio with a better return/risk relationship.85

Table 3. REITs in a mix-asset portfolio

<table>
<thead>
<tr>
<th>Without REITS</th>
<th>With 10 % REITS</th>
<th>With 20 % REITS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Return</strong></td>
<td>10.9%</td>
<td>11.2%</td>
</tr>
<tr>
<td><strong>Risk</strong></td>
<td>10.6%</td>
<td>10.3%</td>
</tr>
<tr>
<td><strong>Sharpe Ratio</strong></td>
<td>0.44</td>
<td>0.49</td>
</tr>
</tbody>
</table>

Source: investinREITs.com

Below some complementary tables to the efficient frontier analysis are presented. The returns and standard deviations are all annualised.

Table 4. Returns and risk efficient frontiers

<table>
<thead>
<tr>
<th>Belgium</th>
<th>France</th>
<th>Netherlands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gov Bond</td>
<td>Std. Dev</td>
<td>9.64%</td>
</tr>
<tr>
<td></td>
<td>Aver return</td>
<td>6.42%</td>
</tr>
<tr>
<td>Corp Bond</td>
<td>10.50%</td>
<td>7.13%</td>
</tr>
<tr>
<td>T-bills</td>
<td>4.40%</td>
<td>2.30%</td>
</tr>
<tr>
<td>EPRA</td>
<td>10.42%</td>
<td>9.65%</td>
</tr>
<tr>
<td>RE</td>
<td>6.04%</td>
<td>11.66%</td>
</tr>
<tr>
<td>World Stocks</td>
<td>14.47%</td>
<td>6.51%</td>
</tr>
<tr>
<td>Emerging</td>
<td>23.80%</td>
<td>7.14%</td>
</tr>
<tr>
<td>Local index</td>
<td>16.22%</td>
<td>13.37%</td>
</tr>
</tbody>
</table>

Source: own calculations

85 InvestInREITs.com, 2005
APPENDIX B. LIQUIDITY TESTS

The tables below all present our calculations of the liquidity offered by different securities on different European markets. The number of days it takes to offset a €1,5M position is calculated by taking 30% of the total daily float (average daily volume times the average price). All the average numbers are derived with a simple arithmetic average. The data for Rodamco in the 1995 table is based on figures for 1999.

Table 5. Liquidity Belgium 2005

<table>
<thead>
<tr>
<th></th>
<th>Cofinimmo</th>
<th>Befimmo</th>
<th>Leasinvest</th>
<th>Retail est</th>
<th>Warehouses</th>
<th>WDP</th>
<th>Wereldhav</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. daily volume</td>
<td>13 925,4</td>
<td>8 393,2</td>
<td>3 637,9</td>
<td>1 623,5</td>
<td>369,8</td>
<td>10 023,5</td>
<td>1 342,2</td>
</tr>
<tr>
<td>Av. price during year €</td>
<td>128,2</td>
<td>80,3</td>
<td>62,5</td>
<td>40,0</td>
<td>34,0</td>
<td>38,2</td>
<td>65,7</td>
</tr>
<tr>
<td>Days €1,5 mil</td>
<td>2,8</td>
<td>7,4</td>
<td>22,0</td>
<td>77,1</td>
<td>397,2</td>
<td>13,1</td>
<td>56,7</td>
</tr>
<tr>
<td>%change from 2000</td>
<td>882 %</td>
<td>668 %</td>
<td>2562 %</td>
<td>141 %</td>
<td>33 %</td>
<td>1239 %</td>
<td>181 %</td>
</tr>
</tbody>
</table>

Source: own calculations

Table 6. Liquidity Belgium 2000

<table>
<thead>
<tr>
<th></th>
<th>Cofinimmo</th>
<th>Befimmo</th>
<th>Leasinvest</th>
<th>Retail est</th>
<th>Warehouses</th>
<th>WDP</th>
<th>Wereldhav</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. daily volume</td>
<td>2 686,7</td>
<td>1 976,0</td>
<td>232,5</td>
<td>1 503,8</td>
<td>459,6</td>
<td>1 931,3</td>
<td>1 013,7</td>
</tr>
<tr>
<td>Av. price during year €</td>
<td>67,6</td>
<td>44,4</td>
<td>36,8</td>
<td>17,9</td>
<td>20,6</td>
<td>14,8</td>
<td>31,0</td>
</tr>
<tr>
<td>Days €1,5 mil</td>
<td>27,5</td>
<td>57,0</td>
<td>585,0</td>
<td>185,6</td>
<td>528,6</td>
<td>175,0</td>
<td>159,3</td>
</tr>
</tbody>
</table>

Source: own calculations

Table 7. Liquidity Netherlands 2005

<table>
<thead>
<tr>
<th></th>
<th>Corio</th>
<th>De vries</th>
<th>Eurocom</th>
<th>Groot</th>
<th>Rodamco</th>
<th>Vast off</th>
<th>Vast ret</th>
<th>Weerhalde</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. daily volume1 year</td>
<td>141 171</td>
<td>35336</td>
<td>44774</td>
<td>214</td>
<td>180 111</td>
<td>55395</td>
<td>35720</td>
<td>53383</td>
</tr>
<tr>
<td>Av. price during year €</td>
<td>44,8</td>
<td>1,3</td>
<td>28,4</td>
<td>25,3</td>
<td>63,1</td>
<td>21,7</td>
<td>53,5</td>
<td>81,9</td>
</tr>
<tr>
<td>Days €1,5 mil</td>
<td>0,8</td>
<td>105,1</td>
<td>3,9</td>
<td>924,4</td>
<td>0,4</td>
<td>4,2</td>
<td>2,6</td>
<td>1,1</td>
</tr>
<tr>
<td>%changes from 2000</td>
<td>1068 %</td>
<td>1974 %</td>
<td>449 %</td>
<td>-22 %</td>
<td>305 %</td>
<td>138 %</td>
<td>499 %</td>
<td>321 %</td>
</tr>
</tbody>
</table>

Source: own calculations
Table 8. Liquidity Netherlands 2005

<table>
<thead>
<tr>
<th>Turnover</th>
<th>Total</th>
<th>No of</th>
<th>Price</th>
<th>Daily</th>
<th>Days 1.5 million</th>
</tr>
</thead>
<tbody>
<tr>
<td>KSEK</td>
<td>Volume</td>
<td>Trades</td>
<td>SEK*</td>
<td>EUR**</td>
<td>MV €</td>
</tr>
<tr>
<td>FABG</td>
<td>7 642 440</td>
<td>65 353 660</td>
<td>42 591</td>
<td>116,9</td>
<td>12,5</td>
</tr>
<tr>
<td>WIHL</td>
<td>6 088 903</td>
<td>55 658 831</td>
<td>37 962</td>
<td>109,4</td>
<td>11,7</td>
</tr>
<tr>
<td>CAST</td>
<td>3 983 929</td>
<td>21 170 801</td>
<td>22 538</td>
<td>188,2</td>
<td>20,1</td>
</tr>
<tr>
<td>RATO</td>
<td>2 471 013</td>
<td>20 080 353</td>
<td>30 019</td>
<td>123,1</td>
<td>13,1</td>
</tr>
<tr>
<td>BDRO</td>
<td>1 694 136</td>
<td>12 056 269</td>
<td>6008</td>
<td>140,5</td>
<td>15,0</td>
</tr>
<tr>
<td>KLED</td>
<td>1 611 138</td>
<td>7 493 350</td>
<td>16 526</td>
<td>215,0</td>
<td>22,9</td>
</tr>
<tr>
<td>HUFV</td>
<td>1 526 347</td>
<td>40 270 804</td>
<td>9796</td>
<td>37,9</td>
<td>4,0</td>
</tr>
<tr>
<td>TORN</td>
<td>977 615</td>
<td>5 405 750</td>
<td>2875</td>
<td>180,8</td>
<td>19,3</td>
</tr>
<tr>
<td>KLOV</td>
<td>944 703</td>
<td>57 200 283</td>
<td>11 479</td>
<td>16,5</td>
<td>1,8</td>
</tr>
<tr>
<td>WALL</td>
<td>856 524</td>
<td>4 352 111</td>
<td>8320</td>
<td>196,8</td>
<td>21,0</td>
</tr>
<tr>
<td>BRIN</td>
<td>271 162</td>
<td>4 473 016</td>
<td>3252</td>
<td>60,6</td>
<td>6,5</td>
</tr>
<tr>
<td>FPAR</td>
<td>118 812</td>
<td>8 747 440</td>
<td>2102</td>
<td>13,6</td>
<td>1,4</td>
</tr>
<tr>
<td>HEBA</td>
<td>101 041</td>
<td>1 008 361</td>
<td>732</td>
<td>100,2</td>
<td>10,7</td>
</tr>
<tr>
<td>LJGR</td>
<td>79 374</td>
<td>646 770</td>
<td>406</td>
<td>122,7</td>
<td>13,1</td>
</tr>
</tbody>
</table>

Source: own calculations and OMX Stockholm

Table 9. Liquidity Sweden 2005

<table>
<thead>
<tr>
<th>Turnover</th>
<th>Total</th>
<th>No of</th>
<th>Price</th>
<th>Daily</th>
<th>Days 1.5 million</th>
</tr>
</thead>
<tbody>
<tr>
<td>KSEK</td>
<td>Volume</td>
<td>Trades</td>
<td>SEK*</td>
<td>EUR**</td>
<td>MV €</td>
</tr>
<tr>
<td>FABG</td>
<td>7 642 440</td>
<td>65 353 660</td>
<td>42 591</td>
<td>116,9</td>
<td>12,5</td>
</tr>
<tr>
<td>WIHL</td>
<td>6 088 903</td>
<td>55 658 831</td>
<td>37 962</td>
<td>109,4</td>
<td>11,7</td>
</tr>
<tr>
<td>CAST</td>
<td>3 983 929</td>
<td>21 170 801</td>
<td>22 538</td>
<td>188,2</td>
<td>20,1</td>
</tr>
<tr>
<td>RATO</td>
<td>2 471 013</td>
<td>20 080 353</td>
<td>30 019</td>
<td>123,1</td>
<td>13,1</td>
</tr>
<tr>
<td>BDRO</td>
<td>1 694 136</td>
<td>12 056 269</td>
<td>6008</td>
<td>140,5</td>
<td>15,0</td>
</tr>
<tr>
<td>KLED</td>
<td>1 611 138</td>
<td>7 493 350</td>
<td>16 526</td>
<td>215,0</td>
<td>22,9</td>
</tr>
<tr>
<td>HUFV</td>
<td>1 526 347</td>
<td>40 270 804</td>
<td>9796</td>
<td>37,9</td>
<td>4,0</td>
</tr>
<tr>
<td>TORN</td>
<td>977 615</td>
<td>5 405 750</td>
<td>2875</td>
<td>180,8</td>
<td>19,3</td>
</tr>
<tr>
<td>KLOV</td>
<td>944 703</td>
<td>57 200 283</td>
<td>11 479</td>
<td>16,5</td>
<td>1,8</td>
</tr>
<tr>
<td>WALL</td>
<td>856 524</td>
<td>4 352 111</td>
<td>8320</td>
<td>196,8</td>
<td>21,0</td>
</tr>
<tr>
<td>BRIN</td>
<td>271 162</td>
<td>4 473 016</td>
<td>3252</td>
<td>60,6</td>
<td>6,5</td>
</tr>
<tr>
<td>FPAR</td>
<td>118 812</td>
<td>8 747 440</td>
<td>2102</td>
<td>13,6</td>
<td>1,4</td>
</tr>
<tr>
<td>HEBA</td>
<td>101 041</td>
<td>1 008 361</td>
<td>732</td>
<td>100,2</td>
<td>10,7</td>
</tr>
<tr>
<td>LJGR</td>
<td>79 374</td>
<td>646 770</td>
<td>406</td>
<td>122,7</td>
<td>13,1</td>
</tr>
</tbody>
</table>

*Total turnover/total volume (No. of shares)

**Converted using an average euro spot rate during 2005)
APPENDIX C. EFFICENCY TESTS

RUNS TEST

The tables below indicate all values from the runs test. A cut point, which is set to zero, divides the time series of returns and all the runs thus are indicated over (positive) and below (negative) this value. The last column indicates the possibility of a more extreme Z-value than the observed one.

Table 10. Efficiency - France

<table>
<thead>
<tr>
<th></th>
<th>Gecina</th>
<th>Unibail</th>
<th>Klepierre</th>
<th>SFLyon</th>
<th>SILIC</th>
<th>FondeReg</th>
<th>Acanthe</th>
<th>Affine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Value (a)</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>Total Cases</td>
<td>473</td>
<td>485</td>
<td>486</td>
<td>482</td>
<td>486</td>
<td>481</td>
<td>486</td>
<td>486</td>
</tr>
<tr>
<td>Number of Runs</td>
<td>242</td>
<td>245</td>
<td>227</td>
<td>254</td>
<td>245</td>
<td>224</td>
<td>245</td>
<td>256</td>
</tr>
<tr>
<td>Z</td>
<td>0.264</td>
<td>1.270</td>
<td>-0.972</td>
<td>1.683</td>
<td>0.482</td>
<td>-0.222</td>
<td>0.482</td>
<td>1.990</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>0.791</td>
<td>0.204</td>
<td>0.331</td>
<td>0.092</td>
<td>0.630</td>
<td>0.824</td>
<td>0.630</td>
<td>0.047</td>
</tr>
</tbody>
</table>

User-specified =0.
Source: own calculations

Table 11. Efficiency - Belgium

<table>
<thead>
<tr>
<th></th>
<th>Confimmo</th>
<th>Befimmo</th>
<th>Leasinvest</th>
<th>Retailest</th>
<th>Warehouse</th>
<th>WDP</th>
<th>Wereldhav</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Value (a)</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>Total Cases</td>
<td>1019</td>
<td>1019</td>
<td>1019</td>
<td>1019</td>
<td>1019</td>
<td>1019</td>
<td>1019</td>
</tr>
<tr>
<td>Number of Runs</td>
<td>557</td>
<td>554</td>
<td>534</td>
<td>544</td>
<td>489</td>
<td>524</td>
<td>528</td>
</tr>
<tr>
<td>Z</td>
<td>4.130</td>
<td>3.614</td>
<td>4.098</td>
<td>2.603</td>
<td>3.564</td>
<td>2.858</td>
<td>3.733</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.009</td>
<td>0.001</td>
<td>0.004</td>
<td>0.00</td>
</tr>
</tbody>
</table>

User-specified =0.
Source: own calculations

Table 12. Efficiency - Netherlands

<table>
<thead>
<tr>
<th></th>
<th>AM</th>
<th>Corio</th>
<th>DeVries</th>
<th>EuroCom</th>
<th>Groot</th>
<th>Rodamco</th>
<th>VastOff</th>
<th>VastRet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Value (a)</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>Total Cases</td>
<td>992</td>
<td>993</td>
<td>992</td>
<td>992</td>
<td>993</td>
<td>992</td>
<td>992</td>
<td>992</td>
</tr>
<tr>
<td>Number of Runs</td>
<td>471</td>
<td>493</td>
<td>438</td>
<td>511</td>
<td>317</td>
<td>475</td>
<td>500</td>
<td>519</td>
</tr>
<tr>
<td>Z</td>
<td>-1.146</td>
<td>-2.47</td>
<td>1.389</td>
<td>0.937</td>
<td>-1.847</td>
<td>-1.428</td>
<td>0.478</td>
<td>1.401</td>
</tr>
<tr>
<td>Asymp. sig 2-tailed</td>
<td>0.252</td>
<td>0.805</td>
<td>0.165</td>
<td>0.349</td>
<td>0.065</td>
<td>0.153</td>
<td>0.633</td>
<td>0.161</td>
</tr>
</tbody>
</table>

User-specified =0.
Source: own calculations
### Table 13. Significant autocorrelation lags for all securities

<table>
<thead>
<tr>
<th>Lag #</th>
<th>Belgium</th>
<th>France</th>
<th>Holland</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>12</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>13</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>14</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>15</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>16</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>17</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>18</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>19</td>
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</tr>
<tr>
<td>20</td>
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<td>0</td>
<td>1</td>
</tr>
<tr>
<td>21</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>22</td>
<td>0</td>
<td>1</td>
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</tr>
<tr>
<td>23</td>
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<tr>
<td>24</td>
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</tbody>
</table>

*source: own calculations*
APPENDIX D. INTERVIEW GUIDE

INTERVIEW GUIDE

The interviews are based upon questions about the effects of a hypothetical introduction of REITs in Sweden, with the exception of the interviews with Olle Halldorf and Lars Vinell, which focuses on the earlier FIB proposition. The interview summary is based upon a selection of the answers given by the respondents.

1. GENERAL QUESTIONS:

- How would the Swedish real estate market be affected in general by an introduction of REITs?
- How would the Swedish real estate market be affected by an introduction of (Swedish) REITs in terms of efficiency and liquidity?
- Which are the prerequisites for an introduction of REITs in Sweden?
- In comparison to the rest of Europe - which effect would an introduction of REITs in other European countries have?

2. QUESTIONS - LARS VINELL:

- Which were the main reasons for rejecting the earlier FIB-proposal?
- How would the real estate market in Sweden today be affected by an introduction of REITs in general, and in terms of efficiency and liquidity?
- Would an introduction of REITs affect the globalisation of real estate markets?

3. QUESTIONS – OLLE HALLDORF

- Which were the main reasons for rejecting the earlier FIB-proposal?
- What would be required for a similar proposal to be discussed once again?