Real estate investments in CEE region. Are there any diversification benefits from direct CEE real estate investments to Western European real estate portfolios?

Marek Dobias (Author)

1 Abstract

Present research investigates commercial real estate investments in Central and Eastern Europe (CEE) during the period of 2007 to 2016. The situation of this recently "discovered" market by global real estate investors is analysed with the help of quantitative and qualitative methods. Based on direct returns data an optimal European portfolio is calculated using modern portfolio theory. The role and positioning of individual countries of this region is identified by maximising the Sharpe ratio. Furthermore, economic data of each country is analysed and compared with real estate returns with the support of cross-correlation analysis.

2 Context

Due to the overflow of an investment capital on traditional Western European real estate markets, real estate returns have been decreasing and worthy investing opportunities became a rare good. Hence, in search for higher returns emerging real estate markets have been focused on by a wider spectrum of international professional real estate investors. The whole European continent is the scope of this research; however the focus of this study lies on the CEE region. In the past three decades these countries have gone through a transition process and most of them entered the European Union in order to converge with the economically stronger Western countries and simultaneously stabilize the peace in Europe.

Recent reports and actual tendencies in these new markets show a very positive picture about opportunities on these emerging markets.[1] Despite these positive claims and encouraging predictions it is still not common to have Eastern European

[1] See the highest share of under-priced real estate markets in CEE region (Gralin, 2016, p. 2)

properties in Western European portfolios; thus there are still a limited number of global real estate investors investing in Eastern European real estates.[2]

This research demonstrates that in addition to the market stability offered by these countries, they also claim to have steady economic growth prospects thus numbers of real estate investments especially in Poland and in Czech Republic have raised massively in 2015 till 2017.[3] These countries have been slowly recognised as relatively stable investment opportunities. They still offer certain risk premiums compared to traditional markets for only slightly higher risk dynamics.[4] The nature of such risk premiums for investing in these lesser established markets could lie in several factors. The difference lies in several soft factors, be it political and legal insecurity, language barriers, insufficient investment opportunities, low maturity of the market, low transparency, poor business environment, or high levels of corruption. In this thesis, qualitative indicators are analysed with help of diverse benchmarks.

Besides the run for returns there is also the anticyclical diversification which plays an essential role. The latest economic crisis showed us how important such diversification in a portfolio is. During shocks, when stock markets are performing badly, real estate markets are strongly linked to that of equities. This has then a significant effect on real estate returns.[5] Therefore, understanding the principle of a boom and bust of real estate markets and their triggers is essential for successful strategical planning of investments. With the help of this model the last ten years of turbulences on the European real estate markets could be explained. Furthermore, this research is analysing performance attributes and indicators of CEE countries in order to compare the performance of their real estate markets against the more developed western part of Europe.

3 Methods

In the field of real estate investments there are three main factors in terms of investment performance; position in the cycle at purchase, economic growth and inflation, ranked in that order.[6] Inflation is an important driver of nominal returns

[2] See available capital by target country 2017 in the “The Great Wall of Money” (Wakefield, 2017, p. 11)

[3] See investment volumes for Poland (Cwiklinski & Wojtczak, 2017, p. 19) and Czechia (Hallett, 2016)

[4] See emerging market risk premiums (Haran, McCord, Davis, McCord, Lauder, & Newell, 2016)

[5] See diversification potential of real estates during shocks (Lizieri, 2013, p. 56)

[6] See property and inflation (Blake, Goodwin, McIntosh, & Simmons, 2011, p. 6)

but not the dominant one. Due to the fact that inflation in Europe is at a record low since 2013,[7] it therefore seems that economic growth is the key driver for real estate performance.

In addition to the above-mentioned analysis of the economic indicators, there are various quality indicators to be reviewed when comparing investments in different countries. Foremost, a qualitative analysis of five of the most useful rankings and indicators has been performed within this study. These clearly depict the level of risks when doing business in countries and allow investors the ability to compare amongst countries.

The quantitative analysis of this research focuses not only on the return performance but also on the economic performance of the chosen European countries and their combination. Firstly, a detailed analysis of direct property returns over last 10 years between 2007 and 2016 is performed. This period is as a result of data availability of direct real estate returns in CEE countries. A correlation analysis between countries is then performed in order to find out regional dependencies. The same procedure is repeated for indicators of economic growth for each country. The correlations of economic growth among countries are examined over the period of the last 25 years between 1991 until 2016. Finally, these two data series are put into a cross-sectional correlation analysis in order to investigate dependencies between these indicators. The period relevant for this analysis between economic growth and real estate returns is 10 years accordingly.

3.1 Boom-bust principle

Initially through review of the theoretical framework, this research tries to assess what happens on the real estate market during the economic cycle and what influence it has on real estate total returns. The chosen time period of last ten years (2007 - 2016) in this research is no coincidence. In the last ten years, markets have experienced the complete set of a real estate cycle movements: starting with the peak into bust, through recovery into boom. The effect of the economic cycle on real estate returns has been statistically proven and it is demonstrable in Figure 1, which shows the magnitude of such impact. Returns on direct real estate investments have been highest in periods of fundamental recovery. It is thus crucial for investors to get into the recovery cycle early to benefit from above-average returns. Timing matters because, even in the boom period, returns tend to be smaller than in the recovery stage.[8] Figure 1 shows each part of such a real estate cycle with the

[7] See annual growth rate of inflation 2007 - 2016 (OECD, 2017)

[8] See stylized real estate cycle and corresponding returns (Garcia & Kaufmann, 2014, p. 25)

explanation what occurs on the real estate market. It is expected that the quantitative analysis of real estate return indexes of different countries will show similar movements as boom-bust model suggests. The question is why certain indexes or economic cycles clearly show similar co-movements as on this model, yet some show rather steady behaviour. Further, real estate market cycle and economic cycle is put in relation. In order to understand the search for equilibrium, meaning what is happening during the boom and bust phase of the real estate market cycle one has to consult the DiPasquale-Wheaton Four-Quadrant Diagram.[9]

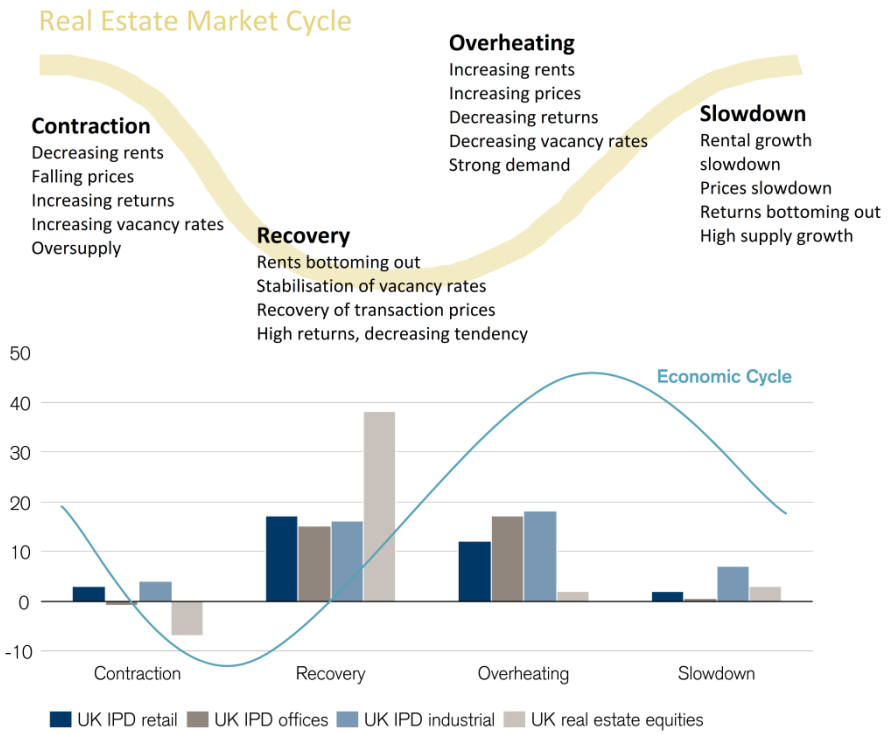

Fig. 1: Real estate market cycle vs. economic cycle with average annualized UK returns since December 1986 in %[10]

[9] See conceptual framework of real estate markets (DiPasquale & Wheaton, 1992, pp. 181-198)

[10] See economic cycle with average annualized UK returns (Garcia & Kaufmann, 2014, p. 25)

3.1.1 Interest rates

As a result of the financial crisis in 2007, one of such boom-bust triggers in 2009 was decreasing interest rates as a product of monetary policy of European national banks. They were reacting to a deflation threat and they were stimulating the recovery phase of the economy. As bond rates started to fall, cap rates on the real estate market followed. With help of the Four-Quadrant Diagram the impact decreasing interest rates and the prevailing cap rates leads to substantial upward of property prices. This new equilibrium involves a substantial increase in the amount of built space, which reflects the effect of a real estate development boom that brings the stock of space up to higher levels. This is the physical capital result of the flow of financial capital into the real estate asset market caused by the shift in investor preferences toward real estate assets. This is an actual depiction of the last five years in Europe. According to the boom-bust model returns are in this case decreasing. Due to new inflowing capital into real estates, real estate prices are increasing and as a result we can expect stagnating or decreasing rents. Even though returns are decreasing, they are still beating other investment classes with similar risk/return ratios as the difference between total return and any other investment alternative for example bonds is historically at the highest point. The question is what happens in subsequent years when the interest rates will start to increase and the capital will flow out into other traditional investment classes like stocks and bonds. Is there a next bust coming and does that impact the whole European continent? What are the differences between countries and is there any diversification possibility within the European region? Can the real estate markets of CEE countries be the new alternative for investors?

3.1.2 Economic growth

When building a long-term real estate investment portfolio the idea is to identify and choose wisely countries which offer the best diversification opportunities. Considering that the low interest rates phenomenon and low inflation is widespread throughout Europe one has to look at other performance indicators or influences. These can help distinguish between countries and find those which behave differently than others in the future and thereby balancing possible losses. The most distinguishing factor is the productivity of the country and its growth. The Four-Quadrant Diagram simulates this effect and different results are attained when decreasing the cap rate. In contrast to the above mentioned cap rates, economic growth stimulates the demand for space directly. In the long run it means higher rents and higher property prices, which leads to higher total returns. GDP growth is therefore one of the major factors in terms of investment performance.

3.2 Qualitative indicators

The importance of quality indicators is not easily quantifiable and consequently their impact on the performance of an investment may not be initially tangible; however, these indicators carry valuable information, mostly non-numerical data, which are usually difficult to assess and compare. Thus, they play a key role when assessing risks during investment decisions and these are further quantified within risk premiums. There are indicators for political risks, governmental efficiency or legal issues during the transaction process or more specifically for example the enforceability of contracts.

Furthermore, these data also have a direct impact on some components of our four quadrant model and thus on the total performance of real estates. The most apparent factors are those directly linked to eventual GDP growth and thus influencing the space market quadrant. These are diverse economic performance and business environment indicators, for example the market competitiveness. For this there are two business oriented rankings namely: the Doing Business index and the Institute for Management Development ranking.

The demand deviations in the space market and more specifically in the office market in global cities is analysed extensively in the Globalization and World Cities Index (GaWC). For the asset market the pricing of properties is crucial and this is monitored by the Fair Value Index measuring the price levels on various real estate markets. The development industry and construction quadrant is influenced by regulatory and legal constraints such as land use planning, building and construction controls, development and construction legislation and building permit processes. These can be found in the Jones LaSalle Transparency Index.

3.3 Modern portfolio theory

The analysis of market data is performed on a portfolio level, or so called macro-level. Investment decisions on the macro-level consider the overall investment portfolio which includes an investor's entire net wealth. In this research, this portfolio is reduced to direct real estate assets and the subsequent analysis and comparisons are performed with a regional focus of investments. The goal of Markowitz's modern portfolio theory is to find the ideal portfolio with the ideal weighing of assets. This will be computed based on a series of historic returns. The iteration process is calculated with a focus on optimising the risk/return ratio, so called Sharpe ratio maximisation.

3.3.1 Direct property index

This study utilises data from the Investment Property Databank of the Modern Index Strategy Indexes (MSCI) to measure direct property market performance. Total returns are annualised over three-, five- and ten-year periods to provide a relative comparison of the different Western European portfolios over short, medium and long-term positions. Sector weights are calculated by aggregating the capital value of individual assets across the main property types.

The direct property index is computed at the building level and excludes properties held indirectly through investment funds, the impact of debt, fund management fees, taxation and cash. For comparison reasons of cross border investments the research is based on nominal returns. The impact of inflation on real estate returns will not be taken into account. Furthermore, currency could possibly have an even more significant impact on nominal returns than inflation. Currency hedging between Eurozone countries would be zero; on the other hand, from Switzerland to Poland, there would be much higher fees needed. Allowing a minus 0,5% or 1% for the currency-hedging of the portfolio could be an option, however, as this research looks objectively at cross-border investments, to stay neutral, any currency hedging premiums is rejected. Nevertheless, this issue has to be looked at in every case separately.

In order to determine the relationship and its intensity of various return and data series the correlation analysis is applied. It is calculated by putting covariance in relation to standard deviations of each return or data series.

3.3.2 Weight parameters

Some limitations of the methodology need to be highlighted. There are many assumptions and conditions behind the concept which are in effect its deficiency when applied in real world conditions. One of the market related issues in this theory is the assumption of a perfect equity market. Firstly, there are ideal market conditions as perfect divisibility of assets, free accessible information, no tax, transaction costs or market access restrictions. This is followed by unlimited credit funds and unlimited investment possibilities. The latter condition is however, the impetus for this thesis. As we know real estates are a limited good and the number of available investment possibilities goes hand in hand with the pricing of such a commodity.

In Switzerland and many Western European cities this has been an issue in recent years as there is a meagre supply of investment real estates or they are overpriced. Despite the moderate economic growth of the past few years, the office property

market in Switzerland has shifted to a position of oversupply of space. In the residential sector, supply is galloping ahead of demand for space.[11] These are not very favourable conditions for new real estate investments. Hence, the focus of this thesis is the question whether CEE countries can eventually offer an adequate alternative for diversification of Pan-European portfolios.

In order to make the link between the ideal market with unlimited investment opportunities and reality, computational restriction in implementing a maximum possible weight percentage of the corresponding country allocation within the overall portfolio can be used. This can be done either evenly or gradually depending on factors such as country size, number of inhabitants or size of real estate investment market. In this paper the allocation is limited evenly between all countries. Our focus lies on CEE countries and their positioning with regard to the whole continent. The chosen percentage of 8% is a result of an iterative method. The goal of the iteration was to find out the right weighing where CEE countries play their role in such a Pan-European portfolio. Thus, we can observe exactly the moment where their input into the portfolio is the greatest.

4 Results

The following chapter interprets results from firstly comparisons based on performance benchmarks and various indexes and secondly, from the statistical analysis. The comparison of countries based on their annual returns and their overall productivity is presented. Finally, the link between the country's productivity and the real estate total return performance will be analysed.

4.1 Qualitative analysis

The qualitative analysis of the economic and business environment has shown that in general, the CEE region has made significant progress in terms of transparency and investment related issues. Despite this positive feature, the gap of GDP per capita levels between Western and Eastern Europe is still substantial and will not be closed in the immediate future. As a result of this gap, CEE countries have historically benefited and continue to benefit from wage competitiveness in the office and industrial spheres, thus contributing to attractive rent levels for support and shared service operators and warehouses supplying both the region and Western Europe. However, the net wage growth itself is eroding this advantage over time.

[11] See "banished from paradise" (Boppart, et al., 2016, p. 23)

4.2 Quantitative analysis

Firstly, the direct property data set is reviewed, and then the performance of countries based on their annual returns is compared. The overall total return and the corresponding volatility over 3, 5 and 10 years is calculated. In the second section, the modern portfolio analysis building the covariance and correlation matrix is executed. The goal is to create an ideal portfolio using the maximization of the Sharpe ratio.

Other statistical factors, which influence real estate returns, were investigated. Apart from low interest rates as a result of low inflation there is the GDP growth. Interest rates are strongly harmonised within the European region as this is regulated by the European Central Bank (ECB), and most of countries outside of Eurozone are converging to its decisions, although with some time lags. The second value which differs between countries is the productivity of the country. As demonstrated in some examples, this could possibly be the key to forecast future growth of total returns in certain countries with high correlations between GDP growth and real estate returns.

4.2.1 Analysis of returns

The behaviour of real estate returns based on a boom-bust model has been observed on a country level. Certain co-movements particularly in bust years 2007-2009 or boom years from 2014 onwards can be identified. The best example could be seen in countries like the UK, Ireland, France or Spain where a distinct decrease in first periods followed by an increase in latter periods could be observed. When compared with previously presented Figure 1, it is clearly visible in the case of the UK or Ireland the periods of bust in years of 2006 up to 2008, with the later recovery and finally the new bubble appearing in 2014. This co-movement could be also observed for France and Spain, however, at a less pronounced level. Nevertheless, Spanish performance in last three years appears as if it were approaching another bubble, which may come faster and sooner than in France. This could be explained by the comparison of the overall productivity of these two countries and its correlation to the real estate sectors. The correlation of GDP and real estate returns is very high in both countries. Consultation of annual GDP growth shows that France has registered productivity stagnation in the years between 2014 and 2016. In comparison, Spain grew by over 3 percent a year, thus, its total return performance is significantly better than in France. In Figure 2 it can observed the immense volatility of the UK's and Irish markets. On the other hand Switzerland was delivering steady total returns throughout the stormy years during which the rest of Europe was struggling with the crisis and trying to reclaim the lost gains.

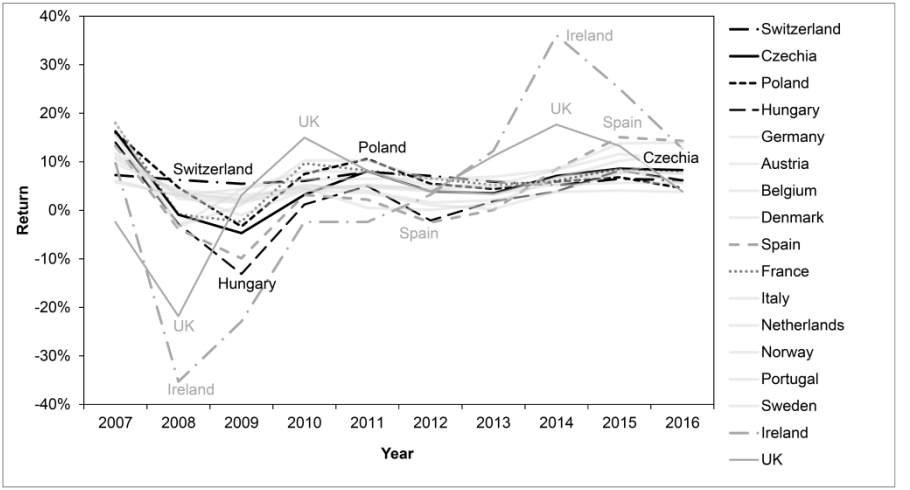

Fig. 2: IPD returns in Europe between 2007 and 2016

From this analysis, the noteworthy finding is that although there is a proven low correlation, there can still exist some degree of hidden lagged correlation. A more extensive examination of these lags, through the calculation of overlapping periods would provide a more precise answer. Obviously, this can also have a very distinct influence on results of the optimal portfolio analysis. If a low correlation between two countries is calculated and risk is then diversified by investing in these two countries, there is still the risk of an unfavourable outcome for the investor when these two countries experience a bust one after the other.

Average total return and volatility is showing different market dynamics across the whole European region. During the 10-years period, Sweden and Norway have experienced extraordinarily high total returns, approximately 8 %. Very good performance has been also registered in Switzerland, Poland and France with values over 6 %. The rest of countries were somewhere around 5 %. Poor overall performance was registered in Ireland with 3,6 % and Hungary did even worse with 2,2 %. Interesting are the extreme values in Ireland within 3 and 5 years periods with 24,6 % and the latter 17,9 %. Amongst the CEE Region Poland presented the strongest performance. Looking at the volatilities there is unbelievably low volatility registered in Switzerland with an extremely low value of 0,83 % and Austria with a value slightly over 1 %. This demonstrates without a doubt that the Swiss real estate market has been overrun by investment capital in recent years. Very high volatilities over ten percent in all three periods have been seen in Ireland.

4.2.2 Correlation analysis

The correlation analysis showed clearly strong regional dependencies. The grouping of countries which influence each other like the ones of the CEE region: Czechia, Poland and Hungary can be observed. Switzerland and Austria are those who correlate the least with all other countries. These outliers are the best diversifiers for such a portfolio. This is based on the fact that when the majority experiences a bust, they act against it and help to stabilize the incomes. The second example would be the UK and Ireland. At this point, it would be important to look at Figure 2, the return curve. Through simple observation, it can be seen that the cyclical pattern of the UK and Ireland is very similar to other countries it would be assumed that the correlation levels are high. However, the correlation matrix contradicts this by showing a very low correlation with the other countries. The difference to the first example with Switzerland may lie with timing. In Figure 2 visible lags between the curves can be traced. These curves demonstrate that the UK and Ireland are peaking you can see that the UK and Ireland are peaking one period before the rest of the examined countries. Reverting to the CEE countries, their returns have a very strong correlation with other countries; this would then mean that the diversification abilities in a Pan-European portfolio are rather low.

4.2.3 Optimal portfolio analysis

Firstly, the simulation has been performed without any boundaries related to regional allocation, which means that the possible result could be allocating 100% of capital into a portfolio in one single country. This presents another disadvantage of this concept. Modern portfolio theory tends to produce very extreme results. In practise, such results are unusable. In this example, Switzerland dominated all other countries in the portfolio due to high levels of stability and relatively strong growth, without any critical impact of the financial crisis in 2008 on the Swiss real estate market. Also, with impressive results, Austria ranked second best. Using the maximum Sharpe ratio as a target value in the Excel Solver, CEE countries have not attained any allocation share in the portfolio. Only when trying to minimize the volatility of the portfolio, Poland could have entered with very little share in this portfolio. This was executed by minimizing the portfolio risk in the Excel Solver.

In order to examine in detail the role of CEE countries within a Pan-European investment portfolio the concept of limiting weight conditions of 8% per country must be introduced. This limitation, which can become a very realistic condition when building a European real estate investment portfolio, demonstrates the exact point when CEE countries are entering the portfolio. In Figure 3 the maximum Sharpe ratio was calculated at the value of 5.63 % of portfolio return. Thus, the

displayed range has been chosen between 5.00 % and 6.00 %; from this it can be clearly deduced the role of investments in particular countries.

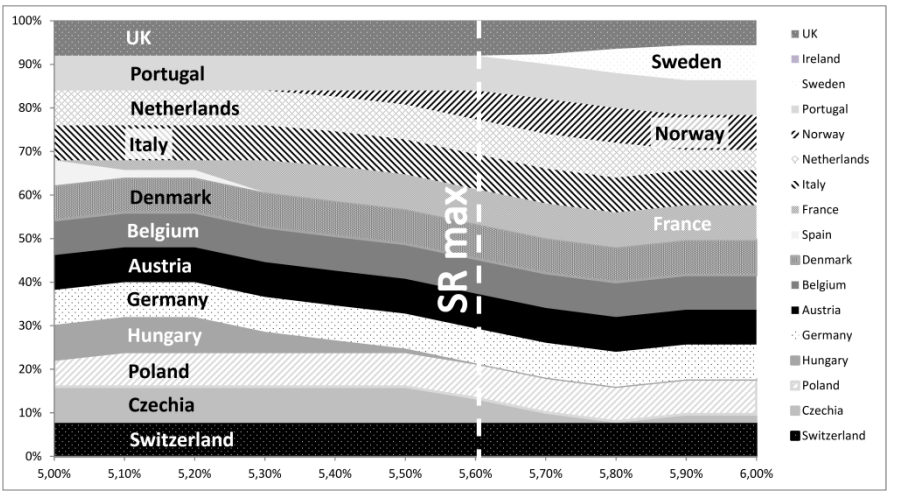

Fig. 3: Opt. portfolio weight distribution at maximum Sharpe ratio of 5,63%

In this special case, Switzerland and Austria are still noticeably dominating the portfolio but as their share is limited, other countries of the middle field like Germany, Belgium, Denmark, Italy and Portugal are represented with their full stake of 8 %. Only Poland with its solid total returns and relatively low volatility keeps up with these strong countries and could eventually take over the outperformance role. Czechia and Hungary do not offer such performance and they have been positioned somewhere in the lower end of the table. Hence, the graph shows that these two countries can only take over a role of risk diversifier at the lower risk spectrum and are therefore less eligible for Pan-European investment strategy.

The quantitative analysis has shown that countries of the CEE region are not the game-changers. The return performance is relatively good, but they do not offer higher returns than in Western European countries. Only Poland offers very competitive performance and thus seems to be a very attractive market. Nevertheless, including CEE countries into the Pan-European portfolio might be an appealing alternative for investments when looking at minimizing risk. CEE markets are showing less pronounced levels of volatility than many Western countries. They offer good risk/return ratio thus, very stable performance.

4.2.4 Correlations

Cross-correlation statistics of real estate returns amongst European countries show strong regional dependencies, accordingly, the performance of CEE countries is closely associated with the majority of European countries. Comparing this data, another noteworthy effect was determined. In each index, the boom-bust cycle model was identified; however, there are two different elements playing a role. Firstly, it is the magnitude, which results in higher standard deviations. Secondly, it is the timing. Some countries such as the UK and Ireland are ahead with their cycle and others are lagged.

The comparison of the GDP growth index highlighted the fact that some countries are economically dependent on each other. The majority of continental Europe is economically linked and the correlation between them is high. Interestingly, the CEE region together with Ireland and Norway seem relatively independent from the Western countries regarding GDP growth level.

4.2.5 Correlation of GDP and real estate return

The cross-correlation between GDP growth and real estate total returns has brought some meaningful side results. Notably, the magnitude of this relationship differs from country to country. From the analysis of the boom-bust model in Figure 1 it is apparent the discrepancy in results. A simplistic approach would consider GDP growth as the economic cycle and real estate returns as the real estate market cycle. Taking the aforementioned into consideration, it is evident that the relationship between real estate and economic cycle should not be simplified or generalised in a model. Detailed analysis could provide valuable information whether there is a possibility to forecast future expected returns in a pursued country based on the overall economic outlook. Consequently, the question for further research is the following. Does this boom-bust model relationship exist in each country as the theory states, though simply with disparate timing in each country? If this were the case, there would be evidence of a lagged high correlation for both curves. On the other hand, should it be considered that this boom-bust model is purely a theoretical model, which can be applied for some but not for all countries? The reason for this assumption could be the structure of an economy or the exogenous factors influencing the economy or the real estate sector separately. In the first case, if the high correlation of real estate returns and GDP growth in Spain is taken as an example, this significant value could be explained by the considerable importance of the real estate sector on the Spanish economy.

5 Conclusion

Since 2007, the European real estate sector has been characterised by a distinct focus on prime tier established markets after a protracted period of instability. The variance in post-crisis recovery periods offers promising opportunities for the diversification of risk among countries. However, the lack of suitable investment possibilities in traditional markets has widened the investment horizons of investors. Hence, since 2013 CEE real estate markets have witnessed a positive change in investor sentiment towards them. This recent shift of capital from Western to Eastern Europe was analysed, in an attempt to ascertain whether there is a reliable basis for this movement and whether the CEE countries indeed have more to offer. From this analysis, it would appear that in general there are potential benefits, which can be achieved by including CEE countries into the European portfolio; though a closer examination at the individual country level is required in order to identify their potential role in this portfolio. Out of the three countries analysed, Poland leads with its competitive performance and relatively low volatility. Over the last ten years, Czechia has not performed as well as Poland; however it still offers solid performance with higher volatility. Disappointingly, the analysis showed Hungary's low total return and relatively high volatility. Qualitative analysis and investor surveys showed that Hungary could be the next upswing candidate within CEE region in coming years. The one condition being that the internal political situation stabilises.

During this research several themes have been identified, which would now require more in-depth examination. Firstly, it is the phenomenon of lagged correlation between countries. For determination of lagged correlations among countries longer time-series data are needed. For instance, this could clear up the effect Germany has on its direct neighbours Czechia or Poland. Furthermore, according to this research the boom-bust model may function differently in some countries. The relationship between real estate and economic cycles in CEE countries behaves differently compared to Spain or the UK. Hence, it would be necessary to perform lagged cross-correlation between GDP growth and real estate returns over longer periods (approximately 15 years or more). This would show particular cycle movements within the investigated period of ten years. The goal would be to find a higher lagged correlation than in a non-lagged situation and show movement relationships between real estate market cycle and economic cycle for each country, as depicted in Figure 1.

Literaturverzeichnis

Blake, N., Goodwin, A., McIntosh, A., & Simmons, C. (2011). *Property and inflation.* London: Investment Property Forum.

Boppart, S., Fries, D., Hasenmaile, F., Hürzeler, F., Kaufmann, P., Lüthi, M., et al. (2016). *Schweizer Immobilienmarkt 2016: Vertreibung aus dem Paradies.* Credit Suisse Economic Research. Zürich: gdz AG.

Cwiklinski, M., & Wojtczak, W. (2017). *Briefing European Investment.* London: Savills plc.

DiPasquale, D., & Wheaton, W. (1992). The markets for real estate assets and space: A conceptual framework. *Real Estate Economics (formerly AREUEA Journal), 20*(2), 181-198.

Garcia, D., & Kaufmann, P. (2014). *Global Investor 1.14.* Zürich: Giles Keating, Credit Suisse AG.

Gralin, M. V. (2016). *Property yields keep falling – where are the opportunities in Europe?* London: Cushman & Wakefield.

Hallett, J. (2016, March 1). *Investment In the CEE Property Market More Stable Than In Western Europe.* Retrieved from Emerging Europe: http://emerging-europe.com/special-reports/ee-at-mipim-2016/investment-in-the-cee-property-market-more-stable-than-in-western-europe/

Haran, M., McCord, M., Davis, P., McCord, J., Lauder, C., & Newell, G. (2016). European emerging real estate markets. *Journal of Property Investment & Finance, 34*(1), pp. 27-50.

Lizieri, C. (2013). After the Fall: Real Estate in the Mixed-Asset Portfolio in the Aftermath of the Global Financial Crisis. *The Journal of Portfolio Managment: Special Real Estate Issue, 39*(5), pp. 43 - 59.

OECD. (2017, July 1). *OECD Data.* Retrieved from https://data.oecd.org/price/inflation-cpi.htm

Wakefield, C. &. (2017). *The Great Wall of Money.*

Autorenverzeichnis

Marek Dobias, geboren 1983. Bauingenieurstudium an der Technischen Hochschule Deggendorf, Diplom 2006. Masterstudium Bauingenieurwesen an der Technischen Universität Prag, Master 2007. Nachdiplomstudium an der ZHAW, Master of Advanced Studies in Business Administration, Diplom 2016. Nachdiplomstudium an der Universität Zürich, Master of Advanced Studies UZH in Real Estate, Diplom 2017. Asset Manager bei der Zurich Investment Management & Real Estate AG.