

PATRIZIA INVESTEMENT COMPASS

Nordics

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Four Countries, Four Currencies – Implications for Real Estate Portfolio Allocation

Over the past few years, the positive trends in the Nordic countries have caught the interest of investors, leading to increased capital inflows into these real estate markets since 2011. One reason for this is that the solid macroeconomic environment promises stable and secure property cash flows. In spite of the (still) ongoing euro crisis, fundamental trends for Denmark, Finland, Norway and Sweden appear to follow a dynamic different from that of other countries across Europe, which have been hit harder by the crisis. Therefore, real estate investments in the Nordic countries are looking especially attractive to many security-oriented investors.

Investors aiming to invest in the Nordic countries, however, should keep in mind that Finland is the only one of those nations that has the euro, with the other three countries still possessing their own currencies. Yield-oriented investment decisions should therefore take into account latent currency effects, which increase the difficulty of strategic decision making. The effect of this is that currency risk also affects both

portfolio diversification and investment calculation. This study analyzes the traditional strategy of direct real estate investment under consideration of different currencies in order to gain knowledge about possibly diverging optimum return-risk portfolios and their allocation in the Nordic real estate markets.

The optimal investment strategy consists of a portfolio of assets that produce the most attractive return-risk ratio from the investor's point of view. The goal is to distribute the capital to be invested such that an expected (minimum) return is achieved with the lowest possible volatility. A real estate investment strategy in the Nordic markets generally consists of the three sectors of office, residential, and retail. The different currencies in the individual target markets and the investors' native countries can result in differing optimal portfolio allocations. The study's data are based on the Total Returns from the IPD database in euros, local currency (corresponding to a fully hedged investment with no consideration of costs)¹, US dollars and British pounds for the period

¹ The results of a fully hedged investment also apply to international investors who use implied hedging with corresponding liabilities in the respective national currencies as part of asset liability management without any costs being incurred by the investor.

Table 1 DESCRIPTIVE STATISTICS FOR NORDIC TOTAL RETURNS, 2000-2011

	Office				Mean Value	Residential ³			Mean Value	Retail				Mean Value	
	Denmark	Finnland	Norway	Sweden		Denmark	Finnland	Sweden		Denmark	Finnland	Norway	Sweden		
Total Return	EUR	8.11%	6.09%	9.92%	7.29%	7.85%	9.82%	8.10%	11.07%	9.66%	8.81%	8.36%	11.92%	9.27%	9.59%
	Local	8.10%	6.09%	8.89%	7.33%	7.60%	9.82%	8.10%	11.05%	9.66%	8.80%	8.36%	11.01%	9.31%	9.37%
	GBP	11.17%	9.24%	12.10%	9.66%	10.54%	12.60%	11.26%	13.45%	12.44%	12.00%	11.45%	14.32%	11.70%	12.37%
	USD	11.00%	8.98%	12.87%	10.04%	10.72%	12.71%	10.96%	14.23%	12.63%	11.82%	11.35%	15.05%	12.31%	12.63%
Volatility	EUR	3.87%	2.52%	13.47%	11.63%	7.87%	11.95%	2.10%	10.56%	8.20%	2.85%	3.88%	12.16%	10.51%	7.35%
	Local	3.92%	2.52%	6.99%	8.49%	5.48%	12.03%	2.10%	5.44%	6.52%	2.85%	3.88%	5.59%	6.85%	4.79%
	GBP	10.52%	11.30%	9.37%	8.77%	9.99%	12.20%	11.15%	5.83%	9.73%	11.73%	10.81%	9.21%	7.44%	9.80%
	USD	12.26%	11.72%	17.98%	15.17%	14.28%	16.32%	11.00%	17.08%	14.80%	13.00%	13.13%	18.16%	16.49%	15.20%

Source: PATRIZIA, IPD

from 2000 to 2011. The choice of currency should not only serve to examine portfolio allocation but also reflect the strategy of international investors participating in these markets. The analysis begins with an examination of return volatilities and the reward-to-variability ratio (Sharpe ratio) in order to later form homogenous groups of similar real estate sectors. Afterwards, we will determine and analyze minimum variance portfolios for different investor profiles before concluding with investment recommendations.

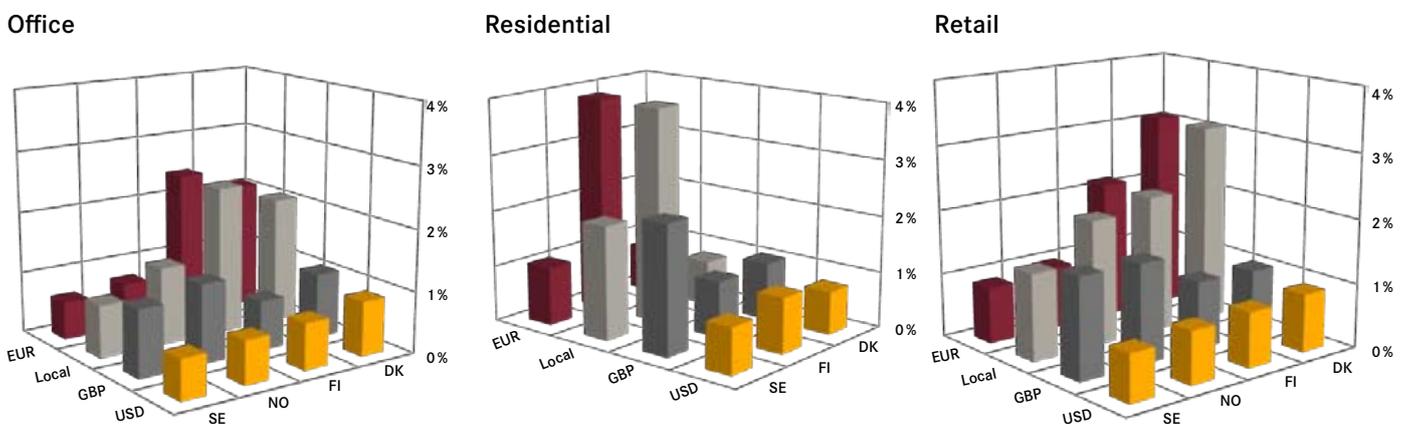
The mean values for the 44 total return time series (3 classes, 4 countries and 4 currencies²) in Table 1 show that the expected return for real estate investments in euros and local currency deviate by less than 0.17% and are thus virtually identical. Besides Finland's membership in the euro area, the result can be attributed to the European Exchange Rate Mechanism II (ERM II) agreement in existence since 1999, which makes the Danish krone a (virtually risk-free) euro hybrid. While the average return on a euro-denominated investment in office properties between 2000 and 2011 was 7.85%, the average return on residential and retail properties fluctuated between 9.37% and 9.66%. The total returns achieved for investors through unhedged investments in British pounds and US dollars are on average more than 10%, with their patterns being highly correlated.

The risk from real estate investment is expressed by volatility as the mean dispersion around the average and shown in the bottom half of Table 1. During the period under observation, the risk from an unhedged investment by a US dollar investor is on average twice as high as an unhedged investment by an investor from the euro area. This currency comparison shows quite plainly what effects exchange rate fluctuations have had on the performance of unhedged real estate investments over the past several years, for investors from other currencies and currency areas, particularly in Sweden and Norway.

Highly volatile real estate investments are suitable for an investment strategy and must be added to the portfolio as long as their expected return is proportionate to the risk. This relationship is expressed by the so-called reward-to-variability ratio, also called the Sharpe ratio, which reflects the number of units of return for a single unit of risk (see Figure 1). Assets with large Sharpe ratios indicate high return with stable risk and should therefore be considered for the desired portfolio allocation. If the investment decision were to be made solely based on this criterion, the selection would give preference to Danish and Finnish office properties, retail properties outside Sweden, and Finnish as well as Swedish residential properties. An examination based on the British pound would mitigate the choices to Swedish residential properties and

REWARD-TO-VOLATILITY RATIO FOR NORDIC REAL ESTATE INVESTMENTS

Figure 1



Source: PATRIZIA

² The Norwegian market contains only time series for commercial and office properties.

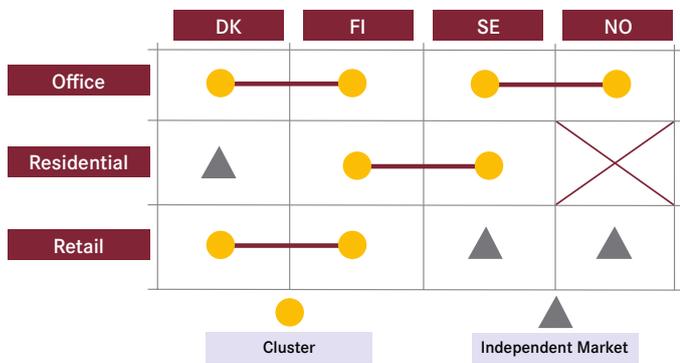
³ See Footnote 1.

possibly office and retail properties in Sweden and Norway. The Sharpe ratios in US dollars point to a consistently proportional relationship between return and risk of roughly 0.8, which, from the standpoint of diversification, restrict the possibilities for allocation. However, from the perspective of an investor from the euro area the picture is much the same for the local currency.

Before the historical analysis can be used to optimize a portfolio or determine optimum allocation strategy under currency considerations, the markets under observation should be examined for possible similarities and areas of convergence. When forming homogenous asset groups (called “clusters”), correlating markets are pooled together to avoid cluster risks and increase the level of diversification by including countercyclical markets. Figure 2 shows the results of the cluster analysis for all currencies and real estate sectors. Sweden and Norway are very similar in terms of the cyclical trends in their office property

CLUSTER ANALYSIS OF SCANDINAVIAN REAL ESTATE MARKETS⁴

Figure 2

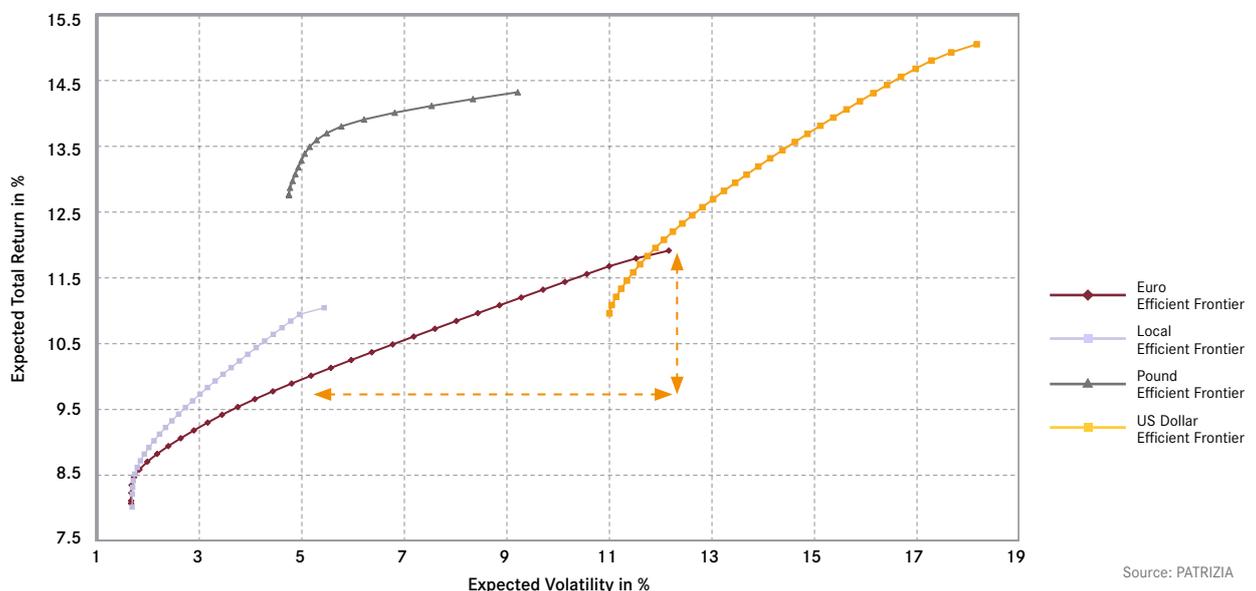


Source: PATRIZIA

markets and form a significant cluster (5% probability of error). Finland and Denmark are also very similar and also form a significant cluster, except in the residential area. At first glance, this result seems obvious since the grouping is apparently based on their currency independence.

EFFICIENT PORTFOLIO ALLOCATION FROM THE POINT OF VIEW OF INVESTORS FROM DIFFERENT CURRENCY AREAS

Figure 3



Source: PATRIZIA

In the residential property sector by contrast, Finland and Sweden form a significant highly correlated cluster, very distinct from the Danish residential property market. Based on the cluster analysis, retail property investments should avoid simultaneously mixing high levels of Finnish and Danish retail properties. With respect to allocation decisions of foreign investors, the findings of the cluster analysis indicate that a strategic regionalization and thus a focus during the selection of investment markets help to minimize economic fluctuations and contagion risks.

The optimum allocation is calculated by means of minimum variance optimization, which shows the weighting of every real estate sector for various return-risk positions. Every possible allocation is computed between risk-averse and risk-seeking investment behavior, which at the same time maximizes the Sharpe ratio. For the period between 2000 and 2011, portfolio optimization was carried out a total of four times, once each from the point of view of a European, a British, an American, and a local investor, in order to determine currency effects as well as the components of diversification. The return-risk diagram in Figure 3 shows the optimum allocation strategy in Nordic office, residential and retail properties.

Applying conservative behavior, a mixed euro-denominated investment in Nordic real estate assets yielded an 8.07% return at a risk of 1.67%. That equals a return-risk ratio of 4.8. Almost the exact same number can also be found in a conservative portfolio held by a local or fully hedged investor (without taking costs into account). However, there is a significant divergence between investments in local currency and euros in the case of an opportunistic (risk-seeking) investor. Local currency investors receive a return of up to 11%, while European investors earn a maximum of 12%. Starting with the Sharpe ratio, we see, however, that a portfolio by an unhedged European investor applying opportunistic investment behavior is dominated by a portfolio strategy administered in local currency. Thus, the return produced by the latter is in comparison twice as high. There is a difference between krone and euro investments only when the investment behavior is opportunistic.

In the case of a British investor, the efficient frontier, which shows every portfolio combination, lies above the European and local portfolios (see

⁴ The groups shown relate to all currencies and are based on the economic progression of the total returns.

Figure 3). Risk-averse British investors receive a return of 12.8% with a Sharpe ratio of 2.7, while an opportunistic investment strategy produces a return of 14.3% and a ratio of only 1.6. As already observed, the extreme volatility of exchange rates for the US dollar versus Nordic currencies lowers the return-risk ratio. That is why greater risk must be accepted when optimizing these portfolios in order to achieve a minimum return. The return-risk diagram shows that the efficient frontier of (unhedged) US investors lies much higher in the upper right-hand area compared to the European-oriented efficient frontiers. The 11% expected rate of return for the US dollar-denominated minimum variance portfolio is proportional to the 11% risk. The maximum rate of return that can be earned is 15% and has an under-proportionate Sharpe ratio of 0.8. This means the volatility of the US dollar exchange rate causes excessive risk out of line with the return.

Table 2 shows the composition of risk-averse portfolios based on this historical analysis in the four currencies being examined. The numbers show a clear difference between the individual currencies. The optimum portfolios denominated in euros and the local currency do not differ significantly in their composition and are concentrated on Finland and Denmark. By contrast, there is a high degree of diversification within an unhedged British investor's portfolio consisting of residential (79%) and office (21%) sectors. The minimum variance portfolio in the case of the US investor contains 100% Finnish residential properties.

The study concentrated on Nordic real estate investments with the aim of finding out whether the optimum portfolio composition from international investors' point of view is different when currency developments are taken into account. As a result of the substantial congruency between the euro and Scandinavian currencies, an unhedged euro strategy and one optimized on the basis of local currencies reveals an investment with a very stable value when compared to unhedged investment

Table 2

ALLOCATION IN A MINIMUM VARIANCE PORTFOLIO

Country	Sector	Investment Strategy Weightings			
		EUR	Local	GBP	USD
Finland	Office	11%	13%	0%	0%
Norway	Office	0%	0%	21%	0%
Denmark	Residential	0%	0%	9%	0%
Finland	Residential	61%	61%	15%	100%
Sweden	Residential	0%	0%	55%	0%
Denmark	Retail	27%	26%	0%	0%

Source: PATRIZIA

strategies in British pounds and US dollars, which are not rewarded by high returns in comparison to risk. Thus, it can be seen that it is not enough for investors in unhedged investments to look at only the respective national markets when determining their optimum investment strategy. Rather, what currencies they are exposed to are also important since the respective optimum portfolios differ significantly. With respect to the convergence of Scandinavian real estate markets, clusters of integrated and independent markets have been identified. If investors base their decisions on these results, they will be able to reduce cluster and contagion risks. The findings also show that relying on the insights gained from portfolio or similarity analysis is insufficient. To process the information in the best possible manner, it is important that all the findings gained from historical analysis be evaluated and weighted with the respective investors and their goals in mind in order to devise the optimum portfolio. Real estate is a local business – and not just in the Nordic countries – but conditions at the investor's location must also be taken into account.

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