

EUROPEAN REAL ESTATE

ASSET CLASS
PERFORMANCE AND
OPTIMAL PORTFOLIO
CONSTRUCTION

EDITED BY
GIANLUCA MATTAROCCHI
DILEK PEKDEMIR



European Real Estate

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Asset Class Performance and Optimal Portfolio Construction

Edited by

Gianluca Mattarocci

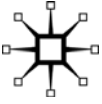
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Contents

<i>List of Figures</i>	vii
<i>List of Tables</i>	ix
<i>Preface</i>	xi
<i>Acknowledgements</i>	xiv
<i>Notes on Contributors</i>	xv
Introduction	1
<i>Gianluca Mattarocci and Dilek Pekdemir</i>	
1 European Real Estate Markets Comparison	5
<i>Dilek Pekdemir</i>	
2 Global Cities vs Other Cities in Europe	43
<i>Anisa Ago</i>	
3 Residential Real Estate: Single and Multi-family Buildings	67
<i>Angelo Marinangeli and Albana Nako</i>	
4 Commercial Real Estate in Europe: The Role of the Retail Market	84
<i>Aamir Inam Bhutta and Marco Migliorelli</i>	
5 Industrial and Logistic Sector	99
<i>Aamir Inam Bhutta and Marco Migliorelli</i>	
6 European Indirect Investors and Asset Allocation	122
<i>Angelo Marinangeli and Albana Nako</i>	
7 Performance Comparison among Real Estate Asset Types and Geographical Areas	141
<i>Dilek Pekdemir</i>	
8 Optimal Asset Allocation for European Real Estate	154
<i>Gianluca Mattarocci</i>	

9	Asset Allocation Strategy and Market Return for Real Estate Institutional Investors <i>Gianluca Mattarocci</i>	183
	Conclusion <i>Gianluca Mattarocci and Dilek Pekdemir</i>	197
	<i>Index</i>	199

List of Figures

1.1	Trends in the global market, 2013	6
1.2	European transaction volume (billion EUR) and annual growth (y-o-y)	6
1.3	Capital source in Europe	7
1.4	European transaction by property types, 2013	8
1.5	The average total return in Europe by periods	9
1.6	Regional total return by sectors	10
1.7	Land use bid rent functions	12
1.8	European market movement, 2013	14
1.9	Total transaction volume in Northern Europe	16
1.10	The average total return in Northern Europe	16
1.11	Total return in Northern Europe by sectors	18
1.12	Total transaction volume in Western Europe	19
1.13	The average total return in Western Europe	19
1.14	Total return in Western Europe by sectors	21
1.15	Total transaction volume in Eastern Europe	22
1.16	The average total return in Eastern Europe	22
1.17	Total return in Eastern Europe by sectors	24
1.18	Total transaction volume in Southern Europe	25
1.19	The average total return in Southern Europe	25
1.20	Total return in Southern Europe by sectors	26
1.21	Willingness to lend in Tier 1 and Tiers 2 & 3 cities	28
1.22	Fair value index in Europe, 2013	29
1.23	Performance of the top cities and the CEE cities	31
1.24	Total volume of real estate stock in London and Paris	37
2.1	Population on 1 January, EU-27, 1960–2012	54
2.2	Share of foreigners in the resident population, EU-27, 1 January 2012 (%)	54
3.1	Single family price trend in European countries analysed	76
3.2	Multi-family building price trend in European countries analysed	78
3.3	Real estate market trend between 2007 and 2014	79
4.1	Commercial real estate investment in Europe in the period, 2005–12	87

4.2	Commercial real estate stock value by destination and type of investors	89
4.3	Listed real estate investment volumes for a panel of European countries	90
4.4	Capital value change in the overall commercial real estate sector for a panel of European countries	93
4.5	Capital value change in the commercial real estate sectors for a panel of European countries	94
4.6	Income return range variation in the period, 2002–12	95
5.1	Industrial property investment in Europe in the period, 2003–11	100
5.2	Industrial real estate and all property total returns (income and capital growth) in Europe in the period, 2002–11	104
5.3	Capital value change in the industrial sector for a panel of European countries	107
5.4	Business models, logistics paradigms and logistics facilities	113
5.5	Logistics total returns (income return and capital growth) in Europe in the period, 2002–11	116
5.6	Income return range variation in the period, 2002–12	117
6.1	Average return of European REITs, 2013	125
6.2	Distribution between European real estate funds and REITs, 2013	129
6.3	European real estate fund performance	131
6.4	Average asset allocation of European REITs	135
6.5	Income return range variation in the period, 2002–12	136
7.1	Factor loading plot (all markets)	146
7.2	Circle of correlation and factor loading plots (all markets: pre-crisis and post-crisis)	147
7.3	Factor loading plot (office market)	148
7.4	Factor loading plot (retail market)	149
7.5	Factor loading plot (industrial market)	151

List of Tables

1.1	Classification of the countries by regions	15
1.2	Top 10 European investment markets	27
1.3	Ranking of top 10 cities for existing new investment	30
1.4	Top 20 cities for real estate markets	32
1.5	City targets for investment, 2015	33
1.6	Investment market size in top 10 cities by sectors, 2007–13	35
1.7a	Prime rental and yields in London by submarkets	38
1.7b	Prime rental and yields in Paris by submarkets	39
1A.1	Country definition by Cushman and Wakefield	40
2.1	GaWC global cities' ranking, 2012	47
2.2	A.T. Kearney global cities' ranking, 2014	50
2.3	Knight Frank global cities' ranking, 2014	51
2.4	EIU global cities' ranking, 2012	52
4.1	Average yearly percentage total returns in the commercial real estate sector for a panel of European countries	91
5.1	Volume index of production for European countries	101
5.2	Differences in returns within the industrial real estate asset class	103
6.1	Analysis of CAPM about European REITs in the period, 2009–14	127
6.2	Analysis of the Fama and French model about European REITs in the period, 2009–14	128
6.3	Analysis of CAPM about European real estate funds in the period, 2009–14	133
6.4	Analysis of the Fama and French model about European real estate funds in the period, 2009–14	134
7.1a	Summary statistics (all markets)	142
7.1b	Summary statistics (office markets)	142
7.1c	Summary statistics (retail market)	142
7.1d	Summary statistics (industrial market)	143
7.2	Barlett's sphericity test	145
7.3	Country group (office market)	149
7.4	Country group (retail market)	150

7.5	Country group (industrial market)	151
7A.1	List of the countries	152
8.1	Sample	157
8.2	Shapiro and Wilk test for normality of returns	158
8.3	Distance measures of ex-ante and ex-post optimal portfolio	163
8.4	Differences between performance of ex-ante and ex-post optimal portfolio	165
8.5	Performance difference between ex-ante and ex-post optimal portfolio by country	168
8.6	Performance difference between ex-ante and ex-post optimal portfolio by country (1 year lag)	170
8.7	Performance difference between ex-ante and ex-post optimal portfolio by country (2 year lag)	173
8.8	Performance difference between ex-ante and ex-post optimal portfolio by country (3 year lag)	175
8.9	Portfolio allocation for internationally diversified portfolios	177
8.10	Performance difference between ex-ante and ex-post optimal international portfolios by country	178
9.1	Sample description	186
9.2	Asset allocation for European real estate investment vehicles	186
9.3	Distance proxy for home biased and internationally diversified benchmarks by year	190
9.4	Distance proxy for home biased and internationally diversified benchmarks by country	192
9.5	Performance of real estate investment vehicles classified on the basis of the portfolio misalignment	193
9.6	Performance of real estate investment vehicles classified on the basis of the increasing or decreasing distance with respect to optimal asset allocation	194

Preface

Indirect investment in real estate is developing in Europe; during the past decade, the size of the market has grown, reflecting increasing interest from institutional investors due to the increase of market transparency and the development of the asset management industry (Hoesli and Lekander, 2005). One of the key issues identified by the literature is the portfolio allocation that allows reducing the overall risk assumed using the advantages related to diversification opportunities (McGreal et al., 2009).

Intra-sector diversification strategy for real estate investment vehicles is quite common, the aim of which is to achieve a better risk-return profile for investors. The main motivation proposed in the literature in order to justify the choice of investing in different sectors is the existence of differences in the trends of both income and the value of different type of real estate assets. These allow reducing overall risk due to the low probability of downturns that simultaneously affect all sectors (see Anderson et al., 2015).

International diversification is less common among real estate portfolios due to the huge differences among countries that can negatively affect the choice to invest abroad (D'Arcy and Lee, 1998). Barriers to international exposure include not only exchange rate risk but also unfamiliarity with foreign market structures and conventions, the costs of information gathering, withholding taxes, fees and other formal regulatory barriers (Worzala, 1994).

Since the creation of the European Monetary Union, there is evidence that real estate market dynamics have been affected by the creation of the unique currency area (Yang et al., 2005). However, even if there is a clear trend of convergence among some sectors and countries, there are still structural differences (Worzala and Bernasek, 1996) that can justify geo-sectoral diversification among European countries.

The book analyses the main differences among European real estate assets classes in different countries considering the standard asset classification proposed in literature and evaluating the main differences among European countries. The analysis proposed considers the specific characteristics of the market, the performance achieved and the risk assumed and evaluates its impact on home biased and internationally diversified investment strategies.

In Chapter 1, Dilek Pekdemir presents an overview of the main characteristics of the European real estate market using the most recent data available. It illustrates the differences between cities and the rest of the market as well as the segmentation of prices and rents inside cities distinguishing the trend for downturn and for the suburbs. In Chapter 2, Anisa Ago discusses the characteristics of global cities with respect to other cities in Europe and presents the main alternative criteria used for identifying them. The analysis provides evidence of the results of alternative classification criteria for analysing European markets and points out the main characteristics of the cities identified. In Chapter 3, Angelo Marinangeli and Albana Nako evaluate the residential market in Europe, looking at the role of single and multi-family units in each market and evaluating the main differences among countries. Results show that among countries there are differences in the stock of residential real estate assets type that also affect their performance.

In Chapter 4, Aamir Inam Bhutta and Marco Migliorelli analyse the commercial real estate market in terms of its size and performance. The evidence indicates that there are numerous differences among European markets in terms of both overall and income performance during the past decade. In Chapter 5, they investigate the industrial and logistics sector in Europe during the past decade and review the impact of the economic downturn related to the financial crisis. The analysis of the two sectors reveals different trends in the size and the performance of the markets, comparing their features with the rest of the real estate market in order to underline their unique characteristics.

An analysis of European real estate investment vehicles is presented in Chapter 6 by Albana Nako and Angelo Marinangeli. It distinguishes between REIT and non-REIT investment solutions and, using standard performance measurement approaches like the CAPM, evaluates the performance of the two types of investment vehicles. Dilek Pekdemir presents in Chapter 7 a detailed comparison of real estate performance among countries and sectors using principal component analysis. Country performance by sector as well as overall market performance are examined over two periods, pre-crisis (2001–08) and post-crisis (2009–13), in order to evaluate the impact of the financial crisis. The results reveal that there is a geographical rotation among countries and among core and emerging markets in both periods, with changing investor sentiment shaping investment strategies. The results also show that it is possible to identify some sectors (e.g., industrial and logistics) displaying different performance pattern with respect to the rest of the market.

In Chapter 8, Gianluca Mattarocci evaluates the optimal investment strategy for a portfolio of real estate assets for both a home biased and internationally diversified strategy. It provides an analysis of the optimal investment strategy for a European real estate asset allocation considering a set of RAP measures that uses an alternative risk definition and demonstrates the difference in asset allocation and performance over time based on the risk measures chosen.

Finally, in Chapter 9, Gianluca Mattarocci discusses investment strategies adopted by real estate investment vehicles in Europe and their impact on performance. Using as a benchmark the optimal real estate asset allocation strategy identified on the basis of alternative RAP measures, the results show that the current real estate asset allocation is still prevalently based on the mean-variance approach and that the market does not always reward managers who adopt a more coherent investment strategy.

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Introduction

Gianluca Mattarocci and Dilek Pekdemir

Indirect real estate investment is fast developing in Europe, and during the last decade, the size of the market has grown because of an increasing interest from institutional investors due to the increase of market transparency and the development of the asset management industry (Hoesli and Lekander, 2005). One of the key issues identified by the literature on indirect real estate investments is the portfolio allocation that reduces the overall risk assumed using the advantages related to the diversification opportunities (McGreal et al., 2009).

An intra-sector diversification strategy for real estate investment vehicles is quite common as investors aim to achieve a better risk-return profile. The main motivation in literature, to justify the choice of investing in different sectors, is the existence of differences in the trend of both the income and value of different types of real estate assets that reduce the overall risk due to the low probability of downturns that contemporaneously affect all sectors (i.e., Anderson et al., 2015).

International diversification is less common among real estate portfolios due to the huge differences among countries that can negatively affect the choice to invest abroad (D'Arcy and Lee, 1998). Barriers to international exposure include not only the exchange rate risk but also the unfamiliarity with foreign market structures and convention, information gathering costs, withholding taxes, fees and other formal regulatory barriers (Worzala, 1994).

Since the creation of the European Monetary Union, there is some evidence that the real estate market dynamics were affected by the creation of the unique currency area (Yang et al., 2005), but even if there is clear trend of convergence for some sectors and some countries, there are still structural differences (Worzala and Bernasek, 1996) that can justify a geo-sectoral diversification among European countries.

The book analyses the main differences among the classes of European real estate assets in different countries considering the standard asset classification proposed in literature and evaluates the main differences among European countries. The analysis proposed considers the specific characteristics of the market, the performance achieved and the risk assumed and evaluates its impact on home biased and international diversified investment strategies.

The first chapter, written by Dilek Pekdemir, presents an overview of the main characteristics of the European real estate market using the most updated data available for comparing Northern, Eastern, Western and Southern countries. An in-depth analysis of the European market compares the differences between cities and the rest of the market, including the segmentation of prices and rents inside the cities, which distinguishes the trend for the downturn and the suburbs.

Anisa Ago, in Chapter 2, discusses the characteristics of global cities with respect to other cities in Europe and presents the main alternative criteria used for identifying them. The analysis of European global cities provides evidence on the results of alternative classification criteria for analyzing the markets and points out the main characteristics of the cities identified.

Chapter 3, written by Angelo Marinangeli and Albana Nako, evaluates the residential market in Europe looking at the role of single and multi-family units in each market and evaluates the main differences among countries. Results show that there are differences among countries in the stock of residential real estate assets that affect their performance.

The analysis of the commercial real estate market presented in Chapter 4, written by Aamir Bhutta and Marco Migliorelli, discusses the main characteristics of the market on the basis of size and performance. Empirical evidence demonstrates that there are a lot of differences among European markets on both the overall performance and the income performance during the last decade.

Aamir Bhutta and Marco Migliorelli, in Chapter 5, evaluate the industrial and logistic sector in Europe during the last decade and the impact of the economic downturn related to the financial crisis. The analysis of the two sectors show the different trends in the size and the performance of the markets by comparing their features with the rest of the real estate market in order to underline their unique characteristics.

The analysis of the European Real Estate Investment vehicles presented in Chapter 6 is written by Albana Nako and Angelo Marinangeli. The evaluation of the European real estate market distinguishes between REITs and non-REITs investment solution and, using standard performance

measurement approaches like the CAPM, evaluates the performance of the two types of investment vehicles.

Dilek Pekdemir presents, in Chapter 7, a detailed comparison of real estate performance among countries and sectors using the principal component analysis. Country performance by sector and overall market performance are examined by two distinctive periods: pre-crisis (2001–2008) and post-crisis (2009–2013) to view the impact of the 2008 financial crisis on real estate markets in Europe. The results reveal that there is a geographical rotation among countries, core and emerging markets in these distinctive periods with the changing investor sentiments shaping their investment strategies. Results also shows that it is possible to identify some sectors (industrial and logistics) displaying different performance patterns with respect to the rest of the market.

Chapter 8, written by Gianluca Mattarocci, evaluates the optimal investment strategy for a portfolio of real estate assets for both home biased and international diversified strategy. The analysis of the optimal investment strategy for a European real estate asset allocation is presented that considers a set of RAP measures that uses alternative risk definition and demonstrates the difference in the asset allocation and the persistent performance on the basis of the risk measures choice.

Gianluca Mattarocci discusses the investment strategies adopted by Real Estate Investment Vehicles in Europe and their impact of the performance in Chapter 9. Using the optimal real estate asset allocation strategy identified on the basis of alternative RAP measure as a benchmark, results show that the current real estate asset allocation is still prevalently based on the mean-variance approach and that the market does not always reward managers that adopt a more coherent investment strategy.

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1

European Real Estate Markets Comparison

Dilek Pekdemir

1.1 Introduction

Recent published reports on the real estate investment market stated that the global investment market activity has expanded significantly, and the growth is becoming more visible in the last a few years (Axa Real Estate, 2013; CBRE Global Investors, 2014; DeAWM, 2014a; DTZ, 2014; Cushman and Wakefield, 2014a; RCA, 2014). Indeed, the highest global total recorded since 2007, delivering an annual total transaction volume of USD 1.18 trillion in 2013 with investment activity and values picking up as recessions ended, business sentiment rallied and increased liquidity lapped the shoreline of the most global markets (RCA, 2014). This strong position helped to increase rents and capital values and to push prime yields back down to the pre-crisis levels. Globally, all regions saw a positive trend over the recent few years, but developments within each region became more diverse (Figure 1.1).

European transaction activities expanded significantly; however, total transaction volume is still almost half of the peak level recorded in 2007. As of 2013 year-end, European transaction volume reached USD 246.3 billion with 23% up on the previous year (Figure 1.2a and b). This transaction volume represents a post-crisis record. Some European economies appear to be moving from contraction into recovery while some are moving through recovery into expansion where stronger economic growth is translating into greater demand and improving real estate fundamentals, displaying diversification by geographically.

Growth in Europe has been driven by increased cross-border flows and by a strengthening domestic market (Figure 1.3a). The global capital has been focusing particularly on Europe with an increasing volume since 2010. Flows from global investors, transacting EUR 48.9 billion (27% of

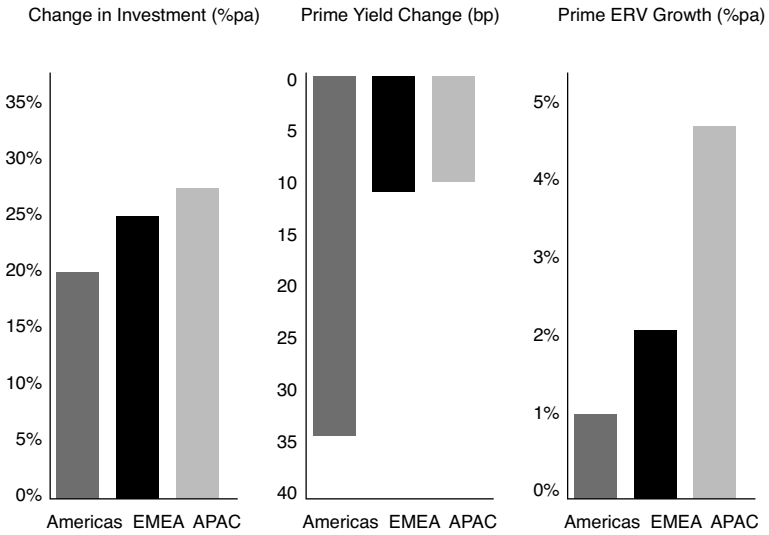


Figure 1.1 Trends in the global market, 2013

Note: Rent and yield excluding multi-family.

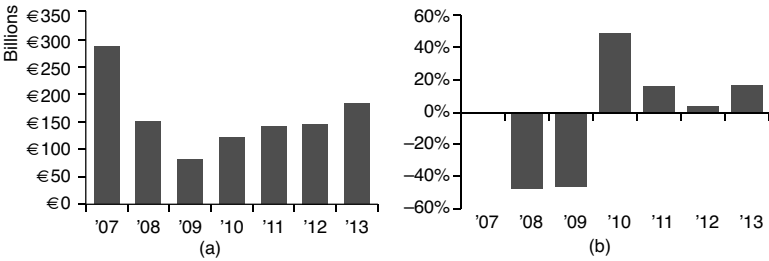


Figure 1.2 European transaction volume (billion EUR) and annual growth (y-o-y)

Source: RCA data processed by the author.

total volume) in 2013, is represented by a peak level recorded by RCA during the period 2007–2013 (Figure 1.3b). The most significant source of global capital remains investors from North America with a total of EUR 21.4 billion, but flows from Asia Pacific (APAC) investors tripled in volume, and those from the Middle East (ME) doubled. APAC and ME investors have increased their investment activities with a particular interest in larger assets in the core markets. Domestic capital represented

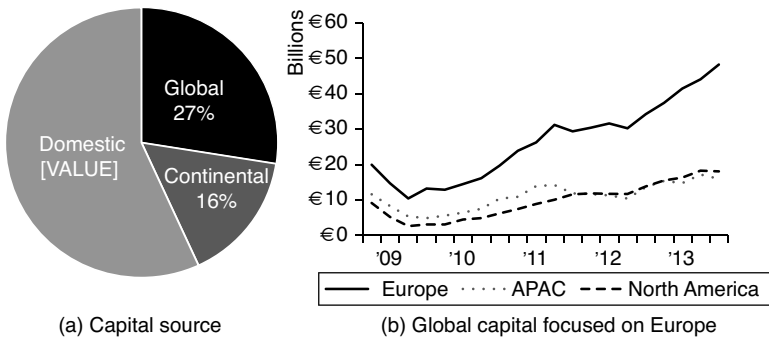


Figure 1.3 Capital source in Europe

Source: RCA data processed by the author.

57% of total volume with EUR 101.1 billion, which became more significantly active in the CEE region and showed a declining appetite for core 'safe haven' markets in Western Europe. Also, the UK domestic investors came back into the market, increasing their activity in particularly on the retail sector.

The remarkable level of investment activity has been recorded in all sectors with the improvement in business environment. In 2013, all sectors saw a new record level since 2007, with the exception of residential sector, which almost doubled compared to the pre-crisis level (Figure 1.4). In the office sector, corporate confidence is improving, and this is slowly being reflected in tenant demand. Top cities London, Paris and Frankfurt are leading the market where an undersupply of modern office space is pushing rental growth, but also secondary cities offer opportunities. In the retail sector, improving consumer confidence is boosting markets, but the growth in e-commerce is keeping a sharp focus on the best locations. Retail saw a smaller increase in investment in top cities than the wider market, reflecting a natural tendency for retail investors to consider a broader range of cities. Core logistics space is also benefitting from the growth of e-commerce, and with quality modern space limited in core markets, rents are under pressure, particularly in transport hubs and international hubs, as well as domestics in larger countries. An increasing interest for apartment investment has been observed with the contribution of Germany (six of top 10 markets).

Total return for real estate markets has improved in line with strengthening economic and capital market fundamentals, following the

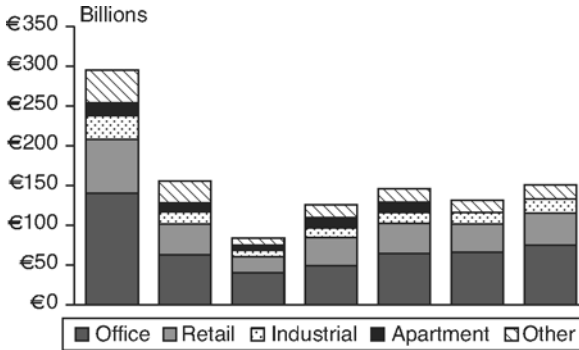


Figure 1.4 European transaction by property types, 2013

Source: RCA data processed by the author.

negative impact of the 2008 global financial crisis and the Eurozone crisis in 2010. Between 2001 and 2013, the real estate market (all sector) in Europe has achieved an average annual return of 10.9%. If the pre-crisis (2001–2008Q2), the crisis (2008Q3–2009Q4) and the post-crisis (2010Q1–2013Q4) periods are examined separately, the average total return for all sectors was 14.5% in the pre-crisis level, and it decreased to 9.7% in the crisis period and followed by recovery period with an average of 11.3% total return in the post-crisis level. The deterioration in the total return of the office sector was relatively greater than the other sectors with an average of -9.7% while it was limited in the retail sector with -4% for the same period. Looking closely at the post-financial crisis period, average annual property return for all sectors was 11.3%, and the best-performing sector was retail with an average of 12.9% total return, followed by office (10.8%) and industrial (9.2%) during the same period, respectively (Figure 1.5).

The performance of the European market, in terms of the average total return, is examined by region and by sector for 2001–2013 period, as presented in the Figure 1.6. It is clear that ‘Top Cities’ and Western Europe determined the general performance trend of all Europe (All); the performance of both regions followed almost the same pattern. Central Europe also provided the same return level with slight differences regarding the sectors. On the other hand, ‘CEE’ and ‘East’ regions displayed more volatility in all sectors, providing the highest return in the pre-crisis period and the biggest hit during the crisis period. Looking closely at the post-financial crisis period, improvement in the total return is clearly seen in all regions and sectors; however, less variations among

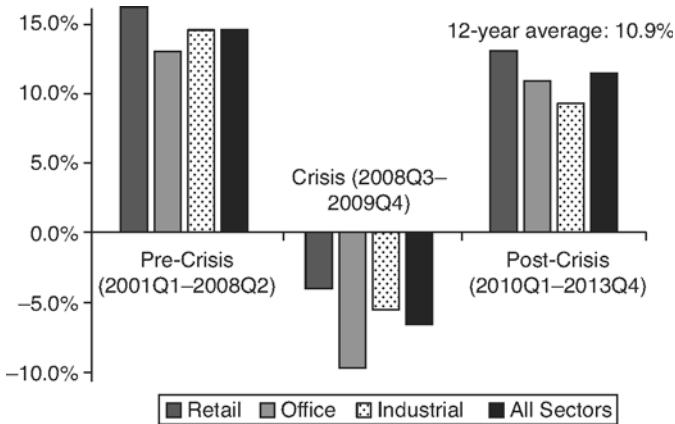


Figure 1.5 The average total return in Europe by periods

Source: Cushman and Wakefield data processed by the author.

the regions are observed in the performance of all sectors compared to the pre-crisis period.

As the Eurozone economy starts to recover, real estate investments are looking increasingly attractive across Europe. The healthy levels of transactions are set to increase driven largely by cross-border investments. The financial crisis may not be over, but a rapid change in the investment sentiment and a reduction in downside risk are generating a new phase of opportunities in the European investment market. Although the prolonged period of illiquidity is continuing in parts of Europe, transaction activity is spreading south to Spain as well as to second tier cities across the regions (E&Y, 2014; RCA, 2014; CBRE Global Investors, 2014).

Investigating the performance of the European investment market, returns to real estate vary substantially across subregions, countries and within the cities. The detailed analysis of the performance of the main geographical areas within Europe is given in the following sections.

1.2 Building location and impact on performance

It is an often quoted cliché that the three most important factors affecting real estate performance are ‘location, location, location’, but it does illustrate the importance of location in the real estate industry. Real estate assets are heterogeneous and have strong attributes relating

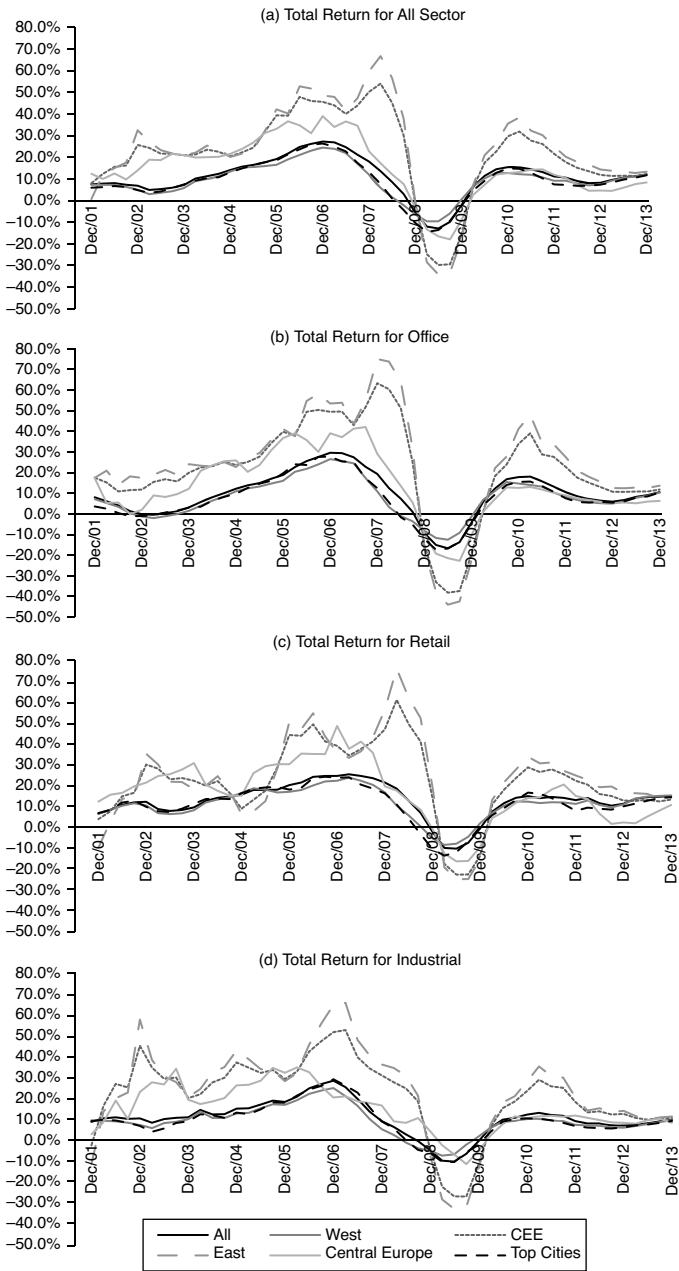


Figure 1.6 Regional total return by sectors

Note: Definition of regional groups is given in the Appendix 1.

Source: Cushman and Wakefield data processed by the author.

to physical characteristics of the building and locational influences. The location of the building is also crucial from the investment point of view and its influence should be taken into account.

Not only do economic factors such as inflation and interest rates have an impact on the performance of an investment property but so does location. Location is indicated as one of the relevant value drivers (Hendrikse, 2003). Good location can support demand to provide some leverage to adding a premium to existing market-related rentals, and higher rentals would have a positive effect on the return of the investment. A good location would attract consumers, ensuring a high turnover, and tenants would be willing to pay above-average market-related rentals (Jensen, 2005).

Location has always been an important determinant of a property's value. Traditionally, monocentric model of land prices predict that the land closest to the city centre has the highest value (Figure 1.7a). Commercial and residential uses compete for the limited central space, and hence, drive up central land prices, while prices gradually decrease with the distance to the city centre (Figure 1.7b). Conversely, modern models focus on how to estimate the effect of location on land values by stressing multicentric elements. A collection of several peaks in the rent gradient, located at suburban sub-centres, are added to the former single peak at the central hub of the city (Frew and Wilson, 2002). Peak rents remain at the city centre, but lesser peaks have formed further out that have been added between the central city and suburbs (Figure 1.7c). The basic assumption is that accessibility increases with the centrality, and therefore, landlords/tenants are much more willing to pay more for the land close to the CBD and less for the land further away from the centre.

In the literature, a great number of locational determinants have been claimed to influence property rent and value, with a great degree of variation. It is attempted to investigate the influences of an extensive variety of locational factors, apart from the building and economic factors. The hedonic models tested variables, the area quality, property visibility, access to workforce and amenities, land constraints and the certain distance of the buildings to focal points, such as to CBD and to freeways, focusing on residential or commercial markets.

The general and specific location of the property relative to its peers in a particular property class and location factors tend to be more demanding for retail, office and multi-family properties than industrial properties. It is reported that the influence of location, representing with various factors, can be highly significant on the value and the rental

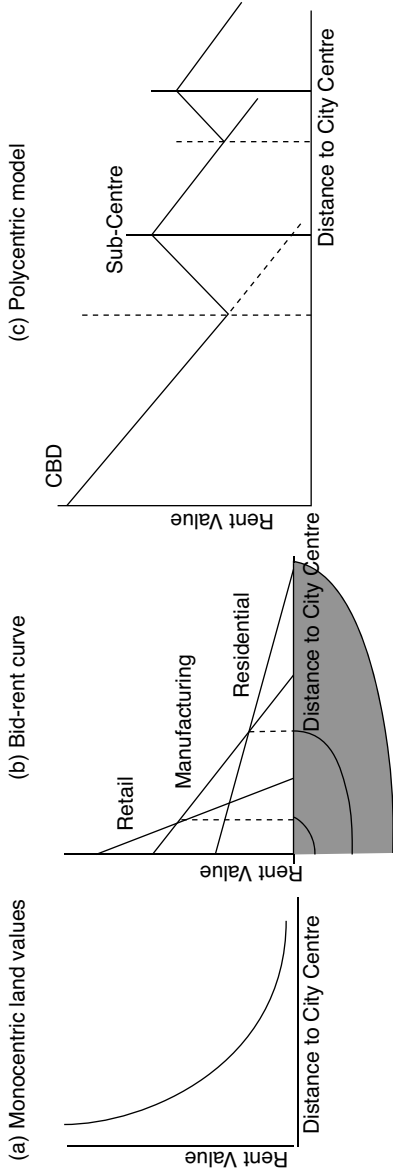


Figure 1.7 Land use bid rent functions
 Source: Alonso (1964).

of the property. The results show that highly valued property is not only located in the city centre but also in the sub-centres (Clapp, 1980; Sivitanidou, 1995, 1996; D'arcy et al., 1996; Bollinger et al., 1998; Oven and Pekdemir, 2006). Ultimately, the conducted studies are attempted to determine the value of the unique location.

1.3 Performance of main geographical areas

Traditionally, there are differences between European core countries and peripheral countries. The geographical diversifications in investment portfolios are reflected risk perceptions and return expectations. The distinction between mature and emerging markets are clear, but the investment strategies are shaped by various demographic, economic and political factors.

During the post-crisis period (2010–2013), it is observed that investors favoured the core European markets for growth and yield compression but avoided the distressed Southern European markets. In 2013, many markets and sectors across Europe saw growth, the most notable has been the rapid improvement in transaction momentum across peripherals (Greece, Ireland, Italy, Portugal, Spain) and emerging European countries (mostly CEE countries) (RCA, 2014). The current and the expected trend is rotating from the northern safe haven markets to the southern recovery markets and the CEE emerging markets (Axa Real Estate, 2014; CBRE Global Investors, 2014; Cushman and Wakefield, 2014a; RCA, 2015). The continental investors significantly increased their focus on peripheral markets and were joined by North American and Middle Eastern investors.

The rapid improvement in transaction momentum across peripheral and emerging European countries is clearly illustrated when comparing annual and quarterly y-o-y volume growth (Figure 1.8). The peripheral countries all showed the greatest annual increase in transaction activity in Europe. Markets saw healthy improvements but also the limited availability of product to match investor appetite in these countries. The Southern and CEE regions are looking more attractive compared with the core western markets, that offer sustainable income but a high price.

Europe is in the early stages of economic recovery. The increasing business and consumer confidence in certain markets are expected to gather pace slowly in the rest of the Europe. However, at a country level, the pace and stage of recovery varies widely. Initially led by the United Kingdom and Germany, the recovery is forecast to broaden as a sustained upturn emerges in Southern Europe and as the CEE countries

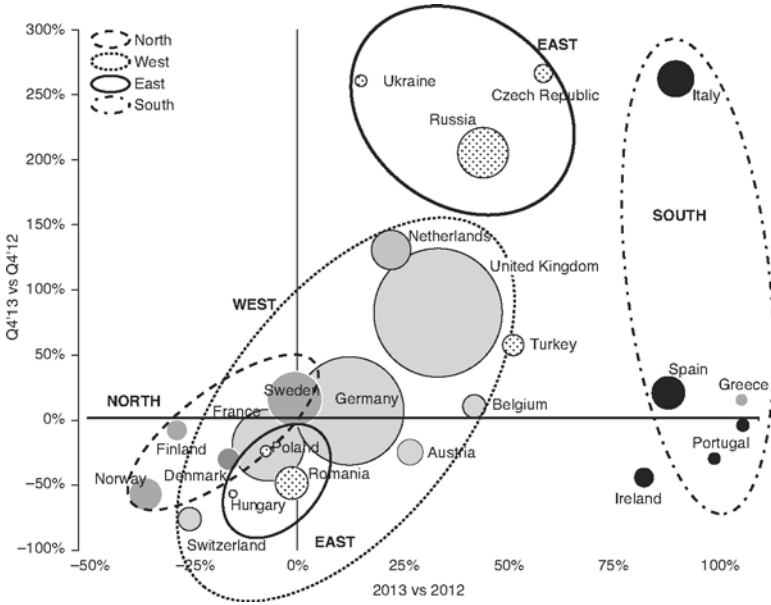


Figure 1.8 European market movement, 2013

Source: RCA data processed by the author.

resume economic convergence with the more mature Western European economies (DeAWM, 2014a).

Under the changing conditions of the business environment, the investment strategies are likely formed at a national level, but also sub-regional in response to different market fundamentals, or growth expectations and risk perceptions of investors in certain sectors. The cyclical variations in investment performance are repeated across real estate markets, leading to notable differences across the regions.

All European countries are classified into the regions to examine the similarities and the differences across the regions, as given in the Table 1.1. The overview of the each region is given in the following section.

1.3.1 Northern Europe

Northern Europe countries are Denmark, Finland, Norway and Sweden, mostly called the ‘Nordics’. The Nordic countries are popular among international investors because they are generally perceived as safe

Table 1.1 Classification of the countries by regions

Region	Country
Northern	Denmark, Finland, Sweden, Norway
Western	Austria, Belgium, France, Germany, Ireland, Luxembourg, Netherlands, Switzerland, UK
Eastern	Bulgaria, Croatia, Czech Rep., Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Turkey, Ukraine
Southern	Greece, Italy, Portugal, Spain

economies, and their property markets are stable. Except Finland, they use their own currencies – Danish krone, Swedish krona and Norwegian krone, but no significant volatility has been experienced against the Euro, with the exception of 2008 crisis period. In addition, all four countries have been top-rated by major credit rating agencies.

Among them, Sweden is known as the most transparent market, mostly preferred by cross-border investors; Norway is dominated by local investors. However, the number of foreign investors in the other Nordic countries is increasing. The institutional investors dominate in all countries, and they focus on prime properties. However, increasing demand to the secondary assets is expected, as the supply of prime assets is limited, and investors are becoming less risk averse (Colliers, 2014).

Although a general recovery occurred in most regions in the post-crisis period, the Nordics was the one European region to see significant weakening in volumes through 2013, totalling €17.8 billion down 14% on 2012 activity (Figure 1.9). While the outlook for Northern Europe is fragmented, markets with robust consumer-driven economies, such as Sweden, are expected to outperform in the short term (RCA, 2014).

The performance of the Nordic countries in terms of average total return is examined for distinct periods by sectors, as presented in Figure 1.10. Although recovery has started to be observed in all sectors, the average returns are still below pre-crisis level, except in the office market. The industrial sector outperformed in the pre-crisis period while it posted the lowest average total return in the post-crisis period. The retail sector looks the most attractive with above all sector average total return.

The Nordics have performed relatively well in a European and global context, albeit with considerable variations in the performance between the stronger Norwegian and Swedish markets and the weaker Danish and

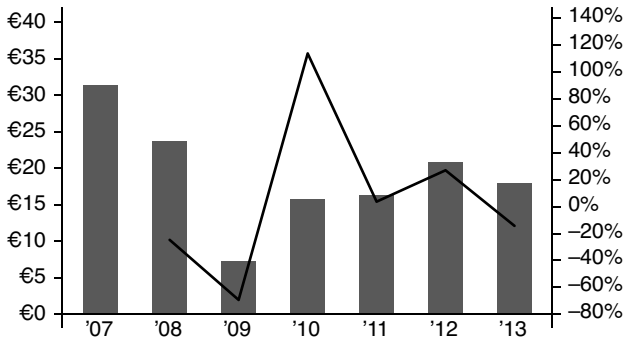


Figure 1.9 Total transaction volume in Northern Europe

Source: RCA data processed by the author.

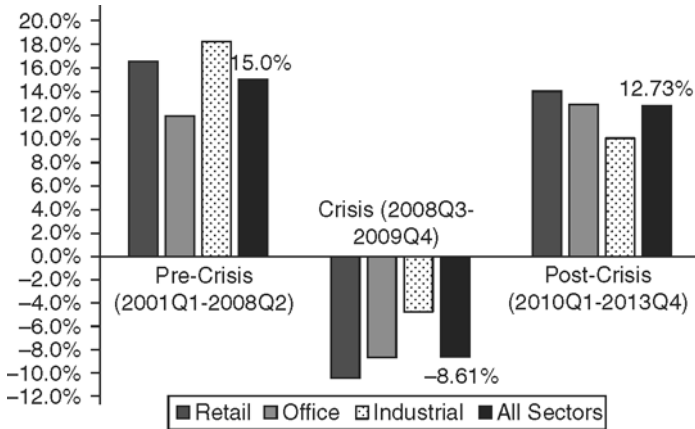


Figure 1.10 The average total return in Northern Europe

Source: Cushman and Wakefield data processed by the author.

Finnish markets (IPD Nordics, 2014). In a longer time perspective, the prime yields for all sectors have decreased since 2009 in all the Nordic capitals. Exceptions are Copenhagen, where most yields have been stable, and Oslo, which has seen increases in the yield for prime retail. Yields are near their previous cyclical low, especially for prime properties (Figure 1.11).

The record-low yields of the prime properties may currently limit some investors' interest, but good investment opportunities can be found in,

for instance, second tier cities for investors with larger risk appetites. This is especially true for domestic investors looking for opportunities in markets outside of the main capital cities, where yield level are more attractive.

One of the positive features for the Nordic markets as a whole relates to the increased availability of debt finance for property investments. The availability has improved significantly during the past year, and various sources can be exploited by different types of investors.

1.3.2 Western Europe

The Western Europe investment market is led by the big three of France, Germany and the UK. It is reported that they saw a 24% rise in volumes (Figure 1.12), thus maintaining their market share of 66% in total European transaction volume in 2013 (Cushman and Wakefield, 2014a). Similarly, the recovery in Europe is also driven by the UK and Germany with some differentiation between market dynamics. The UK has benefited by an upswing in business and financial services while Germany's powerful export sector contributed in confidence, which turned into higher business volume. Both UK and Germany offer alternatives to investors with primary and secondary assets regarding their investment strategies. The boost in the French market, on the other hand, was the result of greater investor activities in Paris.

In terms of the average total return by sectors in the western region, the retail sector was the outperformer with the highest return in the pre-crisis and the post-crisis periods, as well as with the lowest decline during the crisis period (Figure 1.13). The office sector turned back to the pre-crisis level, which peaked in the crisis period. The industrial sector performed below all sector average both in the pre and the post-crisis periods.

Investors have favoured the UK for growth and yield compression in the primary markets and assets, but they have turned to regional cities and value added strategies in the post-crisis period. The average UK office and retail yields remained flat, but transaction volumes were up with a recovery in domestic activity and increased global cross-border interest, its highest level since 2007. Similarly, German office yields were stable, with prime assets in A Cities trading below 5%, but there is an increasing interest in the second tier German markets. Office yields in France remain stable, with some compression in the spread between Paris and regional office assets. Retail yields continued to move in, reflecting the concentration of assets trading in prime areas of Paris. Benelux markets recorded higher volume with the increasing cross-border investments



Figure 1.11 Total return in Northern Europe by sectors
 Source: Cushman and Wakefield data processed by the author.

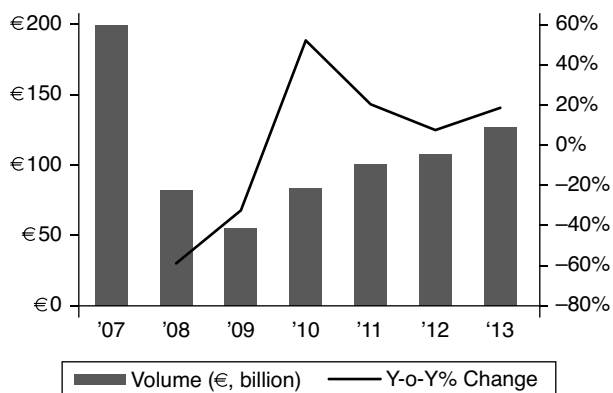


Figure 1.12 Total transaction volume in Western Europe

Note: Data do not include Austria and Switzerland.

Source: RCA data processed by the author.

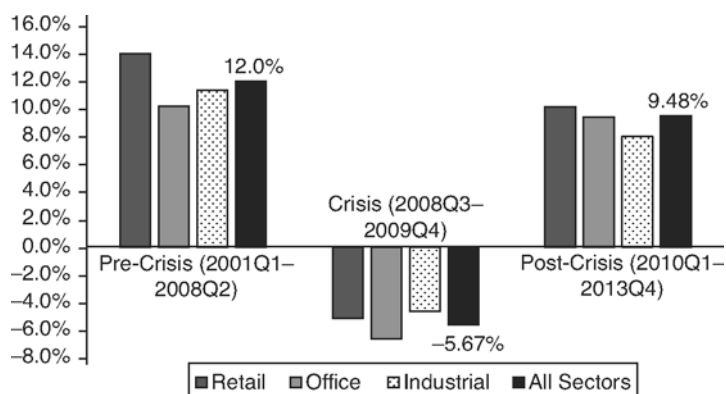


Figure 1.13 The average total return in Western Europe

Source: Cushman and Wakefield data processed by the author.

into the market, corresponding with declining yields in both office and retail assets.

Undoubtedly, London is leading the recovery in European prime rental office values while the highest growth recorded is in the first tier German cities. In the retail market, France remains the largest market in shopping centres and luxury retail.

Growth in western markets is partly driven by increasing cross-border investments, which are especially active in the core segments. While secondary markets in the UK and second tier German cities, due to higher prices and scarcity of acquisition opportunities for core assets, are forcing some to consider taking on more risk.

1.3.3 Eastern Europe

The performance of the real estate markets in the CEE region is characterized by a distinctive pattern in two sub-periods: a roller coast ride lasting until 2008 (pre-crisis period) and market correction after 2008 (post-crisis period). The region experienced increasing foreign capital inflows, strong yield compression and double-digit returns during the first period. Following the negative impacts of the 2008 financial crisis, the market saw an initially severe market correction and subsequent signs of stabilizing performance to sustainable levels, comparable to Western European or other more established markets in the post-crisis period. However, the region has been recovering with new post-crisis record, posting approximately €20 billion investment volume in 2013, up 32% on 2012 volume (Figure 1.15).

According to the IPD, there is a clear sign that the region has become firmly established into the investment patterns of many institutional investors. Despite its small size within mainland Europe, there is an emergence of 'key core countries' Poland and the Czech Republic, surrounded by a loosely defined periphery including Hungary, Slovakia, Romania, Bulgaria (among other smaller markets) and also relatively large countries dominating their region, Russia and Turkey. These core countries became target of European development/investment companies with their large population size and undeveloped market structure offering opportunities compared to the western mature markets.

As displayed in Figure 1.16, the average return for all sector in the eastern region was the highest compared to the rest of the Europe in the pre-crisis period with an average of 27.4%. Retail, in particular, outperformed with an average of 30.1% total return in the same period. The region experienced the lowest return with overall -14.5% total return among all regions in the crisis period. The market has started to recover and has posted the average total return of 10.98% in the post-crisis period.

In retail, the CEE was dominant representing almost two of thirds of all shopping centre completions in Europe and is expected to continue. Russia and Turkey have the largest shopping centre pipeline, far away from western countries (Cushman and Wakefield, 2014b). However, the

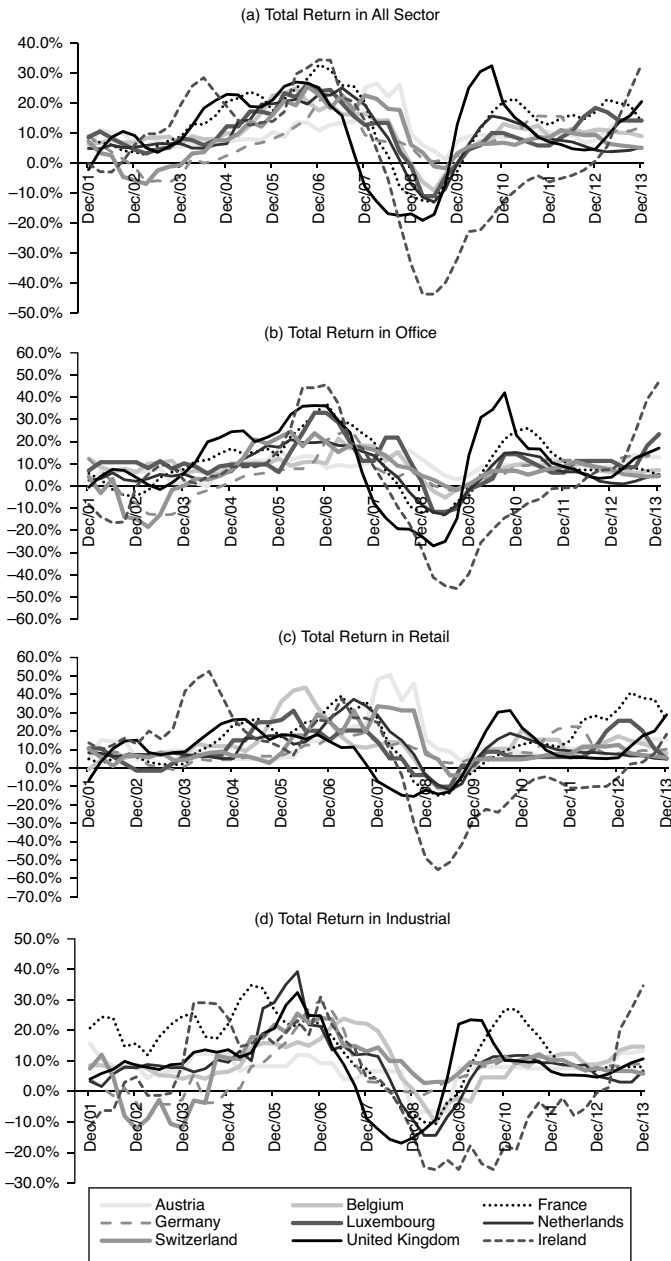


Figure 1.14 Total return in Western Europe by sectors
 Source: Cushman and Wakefield data processed by the author.

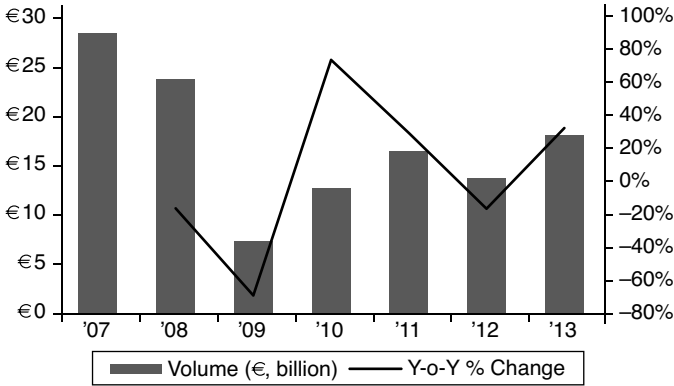


Figure 1.15 Total transaction volume in Eastern Europe

Source: RCA data processed by the author.

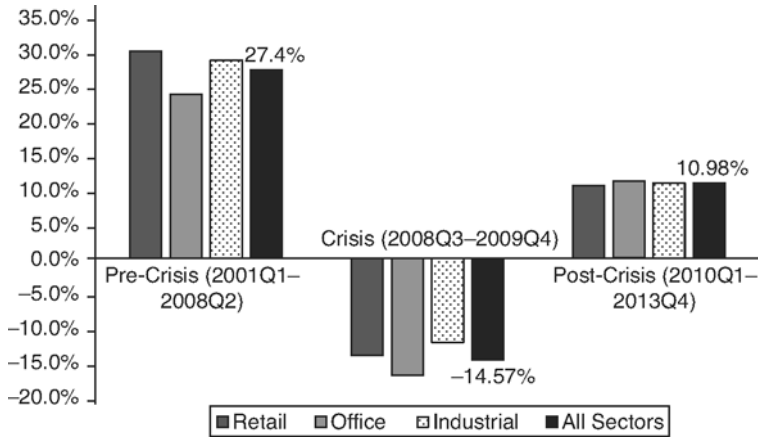


Figure 1.16 The average total return in Eastern Europe

Source: Cushman and Wakefield data processed by the author.

geopolitical concerns in the region may lead to the postponements of some projects into the future. Average office yields are rising slightly, with retail seeing some compression. However, both still remain below the average for peripheral countries. Investments into the CEE logistics/

industrial market have expanded, reflecting the growth in pan-European logistics networks and cheaper costs in comparison with the other markets (RCA, 2014).

The current political unrest in Russia, Ukraine and Turkey has had significant impact on investment volumes in Eastern markets. Cross-border investments in these markets is virtually non-existent. On the other hand, an increasing interest of international real estate players vs the emergence of new entrants like sovereign wealth funds and local funds has started to be observed.

1.3.4 Southern Europe

The Southern European economies have experienced some of the deepest and most prolonged recessions in Europe, starting in 2008, which caused relatively longer-term depreciation in their real estate markets. The clear sign of the recovery occurred in 2013, initially in Spain followed by Portugal and partially by Italy. Southern European countries recorded the strongest jump in investment transactions, with a 97% (y-o-y) surge in investment to €11 billion in 2013 (RCA, 2014).

As one of the most attractive regions in the pre-crisis period, real estate markets in Southern region posted an average of 11.6% overall return, and they faced a major change in total returns from the negative effect of 2008 financial crisis and later 2010 Eurozone crisis (Figure 1.19). There is a sign of recovery in the retail sector, although it is still quite below the pre-crisis level, while average returns in office and industrial sectors are behind compared to the pre-crisis level.

These markets are offering alternatives to the investors compared to the overpriced markets in the western region. While many of the most attractive opportunities have already snapped up, investors continue to buy into the recovery story in those markets (RCA, 2014).

A broad mixture of cross-border investors has led a resurgence of investment in Spain and Italy, with almost doubling investment volume. The huge increase in cross-border investment targeting these markets has corresponded with a flattening to downward trend in office and retail transaction yields. The cross-border interest has pushed yields down significantly, although average yields are still attractively priced in a European context. Furthermore, the yield compression is expected to accelerate and spread across countries and other sectors. A rebound is likely to be limited to a small subsection of prime assets and locations (DeAEW, 2014a). Sentiment surveys have shown a surge in investors targeting these markets in the forthcoming years.

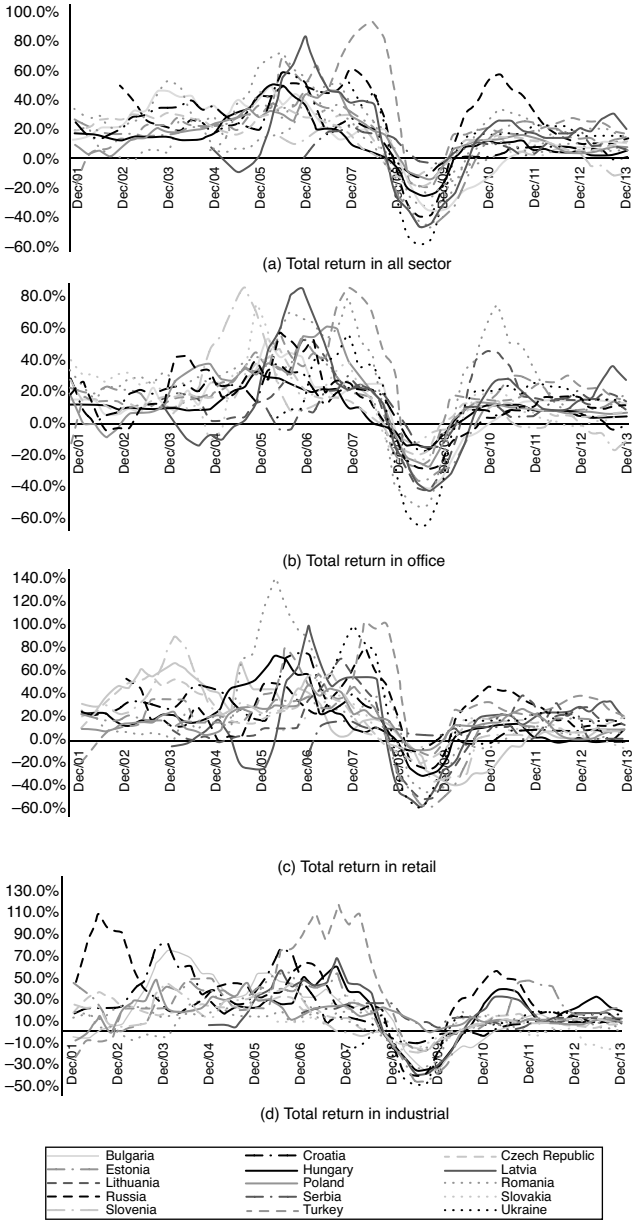


Figure 1.17 Total return in Eastern Europe by sectors
 Source: Cushman and Wakefield data processed by the author.

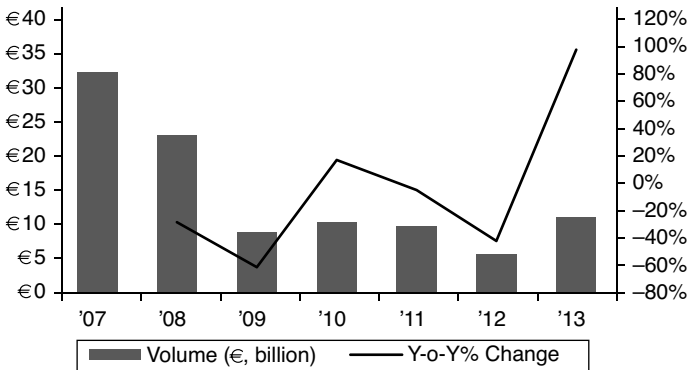


Figure 1.18 Total transaction volume in Southern Europe

Source: RCA data processed by the author.

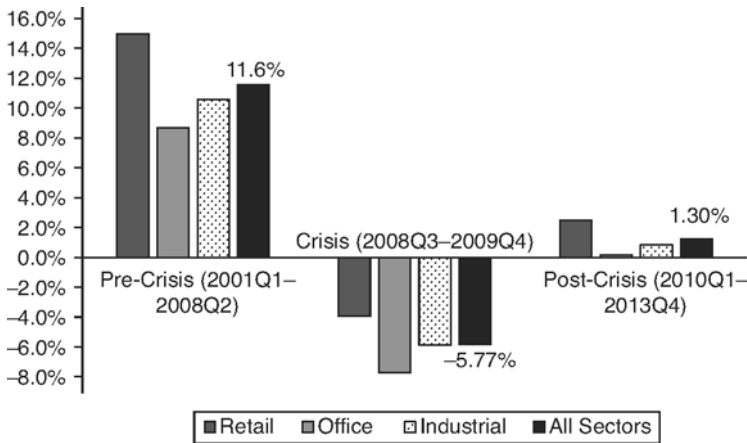


Figure 1.19 The average total return in Southern Europe

Source: Cushman and Wakefield data processed by the author.

1.4 Market performance differences in countries

In terms of the European investment market, the main focus is on the three core property markets of France, UK and Germany, which represent 50%–70% of European investment activity (Axa Real Estate, 2013; Cushman and Wakefield, 2014a; DTZ, 2013; RCA, 2014). As seen in Table 1.2, the ranking of the major markets remained unchanged in the core western countries, the UK, Germany and France, the strong Nordic market Sweden and the shining star of the East, Russia.

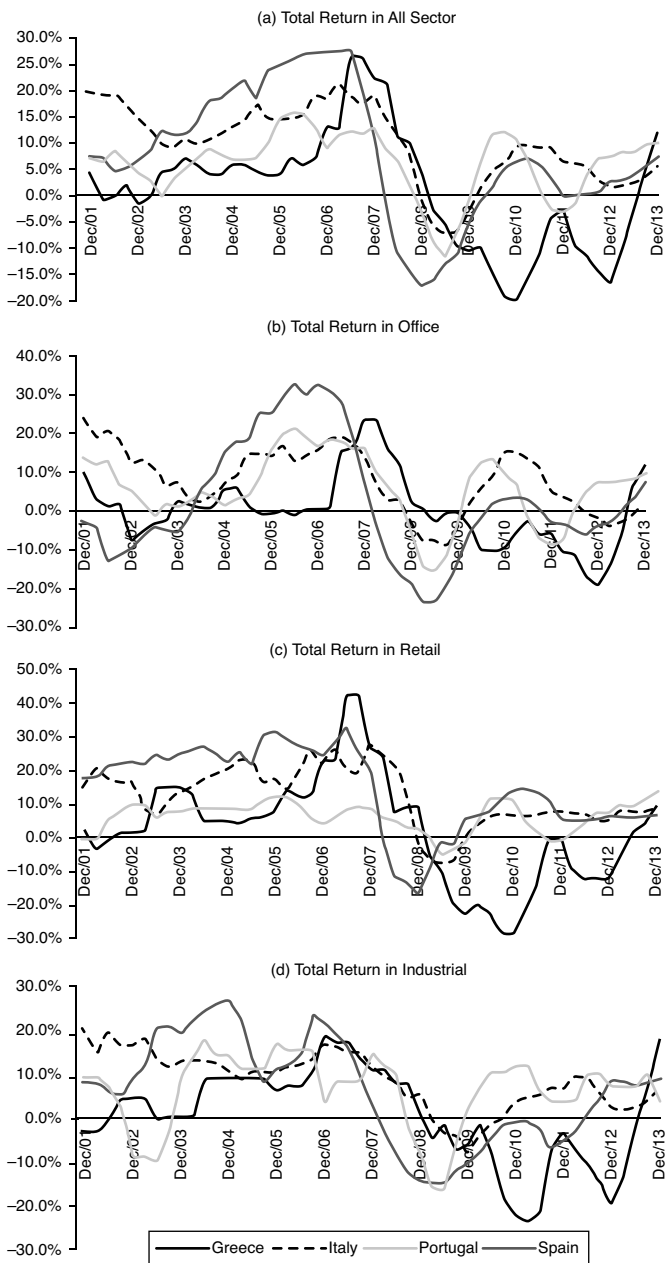


Figure 1.20 Total return in Southern Europe by sectors
 Source: Cushman and Wakefield data processed by the author.

Table 1.2 Top 10 European investment markets

	Market	2010 Vol (€M)	Market	2011 Vol (€M)	Market	2012 Vol (€M)	Market	2013 Vol (€M)
1	UK	36,860	UK	37,073	UK	41,402	UK	58,688
2	Germany	19,782	Germany	30,132	Germany	33,374	Germany	42,028
3	France	16,379	France	16,522	France	16,918	France	18,449
4	Sweden	8,187	Sweden	9,624	Sweden	9,371	Sweden	11,028
5	Russia	5,371	Russia	5,360	Russia	5,689	Russia	9,158
6	Spain	4,833	Spain	4,127	Norway	5,147	Netherlands	5,530
7	Netherlands	4,150	Italy	3,688	Netherlands	4,050	Italy	4,714
8	Italy	3,151	Netherlands	3,407	Poland	3,056	Spain	3,925
9	Poland	1,864	Poland	3,309	Italy	2,464	Poland	3,815
10	Norway	1,762	Czech Rep.	2,327	Denmark	2,048	Norway	3,507

Note: Data is compiled from RCA.

The UK and Germany remain the best places to invest in Europe thanks to the size of their market and an overall liquidity ratio above the regional average (DTZ, 2013). Another western market, the Netherlands also has a strong position among the top markets with a €5.5 billion total transaction in 2013. From the Nordics, Norway is also ranked in the top ten markets and recorded €3.5 billion total transaction in 2013. Poland has a strong position in Eastern markets, followed by Russia. Poland maintained its attraction as the main target of foreign investors in the CEE regions.

Market activity is still at a very low level in the peripheral countries. However, a number of previously stressed peripheral markets are now recovering, led by Italy and Spain. In 2013, Italy and Spain outperformed with an 88% annual growth and posted €4.7 billion and €3.9 transaction volume, respectively, which is claimed to show that there is clear sign of recovery in peripheral markets.

It is reported that no significant change is expected in the ranking in the short term. However, capital values are quite low in the CEE region and clearly not enough to impact significantly the hierarchy of invested stock across the region. Regarding the lenders expectation lending by type of investment in Tier 1 and Tier 2 & 3 cities, there remained a clear focus toward prime standing investments (Figure 1.21). Overall, a net

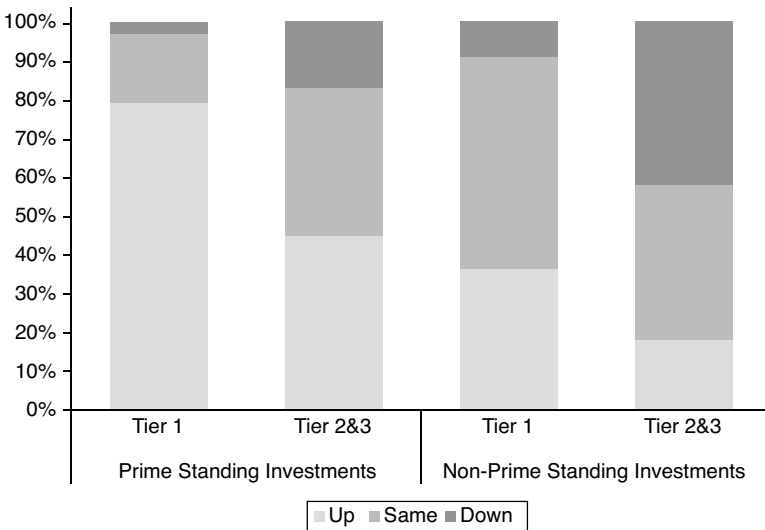


Figure 1.21 Willingness to lend in Tier 1 and Tiers 2 & 3 cities

Source: DTZ data processed by the author.

balance of 74% is seeking to increase lending toward prime standing investments in Tier 1 cities while the balance shrank to a net 29% in Tier 2 & 3 cities. However, it is expected that lending on non-prime assets to be down in Tier 2 cities. This highlights that lenders still remain cautious in Tier 2 cities, with a clear focus toward core assets (DTZ, 2013).

According to DTZ Fair Value Index, there are 66 hot, 30 warm and only 9 cold markets in Europe, indicating that many property markets look attractive from an investment perspective. The UK and Germany look to be particularly good value, and the CEE and Nordics remains very attractive (Figure 1.22). Nordics can benefit from a large basis of sub-regional rich-equity investors (DTZ, 2013).

As usual in Europe, the hot markets are balanced by a handful of markets still classified as cold, which are located mostly in the CEE and peripheral regions (DTZ, 2013). Although core markets keep their attractiveness, emerging or secondary markets are also offer alternatives to investors by the higher risk-adjusted returns.

1.4.1 Cities vs the rest of the market

Among mature markets, Europe’s stalwarts London and Paris kept their strong position; however, competition, growth and change bring forth new winners. Among emerging markets, larger cities in the eastern

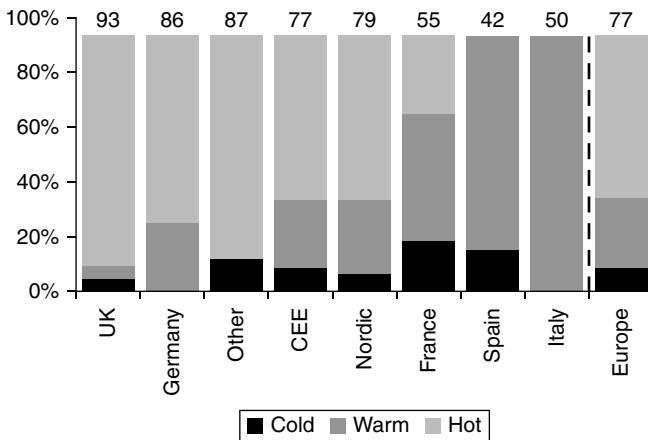


Figure 1.22 Fair value index in Europe, 2013

Source: DTZ data processed by the author.

markets have a potential to develop as regional hubs and offer alternatives to the investor who is looking for higher returns with higher risk appetite. A small group of markets, led by London and Paris and a few German cities (Berlin, Frankfurt, Hamburg, Munich), are pursued by global investors because of their generally low yield profile, but they are also known as safe markets.

PwC Emerging Trends in Europe surveys (PwC&ULI, 2008; PwC&ULI, 2010) are reported that Moscow and Istanbul supplant Paris and London as the top-ranked cities according to European investment ratings, in the pre-crisis period (2008); however, investors preferred to turn back to safe markets, just after the crisis (2010). This cyclical movement was also observed during the post-crisis period, compared to 2012 and 2014 (Table 1.3). It is clear that the market is shifting from core markets to emerging markets and is rotating among primary and secondary cities regarding risk perceptions and return expectations under the different real estate market conditions.

The performance of the top cities and the emerging markets, in terms of yield and capital growth, is presented in Figure 1.23. The emerging markets offered higher capital growth with yield compression in the pre-crisis period, but they experienced the negative impact of the 2008 financial crises with sharp fall in capital growth. On the other hand, top cities have stable yields, although at lower rate, with relatively moderate capital return.

According to Cushman and Wakefield Winning in Growth Cities 2014/2015 report, the global ranking of the European cities was the most improved with 13 vs 4, a year ago, led by Dublin, Manchester, Amsterdam, Helsinki and Madrid. London and Paris led the markets as

Table 1.3 Ranking of top 10 cities for existing new investment

	2008	2010	2012	2014
1	Moscow	Munich	Istanbul	Munich
2	Istanbul	Hamburg	Munich	Dublin
3	Hamburg	Paris	Warsaw	Hamburg
4	Munich	London	Berlin	Berlin
5	Paris	Vienna	Stockholm	London
6	Lyon	Milan	Paris	Zurich
7	Frankfurt	Istanbul	Hamburg	Istanbul
8	Stockholm	Berlin	Zurich	Copenhagen
9	Berlin	Rome	Moscow	Stockholm
10	Helsinki	Frankfurt	London	Frankfurt

Source: PWC & ULI, 2008, 2010, 2012 and 2014.

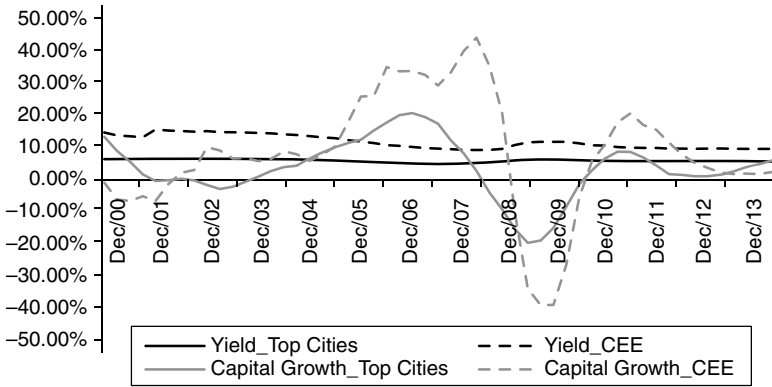


Figure 1.23 Performance of the top cities and the CEE cities

Source: Cushman and Wakefield data processed by the author.

top cities; however, the interest has spread further to new markets, with Southern Europe and Spain and most in focus in second tier cities in the UK and Germany (Cushman and Wakefield, 2014c).

Looking at the top 20 global cities, Europe has a broader representation with 7 of top 20 cities, respectively in three or more sectors (Table 1.4). The European economic recovery is expected to translate into property, reflecting an improvement in corporate confidence which is pushing investment and occupier demand, with a focus on modern space and new working and retailing practices. Although retail supply is falling in the core European markets, luxury retail is still in a growth mode and expansion in convenience retail for the right size units in accessible locations. London and Paris continue to lead the market with primary assets while Moscow and Istanbul are offering alternatives with their large shopping centre pipeline in Europe. An undersupply of modern office space will enliven rental growth, with demand firming ahead of expectations in some markets. Dublin and London will lead, but others such as Madrid, Stockholm, Berlin, Munich, Frankfurt and Oslo are also expected to see good growth. Logistics hubs across the region are seeing increased activity, favouring major transport interchanges at ports and airports as well as urban area logistics.

Core gateway markets such as London, Berlin, offer strong potential – albeit with more risk taking needed to boost returns – while a broader range of opportunities can be identified in second tier and emerging markets. This ranges from a low risk upturn in Northern Europe, led

Table 1.4 Top 20 cities for real estate markets

	Retail	Office	Logistics	Multi-family residential
1	New York	New York	Shanghai	New York
2	London	Singapore	Singapore	Berlin
3	Paris	London	Hong Kong	London
4	Tokyo	Hong Kong	Tokyo	Stockholm
5	Los Angeles	Paris	New York	Toronto
6	Hong Kong	Tokyo	Paris	Paris
7	San Francisco	Boston	Chicago	Tokyo
8	Moscow	Chicago	London	Hong Kong
9	Singapore	San Francisco	Guangzhou	Sydney
10	Sydney	Washington D.C.	Shenzhen	Singapore
11	Miami	Zurich	Beijing	Los Angeles
12	Seoul	Stockholm	Amsterdam	Chicago
13	Milan	Sydney	Los Angeles	Houston
14	Shanghai	Melbourne	Washington D.C	San Francisco
15	Beijing	Los Angeles	Frankfurt	Tel Aviv
16	Madrid	Toronto	Hamburg	Amsterdam
17	Barcelona	Seoul	Rotterdam	Dublin
18	Guangzhou	Vienna	Munich	Copenhagen
19	Toronto	Frankfurt	Madrid	Auckland
20	Istanbul	Amsterdam	Atlanta	Atlanta

Note: European cities are given in bold.

Source: Cushman and Wakefield (2014b).

by Stockholm and Copenhagen, to higher risk markets such as the CEE region.

The latest PwC Emerging Trends in Europe survey is also confirmed rotation between safe primary markets and attractive secondary markets (PwC&ULI, 2014). Investors stated that for investment prospects for the coming years, there will be a mix of German ‘gateway’ stalwarts (Berlin, Hamburg) and recovery plays (Dublin, Madrid and Athens). Although big money is dominating many of Europe’s core markets, it is a case of using local knowledge to find the right locations and right assets: high quality investments in regional cities or renewal opportunities in town offices and shops, logistics and conversions to residential.

Similar findings are also supported by the latest report by Cushman and Wakefield (Cushman and Wakefield, 2014c). As given in Table 1.5, the target cities offer an investment view for each sector. Looking across all of these categories, a small group of markets dominate, led by London and Paris and a few German cities. Also, second tier markets

Table 1.5 City targets for investment, 2015

	Office	Retail	Logistics
Core	Gateway markets: London, Paris, Stockholm, Munich, Frankfurt, Berlin	Dominant shopping centres and luxury/flagship high streets in core western cities	London, Paris, Munich, Hamburg, Rotterdam, Barcelona
Core-Plus	Amsterdam, Second tier German and UK cities, Prague, Warsaw plus development in core cities: London, Paris, Stockholm, Frankfurt, Berlin, Madrid, Milan, Brussels, Copenhagen, Luxembourg	Retail development and refurbishment in core cities in Western Europe including well anchored convenience centres	German second tier, Lyon, Milan, Antwerp, Madrid, Warsaw, Prague and build to suit development in core cities
Opportunistic	Lisbon, Moscow, Istanbul, CEE capitals and development in Central and Southern Europe	Moscow, major cities in Turkey and elsewhere in CEE plus active management/development in larger cities	Development and units serving large Eastern European cities and peripheral western

Source: Cushman and Wakefield (2014b).

in Europe are expected to enjoy improved demand, led by Amsterdam, Madrid, Milan, Warsaw and Brussels. New markets are, however, set to be of growing interest in the wider region like Istanbul benefitting from ongoing instability in the Middle East, for example. Infrastructure development is a key area to watch in EMEA, with the biggest changes emerging in London and Paris but also Istanbul, where important large scale transportation projects are set to be an important driver of real estate demand in the coming years such as London CrossRail, Grand Paris Express and a new airport and new tunnels under the Bosphorus in Istanbul.

The power of emerging cities is expected to increase in the next years as manufacturers and retailers seek out opportunities for growth. In terms of the office market, the status of emerging cities as corporate centres is also increasing, with some firms setting up regional headquarters targeting cities such as Istanbul. This is not only due to their growing

support services (multi-campus universities, hotels and business services) but also to the increasing importance of a low cost centre.

Investors mentioned a high interest in second tier cities that geographically surround established European cities, and there is a need to consider secondary markets as they are willing to take on more risk. The shining stars of the emerging markets, Moscow and Istanbul, offer opportunities with their large population and dominant economic powers in their region. They also offer alternatives with their large development pipeline, unlike the top markets, where the investment grade products are limited and overpriced. Apart from these dominant cities in their regions, 'medium and large towns outside Warsaw and Moscow' or 'secondary cities' in Turkey, Russia, Poland and Bucharest, like Ankara, Izmir, Odessa, Constanta, Brasov, Timisoara, Gdansk and Krakow are also identified as new players (PwC&ULI, 2008). It is also stated that cities with a population of over 1 million, such as Russian cities St. Petersburg, Novosibirsk and Yekaterinburg, are 'ripe with investment opportunities'. A similar effect for surrounding cities near Paris, London, Rome and Stockholm is also expected.

1.4.2 City downtown vs suburbs

In terms of metropolitan urban development, economic, social and technological advances have an impact on changing business environment, but growth and supply limitations also have an important role in urban development and the emergence of new sub-centres. Although primary market dominance has shaped the real estate market within the cities, secondary locations or peripheral areas are becoming attractive alternatives for investment purposes. In addition, price concerns and return expectations of investors are major determinants in their investment decisions.

Indeed, the risk appetite of investors is increasing with a desire for secondary locations to explore opportunities. For example, London remains a favourite location for global investors with the recent weight of capital pushing them to explore a range of opportunities within differing London villages. It is reported that the movement of high quality tenants to growing office villages such as Soho, Noho and Marylebone/Euston is pushing investors beyond their traditional core market boundaries. The vast majority of the London village markets highlighted are at or above 2007 price per square foot values (RCA, 2014).

Scarcity and the high prices of the better-quality properties are forcing some investors to consider taking on more risk, and others are being priced out of hot markets and chasing yield. They are moving into

Table I.6 Investment market size in top 10 cities by sectors, 2007–13

2007	2008	2009	2010	2011	2012	2013	Markets	Sales volume (€M, 2013)
Office market rankings								
1	1	1	1	1	1	1	London	€25,511
2	2	2	2	2	2	2	Paris	€8,596
3	18	12	5	5	4	3	Frankfurt	€3,231
10	6	4	3	3	7	4	Moscow	€3,020
4	19	5	9	8	5	5	Munich	€2,413
5	3	16	4	4	3	6	Stockholm	€2,374
7	7	11	6	7	6	7	Berlin	€1,714
11	11	7	11	12	26	8	Milan	€1,565
14	8	15	14	9	8	9	Oslo	€1,527
25	16	24	21	10	12	10	Warsaw	€1,316
Retail market ranking								
1	1	1	1	1	1	1	London	€3,496
11	2	12	20	4	7	2	Moscow	€2,250
29	18	8	2	6	2	3	Paris	€1,486
4	36	9	3	11	4	4	Berlin	€1,181
24	8	17	22	3	12	5	Munich	€957
67	41	55	50	55	54	6	Milton Key.	€948
3	16	36	9	10	3	7	Stockholm	€931
18	13	4	11	13	15	8	Birmingham	€749
16	7	5	15	9	10	9	Hamburg	€729
35	55	25	29	14	24	10	Hanover	€635

Continued

Table 1.6 Continued

		2007	2008	2009	2010	2011	2012	2013	Markets	Sales volume (€M, 2013)
Industrial market ranking										
2	1	4	1	1	1	1	1	1	London	€1,115
4	14	5	14	3	8	3	8	2	Stockholm	€593
16	63	3	28	5	2	5	2	3	Moscow	€587
3	15	2	2	2	3	2	3	4	Paris	€443
5	33	22	27	7	19	7	19	5	Munich	€440
11	9	18	4	12	18	12	18	6	Frankfurt	€382
10	3	7	5	8	4	8	4	7	Birmingham	€371
22	31	26	40	14	47	14	47	8	Malmö	€281
37	56	21	22	24	17	24	17	9	Hanover	€241
63	50	44	50					10	Geneva	€219
Residential market ranking										
1	3	3	2	3	1	1	1	1	Berlin	€5,994
6	9	2	3	2	2	2	2	2	London	€1,314
9	1	1	1	3	4	3	4	3	Stockholm	€804
10	46	16	15	33	20	33	20	4	Ruhr Valley	€506
14	37	5	5	4	6	4	6	5	Hamburg	€503
23	12	8	8	11	10	11	10	6	Frankfurt	€438
25	7	11	11	27	48	27	48	7	Madrid	€367
4	2	34	34	18	12	12	7	8	Copenhagen	€354
2	38	9	9	5	15	5	15	9	Dusseldorf	€344
13	15	4	4	6	14	6	14	10	Munich	€342

Note: RCA data processed by the author.

less competitive environments, where their local knowledge and asset management skills give them an edge in the fringes of central business districts (CBDs). Outside the established central areas, there are also a number of emerging submarkets in other parts of town, especially in the office market. As the largest metropolitan cities in Europe, London and Paris are represented as good examples of such an urban development pattern.

London and Paris dominate their national economies and drive the growth. With a highly educated and young workforce, each city has an employment structure focused on the stronger performing sectors of the economy. Both cities rank at the top of the global and European markets, attracting considerable cross-border investment.

Greater London and Ile-de-France represent the two largest real estate markets in Europe, both in terms of real estate stock and investment liquidity. Both markets are highly successful in attracting international capital with buyers from all over Europe, the Americas and Asia Pacific. Despite having relatively similar-sized office-based workforces, the Paris region contains a larger inventory of office space than Greater London. However, much of the Ile-de-France stock is located within suburban clusters separated from the centre of town, and a look at the central parts of each city reveals two more similarly sized markets shown by Central Paris and Greater London in the Figure 1.24.

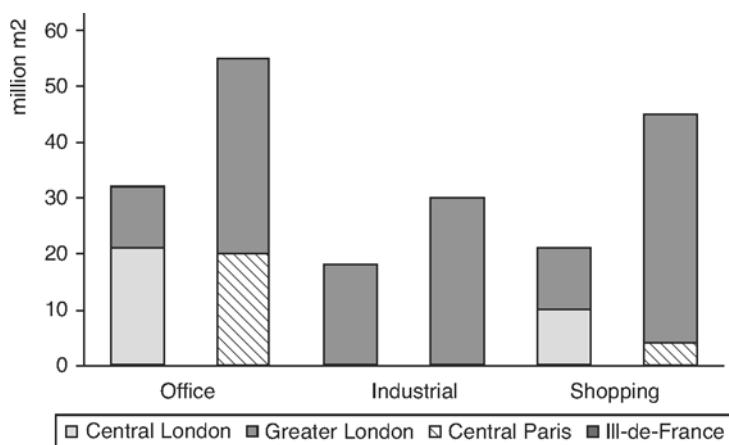


Figure 1.24 Total volume of real estate stock in London and Paris

Source: DeAWM data processed by the author.

The areas containing the highest concentrations of office stock in Central London (City, Midtown, West End, Southbank and Docklands) and Central Paris (CBD, La Défense and Western Business District-WBD), both contain just over 20 million square metres. Within this central inventory, there are certain defined submarkets, each attracting different occupiers and investors as well.

In London, the ‘City’ has been a traditional centre for banking and finance while Docklands is the relatively modern business district, emerging in the early 1980s. The weight of capital focused on London office investment opportunities has resulted in a significant spillover of capital into different office areas in London. Investment activity in areas such as Covent Garden and Waterloo-Southwark are well above 2007 levels. The highest rentals and lowest yields are still reserved for the prime office areas of St James, Mayfair and Belgravia/Knightsbridge. However, there are a number of other office villages in Central London providing higher yielding opportunities (RCA, 2014).

The WBD of Paris was originally home to a number of industrial and manufacturing centres and is still dominated by manufacturing and energy sectors, although the area has been transformed with a significant quantity of office space. La Défense in Paris is the largest purpose built business district in Europe, which is largely dominated by financial services occupiers. New business districts and financial hubs are emerging due in part to large scale infrastructure projects, like Rive Gauche and ZAC Clichy Batignolles. This has not only helped soften the fall in demand in Paris, but it has also illustrated the office market’s trend to move away from business districts in central Paris.

The historic centres of London (the West End) and Paris (the CBD) are composed of diverse occupiers, with business services, consumer services and leisure and finance all playing an important role. These two prestigious submarkets tend to command the highest rents due to their limited availability and consistent demand. Zoning plans and

Table 1.7a Prime rental and yields in London by submarkets

	Rent (€/m ² /year)			Yield (%)		
	2014Q4	Growth (y-o-y)	5-year CAGR	2014Q4	10-year Low	10-year High
West End	1,595	4.5%	8.9%	3.50%	3.50%	6.00%
City	867	8.7%	7.3%	4.50%	4.25%	6.50%
Docklands	506	4.3%	0.8%	4.75%	4.25%	7.00%

Table 1.7b Prime rental and yields in Paris by submarkets

	Rent (€/m ² /year)			Yield (%)		
	2014Q4	Growth (y-o-y)	5-year CAGR	2014Q4	10-year Low	10-year High
CBD	750	-6.3	1.4	4.00	3.80	5.75
Rive Gauche	750	0	4.6	4.75	4.50	6.25
La Defense	530	0	-0.7	5.50	4.50	6.75

Source: Cushman and Wakefield data processed by the author.

supply constraints make new development very difficult in the central areas. Emerging office markets, on the other hand, such as Farringdon in London or Paris Rive Gauche, many of which will be supported by major infrastructure projects, are offering value added opportunities, which was the competitive pressure from established markets toward alternative markets and emerging districts to become more attractive (DeAWM, 2014b).

1.5 Conclusion

The European market has basically been quite different from one country to another and also from one sector to another in terms of the relative performance of the regions and countries, as evident from the geographic structure of investment transactions regarding their return expectations and risk perceptions. As a result, a range of factors are shaping the real estate markets, some focused on specific areas or city types. Mature markets have to address weak population growth and industrial change while emerging markets struggle with growth rates outpacing their infrastructure capacity. However, both markets appear attractive for different investment strategies offering various alternatives.

The core investment strategies are focused on the large, liquid, certain safe haven locations and property types that can generate stable cash flows and are less reliant on an improvement in the wider economic environment to deliver performance (DeAWM, 2014a). The core markets, such as Germany and some Nordics, are also the most resilient market with the lowest downside risk and volatility. The developed and mature western markets attract investors who are seeking to minimize the impact of a further economic shock. However, a shortage of acquisition opportunities remains a significant issue for core markets and causes a rotation from core markets to emerging markets. Scarcity and the high

prices of better-quality properties are forcing some to consider taking on more risk.

The emerging markets, on the other hand, especially the CEE region, are attractive for investors who are targeting high yield strategies where risks have been reduced. It is reported that there is an increasing number of international institutions looking at core opportunities in riskier markets, like Southern Europe and the CEE. These regions have experienced the changing market conditions in a different way in the pre and post-crisis periods.

Some emerging markets in the CEE have turned into mature markets compared to the rest of the region with relatively higher availability in a different range of the products. The current and expected yield compression is also attracting investors who are looking for opportunities to diversify their portfolios whereas the southern markets saw a deep recession and the resurgence of the real estate market has started recently. The weakness of these markets creates potential for longer-term outperformance. An economic recovery translating into rental growth and improving investor sentiment leads to higher total returns in the medium term.

Finally, the rapid change in sentiment and a reduction in downside risk is generating a new phase of opportunities in the European property markets. In the Eurozone area, economic growth and political risk is identified as one of the key areas of concern for future. A number of themes characterized the European real estate market, but the rebalancing of the investment transactions across different geographical regions looks to be the key issue under the changing business conditions and strategies.

Appendix 1

Appendix 1A.1 Country definition by Cushman and Wakefield

Western	Eastern	CEE	Top cities
Austria	Bulgaria	Czech Rep.	Vienna
Belgium	Croatia	Hungary	Brussels
Denmark	Cyprus	Poland	Copenhagen
Finland	Czech Rep.	Slovakia	Helsinki
France	Estonia		Paris
Germany	Hungary		Lyon
Greece	Latvia		Berlin
Ireland	Lithuania		Frankfurt
Italy	Macedonia		Dublin

Continued

Appendix 1A.1 Continued

Western	Eastern	CEE	Top cities
Luxembourg	Poland		Rome
Netherlands	Romania		Milan
Norway	Russia		Amsterdam
Portugal	Serbia		Rotterdam
Spain	Slovakia		Oslo
Sweden	Slovenia		Lisbon
Switzerland	Turkey		Madrid
UK	Ukraine		Barcelona
			Stockholm
			London
			Edinburgh

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2

Global Cities vs Other Cities in Europe

Anisa Ago

2.1 Introduction

As the urbanization continues across the world, with a large part of the world population living in urban areas, cities have gained a huge importance to social and economic development. For most countries, the economic development is linked to the performance of their biggest cities. However, size alone is not sufficient to inform about a city's growth potential as several other factors determine a city's competitiveness.

Global metropolis are characterized by a high degree of internationalization, wide and varied cultural offer. Various global cities are identified by researchers as key spatial nodes of the world economy. World cities differ from one another in many aspects because they are situated among differently organized national and regional systems, but also we can see similarities in their economic base, spatial organization and social structure. One of the principal characteristics is that they provide to the corporations infrastructure that enables them to control their global operations.

The contemporary study of world cities can be said to begin with Friedmann and Wolff (1982). According to the authors, a fundamental question about these cities is the one concerning the ways by which these urban regions become integrated with the global system of economic relations. We can also mention Friedmann (1986), a study in which the author explores the link of urbanization processes to global economic forces.

Beaverstock et al. (1999) reports the construction of an inventory of world cities based upon their level of advanced producer services. It focuses on four key services: accounting, advertising, banking and law. A further study on the subject is the one conducted by Sassen (2000). According to her, even though these cities are located in national

territories, those are at the heart of some of the major dynamics of denationalization.

Taylor et al. (2002) explored the diversity among world cities and measured the powers of cities. For the authors, power is a relation. Although the size is important in indicating the significance of a city, relations tell us how well the city is globally connected. It is this latter measure that they use to rank cities.

Cities are evaluated as global service centres, and the methodology that GaWC has developed for studying world city network formation is described by Derudder et al. (2003). The results obtained by using this method provide a measure of a city's global capacity. As leading examples of global cities, New York, London and Tokyo are mentioned as three cities that have undergone massive changes in their economic base, spatial organization and social structure (Sassen, 2005).

As mentioned before, globalization is as much a cultural as an economic phenomenon. Political globalization (such as movements for democratization or human rights) and cultural globalization (immigration, popular culture and ideas) can be as influential in globalization dynamics as the movement of capital and goods. So, Benton-Short et al. (2005) emphasizes the importance of the immigration as a key element of a global city. The same argument has been taken up by Beaverstock (2002), whose study's aim is to expand the range of criteria used to assess the 'globalness' of cities and to call attention to cities experiencing social and demographic change due to immigration.

The remainder of this chapter will, first of all, expose the criteria according to which a city can be defined as global, then it will supply the main global cities' rankings, and conclude with an analysis of the main European cities highlighting their main characteristics.

2.2 Global cities

A fundamental question regarding global cities is the one concerning the ways by which these urban regions become integrated with the global system of economic relations. Referring to the first study regarding the topic (Friedmann and Wolff, 1982), two aspects were considered:

- the form and strength of the city's integration (e.g., to what extent it serves as a headquarters or location for transnational corporations; the extent to which it has become a safe place for the investment of 'surplus' capital, as in real estate; its importance as a producer of commodities for the world market; its role as an ideological centre; or its relative strength as a world market);

- the spatial dominance assigned by capital to the city (e.g., whether its financial and/or market control is primarily global in scope or whether it is less than global, extending over a multinational region of the world or articulating a national economy with the world system).

The main argument for this choice is that the character of the urbanizing processes – economic, social, and spatial – which define life in these cities reflect, to a considerable extent, the mode of their integration into the world economy.

As one of the leading scholars of the subject, the contribution of Saskia Sassen, who has dedicated her studies to global cities, their characteristics and their role in the world economic system should be mentioned. According to her, it is necessary to consider seven hypothesis for the theorization of the global city model:

- A key factor is the geographic dispersal of economic activities along with the integration of such activities. More dispersed operations of a firm need more complex and integrated central functions (managing, coordinating, financing a firm's operations).
- The complexity of these central functions makes it necessary that the headquarters of large global firms outsource them. For services such as accounting, legal, public relations, programming and telecommunications, they cater to specialized service firms.
- The specialized service firms that are engaged in complex markets are subject to agglomeration economies. The complexity of the services they produce needs a mix of talents and expertise from a broad range of fields. This kind of mix makes a certain type of urban environment function as an information centre, with the city becoming consequently an information loop.
- The more headquarters outsource their most complex functions, the more freedom they have to choose any location. So the specialized and networked services sector is the key sector that gives to the global cities the distinctive production advantages. The number of headquarters is what specifies a global city, and in many countries, the leading business centre is also the leading concentration of headquarters. But in other developed countries, there are likely to be multiple options for the location of such headquarters.
- The specialized service firms need to provide a global service. It means that they need to create a global network of affiliates or some other form of partnership. The growth of global markets for finance and specialized services and the increases in international investment

point to the existence of a series of transnational networks of cities. To this fact relates the hypothesis that the economic fortunes of these cities become disconnected from their broader hinterlands or even their national economies. We can see the formation of transnational urban systems and how the major business centres in the world today draw their importance from these transnational networks.

- The growing numbers of high level professionals and high profit making specialized service firms have the effect of a greater inequality in the socio-economic aspect of these cities. It is increased the value of top level professionals and their talent, and consequently, the structure of rewards is likely to increase rapidly too. Types of activities and workers lacking these attributes, for example, manufacturing, are more likely to undergo the reverse process.
- An effect of the dynamics described in hypothesis six is that a range of economic activities find their demand in these cities, yet have profit rates that do not allow them to compete with the high profit making firms at the top of the system.

As leading examples of global cities, New York, London and Tokyo are mentioned as three cities that have undergone massive changes in their economic base, spatial organization and social structure.

Bearing in mind the above-mentioned studies, it is possible to give a definition of what a global city represents. In the globalized economy, such cities are crucial sites with social and economic concentration of resources. These dynamic urban centres stimulate creativity and innovation, attract investment, services and a skilled labour force, giving a boost to businesses and to the social quality of life.

In the next section, the main global cities' rankings will be shown and the way in which the guidelines mentioned above are interpreted and used by the individual agencies that deal with drawing up these lists.

2.3 Alternative identification criteria

In order to explore the global cities phenomenon, the Globalization and World Cities Research Network, commonly abbreviated to GaWC, was created. This is an organization based in the Geography department at Loughborough University in England and was founded by Peter J. Taylor in 1998. The studies categorize the world cities into alpha, beta and gamma tiers, based upon their international connectedness.

These levels are interpreted as follows:

- alpha++ cities: In all analyses, London and New York stand out as clearly more integrated than all other cities and constitute their own high level of integration;
- alpha+ cities: Other highly integrated cities that complement London and New York, largely filling in advanced service needs for the Pacific Asia;
- alpha and alpha-cities: Very important world cities that link major economic regions and states into the world economy;
- All beta level cities: These are important world cities that are instrumental in linking their region or state into the world economy;
- All gamma level cities: These can be world cities linking smaller regions or states into the world economy or important world cities whose major global capacity is not in advanced producer services;
- Cities with sufficiency of services: These are cities that are not world cities as defined here, but they have sufficient services so as not to be overly dependent on world cities. Two specialized categories of city are common at this level of integration: smaller capital cities and traditional centres of manufacturing regions.

The first classification was compiled in 1998, and the most recent one in 2012. On the basis of the 2012 ranking, we can see that London and New York are considered the only global cities, followed by the alpha+ cities Hong Kong, Paris, Singapore, Tokyo, Shanghai, Chicago, Dubai, Sydney and later by the cities of all the other categories.

Table 2.1 GaWC global cities' ranking, 2012

Position	Type	Name
1	Alpha ++	London
2	Alpha ++	New York
3	Alpha +	Hong Kong
4	Alpha +	Paris
5	Alpha +	Singapore
6	Alpha +	Shanghai
7	Alpha +	Tokyo
8	Alpha +	Beijing
9	Alpha +	Sydney
10	Alpha +	Dubai

The organization (GaWC) boasts the collaboration of the leading figures in this field, including John Friedmann (University of British Columbia) and Saskia Sassen (Columbia University).

Another global cities' ranking to be mentioned is the one made by A.T. Kearney, which is an advisory global team operating since 1926.

For the construction of its Global Cities Index (GCI), Kearney examines a list of 84 cities on every continent and considers 26 measures across five dimensions:

Business activity (30%) is measured by the value of the cities capital markets, locations and headquarters of global corporations and by the flow of imports and exports in the city;

Human capital (30%) concerns the city's ability to attract talent and is based on the quality of education, internationality of the students and population of the city, the number of residents with a university degree.

Information exchange (15%) analyzes the quality of the exchange of information within and outside the city, and it is based on the freedom of expression, the presence of international news bureaus, internet presence and how accessible the main television news channels are.

Cultural experience (15%) takes into consideration the number of museums, sporting and performing art events that are hosted by the city, international visitors and relationships with other cities.

Political engagement (10%) examines the influence of a city on global policy by considering the number of organizations with international reach that reside in the city, political conferences hosted and the presence of embassies and consulates.

Parallel to this index, the company has also built the Emerging Cities Outlook (ECO) ranking that complements the GCI and measures the potential of cities in low and middle income countries to improve their global positioning in the future. It examines 34 cities by analyzing 10 leading indicators which are grouped in three categories:

Business activity examines the city's GDP, its infrastructure, business opportunities and public sector transparency.

Human capital concerns stability and security, quality of healthcare, income and environmental sustainability.

Innovation considers the progress in the number of patents per capita and in a number of selected metrics such as businesses created and opportunity of taking credit.

According to the Kearney studies conducted over the past six years (three editions), it was noticed that cities are becoming more global over the years. The highest positions are stable over time unlike from the positions in the tail of the list, which are subject to a higher volatility, human

capital is distributed in a more equitable way between cities, politics in the cities located at the top of the list occupies a prominent place.

Human capital scores have shown the largest increase, and the distance between the highest and lowest ranked cities in this dimension is less than on any other. The average score was mainly influenced by the number of inhabitants with tertiary degrees and the size of the foreign born population.

Business activity scores have risen moderately, and it was noticed an increase in the number of top global companies based in emerging countries as China, India, Brazil and Russia.

The information exchange scores have had a slight increase as a result not only of the spread of information technology, but also by including in the metrics used by the company a city's presence in Google, its access to international television news networks, etc.

With regard to the cultural experience, the results show an increase, mostly due to the inclusion of culinary offerings in the metric to evaluate the cities.

In this scenario, the only dimension where scores have actually decreased is the political engagement. The analysis reveals that despite the higher number of think tanks, international organizations and political conferences, the majority of cities have remained stagnant, by pushing in this manner down the score.

Relative to the Emerging Cities Outlook, the analysis reveals that cities wishing to improve their global positioning must focus especially on the business activity and human capital.

New York and London lead the ranking, followed by Paris, Tokyo and Hong Kong. The top 10 cities are distributed between Europe, the Asia Pacific region and the Americas.

Another main global cities' ranking is the one constructed by Knight Frank, an independent global real estate consultancy operating in key hubs across the globe. It provides global residential and commercial property advisory services, and the past four years, it has published 'The wealth report', a survey that provides an insight into the attitudes of the world's UHNWIs (Ultra High Net Worth Individuals) relatively to portfolio allocation and investments.

Among various analysis, the study also deals to assess the key urban centres basing its ranking on four key themes: economic activity, political power, quality of life, knowledge and influence.

Economic activity includes indicators as income per head, number of international business headquarters in the cities, economic output and also financial and capital market activity.

Table 2.2 A.T. Kearney global cities’ ranking, 2014

Position	Name
1	New York
2	London
3	Paris
4	Tokyo
5	Hong Kong
6	Los Angeles
7	Chicago
8	Beijing
9	Singapore
10	Washington

With regard to the political power, the importance of each city to global political thought and opinion is calculated. The ranking includes the number of embassies, think tanks, headquarters of national political organizations and international non-governmental organizations.

Quality of life takes into consideration personal and political freedom, personal security, political stability, censorship, public services and transport, health facilities, culture and leisure and climate.

Under knowledge and influence, the cities’ knowledge base, educational status and the educational facilities are examined and how well this knowledge is transmitted (presence of national and international media organizations, news bureau).

In the calculations, the results of the Attitudes Survey 2014 and data from sources as WealthInsight, World Bank, United Nations, International Monetary Fund, Economist Intelligence Unit, the Institute for Urban Strategies at the Mori Memorial Foundation and the Y/Zen Group are also included. The survey is conducted by the company’s global panel of UHNWI advisors, whom are asked to confirm the most important cities to their clients now and in 2024 and the cities growing most rapidly in importance.

The rivalry between London and New York to reach the top of the ranking is clear. According to the survey, London scored more highly in the present moment; but looking forward, the results suggest that by 2024, New York should surpass London. It is also important to mention that leaving aside London and New York, Asia dominates the top 10 places of the ranking and the dominance of China is unavoidable.

Economist Intelligence Unit (2012) ranked the competitiveness of 120 of the world’s major cities using not only economic size and growth but

Table 2.3 Knight Frank global cities' ranking, 2014

Position	Name
1	London
2	New York
3	Singapore
4	Hong Kong
5	Geneva
6	Shanghai
7	Miami
8	Dubai
9	Beijing
10	Paris

also several other factors that need to be considered, such as the quality of human capital and cultural aspects.

The index is constructed by examining eight categories of competitiveness and 21 qualitative and 10 quantitative indicators and by also conducting interviews with ten city experts, mayors and corporate executives to get their qualified opinions on city competitiveness.

Indicators were grouped under eight thematic categories: economic strength, human capital, institutional effectiveness, financial maturity, global appeal, physical capital, environment and natural hazards, and social and cultural character.

Economic strength (30%): GDP data in local currency units were collected that were then converted in to US dollars by using the International Monetary Fund's implied purchasing power parity (PPP) conversion.

Another important aspect of economic strength, is the size of the middle class, which was also considered together with the cities' real GDP growth prospects over the next five years.

Human capital (15%): A productive and skilled labour force is a key driver of competitiveness. To study this aspect, information on the size of working-age population and the quality of education and healthcare was also gathered. In addition, it was also analysed the entrepreneurial and risk-taking mindset among citizens, immigration barriers and regulations over hiring foreigners, as features that increase a city's attractiveness to businesses.

Institutional effectiveness (15%): The examined indicators included local government's fiscal autonomy and government efficacy, as it is believed that local governments with greater autonomy in investing in the development of the city are more effective in implementing growth strategies.

Financial maturity (10%): It is evaluated if the city can be considered a financial cluster or not. The global clusters cover various industry segments such as asset management, investment banking, insurance, professional services and wealth management and have specialists which operate in this field. On the other hand, there are cities that have a poor financial infrastructure.

Global appeal (10%): The attractiveness of the city is assessed by considering the presence of globally renowned institutions with headquarters in it and its international orientation.

Physical capital (10%): For this category, the accessibility to efficient infrastructure, which helps businesses to operate, is taken into consideration. Another element is also the quality of life for residents and visitors.

Environment and natural hazards (5%): As environmental factors affect the decision to start a new business or to visit or live in the city, there were analysed the city's environmental standards (data relative to air, water and waste) and natural disaster hazard risk.

Social and cultural character (5%): In this group, several aspects that add life and dynamism to a city are included. These factors attract talents and improve a city's global appeal.

Due to the agency's scoring system, in this last list, it can be noticed that two distinct cities occupy the same position in the ranking.

A common feature to all the above classifications is the significant presence of North American, Asian and European cities. In the next paragraph, the attention will be focused on the importance and role of the global cities in Europe by analyzing the main economic and social aspects.

Table 2.4 EIU global cities' ranking, 2012

Position	Name
1	New York
2	London
3	Singapore
4	Paris
5	Hong Kong
6	Tokyo
7	Zurich
8	Washington
9	Chicago
10	Boston

2.4 Global cities in Europe

For European countries, there was no harmonized definition of 'a city' until recently. For resolving the problem, the OECD and the European Commission, in 2011, developed a new definition of a city identifying 828 (greater) cities in the EU, Switzerland, Croatia, Iceland and Norway. According to it, only two are global cities, London and Paris, which host about 40% of the EU population.

A large part of the EU's population lives in urban areas, and Europe's towns and cities can be considered as centres not only of economic activity, but also cultural sites attracting innovation and employment. But in contrast to these aspects, there are also challenges to be faced such as crime, poverty, unemployment, inadequate housing and traffic congestion. Consequently, the EU is focusing on a cohesion policy that seeks to create eco-friendly cities, promote integration of the population, culture and support sustainable development of energy, transport, digital communications and health.

The main goal of EU cohesion policy is investing in growth and jobs and promoting territorial cooperation through reducing development gaps between regions and among EU Member States.

A considerable importance in the European countries are gaining the structural demographic changes, as models which estimate future population dynamics in countries suggest that the EU's population will continue to age. This phenomenon will lead to social and economic consequences and have an impact on pensions and healthcare services, for example, or a reduction in the number of students in education.

The population data taken into consideration are those published by Eurostat on March 2014. According to this data, there were 505.7 million inhabitants living in the EU-28 at the start of 2013. By comparing this figure to the start of 2012, the population increased by 1.1 million (0.2%).

The population density was estimated at 116.3 inhabitants per sq. kilometre (km²) in 2012, with ten European regions where it was above 5000 inhabitants per km². The highest population densities in 2012 were observed generally in the capital region of each of the individual EU Member States.

The most densely populated regions were found to be Paris (21.516 inhabitants per km² in 2012) and London (10.374 and 9.311 in 2010 for Inner London – West and Inner London – East). Those were followed by Bucuresti, the capital of Romania (data are for 2011); the Arrondissement de Bruxelles-Capitale/Arrondissement van Brussel-Hoofdstad, the capital

of Belgium; the Spanish autonomous city of Melilla; and Portsmouth on the southern coast of the United Kingdom. The evolution of the European population in the latest decades is shown by the Figure 2.1.

A relevant aspect related to the population and its changes is migration; since 1985, there has been an important net flow of migrants to the EU-28 with a concentration across Southern France, north Italy, the Benelux countries and the United Kingdom.

Natural population change and net migration are the causes of the overall change in population. Positive rates of net migration and natural increase lead to a population growth; negative net migration and a natural decrease result in population decline. These components can cancel each other out when moving in opposite directions.

The relevance of migration in the European countries is illustrated by the Figure 2.2.

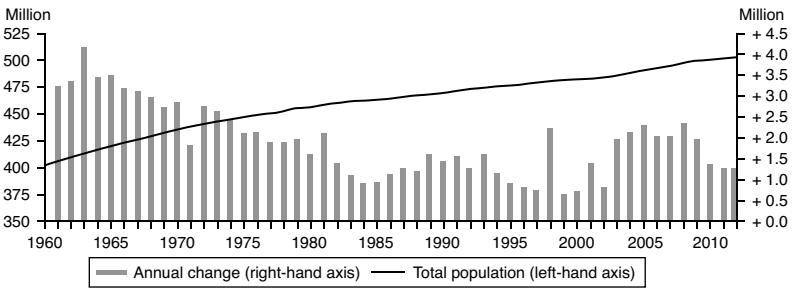


Figure 2.1 Population on 1 January, EU-27, 1960–2012

Source: Eurostat data processed by the author.

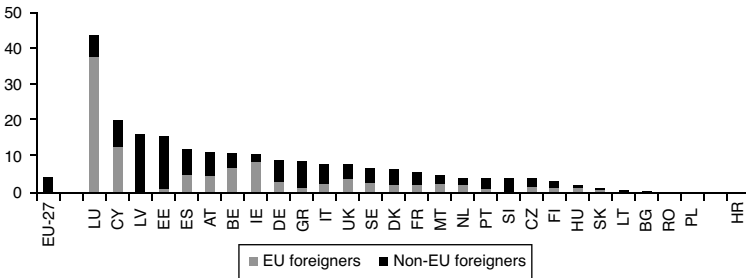


Figure 2.2 Share of foreigners in the resident population, EU-27, 1 January 2012 (%)

Source: Eurostat data processed by the author.

The data clearly show that the country with the greatest significance of the foreign population is Luxembourg. This part of the population is composed mainly by citizens of countries belonging to the European Union.

Oslo (the capital of Norway) and western Switzerland recorded the fastest population growth; the highest variation in population growth with regard to the European Free Trade Association (EFTA) and candidate country regions was observed in Turkish regions.

In each of the EU Member States, the highest rate of population change was recorded in the capital region or at least the capital region was among those regions with the highest rates of change in the country.

The overall number of inhabitants in the EU-28 rises at a relatively slow rate, but at a regional level, there is considerable variation in population due to the combination of natural population growth and net migration. As a result of natural population decline and in some cases the net emigration following the financial and economic crisis, population is in decline across much of Bulgaria, Greece, Spain, Croatia, Hungary, Poland, Portugal, Romania and the Baltic Member States. By contrast, in most German, Italian and Austrian regions, the number of inhabitants is only sustained through migration, with a natural population change which is negative.

Relative to the population and its evolution, it seems clear that health is a priority for Europeans. The competence for the organization and delivery of healthcare services is mainly held by the individual EU Member States. Its determinants include, among others, the availability of healthcare services, the access to these services, individuals' lifestyle, and social, economic and environmental factors.

According to the 2012 data in the EU-28, the life expectancy of women at birth was 83.1 years and that for men was 77.5 years. While life expectancy continues to rise, policy attention has progressively turned to the quality of life.

The highest concentration of healthcare resources was recorded in capital regions (those with higher population density), with only a few exceptions. These resources included the presence of physicians, hospital beds, specialized hospital services, medical facilities and their distribution together with the fact that those are used not only by the local population but also people from the neighbouring regions. This can be observed in the higher density of practising physicians in the capital regions (especially Austria, Czech Republic and Slovakia) and the density of available hospital beds in a capital region with respect to their respective countries (with the exception of Germany, Finland and Sweden).

But it is important to go beyond the boundaries of public healthcare systems and improve education and awareness or environmental protection, which are linked to a population's well-being and consequently health status.

The EU Member States are responsible for their own education and training systems as well as for the content of teaching programmes. The EU helps national actions to address common challenges such as improving the quality and efficiency of education, encouraging mobility and learning, promoting equity, social cohesion and active citizenship, creativity and innovation at all levels of education.

Figures for 2011 indicate that there were 93.7 million students for the EU-28 enrolled in regular education systems covering all levels of education and 15.4 million children enrolled in pre-primary education.

It was observed that in Eastern Europe, the rate of early leavers from education and training was lower than in other EU countries, and Prague (Czech Republic) had the lowest proportion of 18–24 year-olds leaving education and training early (2.4% in 2012). Conversely, the highest figures were recorded in the capital regions of Belgium and Austria. Figures that were in contrast to the pattern of European capital regions often register low rates.

Generating employment is considered a key factor in giving people their independence, financial security and combating social exclusion. A skilled workforce is considered one of the main assets to develop a competitive, sustainable and innovative economy. For this reason, the EU has focused its attention on employment and skills policies, as well as on contrasting the exclusion of underrepresented groups due to a disability or health problem, because they are migrants or because they live in a deprived area.

The two principal concerns of policymakers regard youth unemployment and long-term unemployment. With the onset of the financial and economic crisis, the labour market displayed a rising unemployment through to 2012 and showed the first signs of stabilization toward the end of 2013.

In April 2012, the European Commission launched a set of measures to boost jobs in order to have sustainable and inclusive growth. The aim is to identify areas with high potential for future job creation and to reform labour markets.

According to the main statistical findings, the EU-28's economically active population (the labour force, defined as the sum of the employed population and the unemployed population) was composed of 242.2 million persons aged 15–74 in 2012, where 216.9 million were employed and 25.3 million were unemployed.

North-western and Central Europe recorded the highest regional employment rates, particularly in Germany, the Netherlands, Austria, Sweden and the United Kingdom, followed by Denmark and Finland. The highest regional employment rate in 2012 was registered in Åland (Finland) while the lowest rates were observed in southern regions of Spain and Italy, as well as various regions spread across Greece, Croatia, Hungary and the French overseas regions.

By comparing employment rates between 2008 and 2012, the largest contractions were recorded in Greece and Spain, and the largest gain in Germany (particularly Berlin).

The objective of European social cohesion is to minimize disparities in labour markets, as fewer young persons were active in the labour market in the years following the financial and economic crisis. From the data considered, it also appears to be a strong link between female employment rates and overall employment rates.

In the majority of capital regions, youth unemployment rates were lower than national averages. There were also noticed exceptions where the youth unemployment rate was higher than the national average in the capital regions of the United Kingdom, Belgium, Austria and Germany, although in these cases, the national youth unemployment rate in each of these Member States was lower than the EU-28 average.

Another major concern of policymakers is long-term (structural) unemployment. It involves those who remain unemployed for 12 months or more. The 2012 data show that the long-term unemployment rates for persons aged 15–74 was 4.7% in the EU-28, and there was no difference between the rates for men and women. The EU-28 long-term unemployment rate followed the pattern observed for the overall unemployment rate during the crisis years. A higher incidence of long-term unemployment was noticed in the EU Member States that were most affected by the crisis of Greece and Spain; those with the lowest rates were Denmark, Germany, Luxembourg, the Netherlands, Austria, Finland, Sweden and the United Kingdom and the EFTA countries of Iceland, Norway and Switzerland.

The EU cohesion policy also supports the creation and growth of businesses. In order to improve regional competitiveness and performance, a particular attention is paid to small and medium-sized enterprises (SMEs). Direct investment and supporting measures are designed to help in accessing finance, keeping up with technological change and managing administrative demands.

One of the goals of the European strategies is to promote research and transnational cooperation, development and innovation as an innovative society helps businesses to maintain a competitive advantage, as

well as stimulate their activity and develop better products. The influence of new research and innovation extends beyond the economic development, as it leads to new solutions in the health field, environment or energy.

Before the financial and economic crisis, the economic differences between European regions were being reduced through a process of convergence, but the post-crisis period shows evidence of growing disparities, especially in the areas most affected by the crisis.

For the evaluation of the total economic activity, the GDP (gross domestic product) measure is used. It shows the evolution of the economic performance and the cycles a country or a region is going through, such as recession or recovery.

GDP is firstly calculated in national currencies; then, it is converted by purchasing power parities (PPPs) in order to allow the purchasing power comparison across different countries. Using such conversion factors to an artificial common currency, the purchasing power standard (PPS); it is possible to compare the purchasing power of different national currencies. The use of the PPS series rather than the euro based ones has the advantage of a levelling effect as even in the case of the euro area, a single currency would display different purchasing power across countries.

The 2011 data show that generally capital regions had the highest average GDP per inhabitant, with the exception of Germany, Spain, Italy and the Netherlands. The situation of Germany was the most particular as Berlin was found to be the only European capital region that recorded a GDP level per inhabitant below its national average.

With regard to the labour productivity, the highest figures were recorded in the most relevant financial hubs; Inner London registered the highest level of gross value added per person employed in 2011. This phenomenon might be linked to the nature of financial services sector as an activity characterized by particularly high levels of productivity. Luxembourg together with Southern and Eastern Ireland (which includes Dublin), both specialized in financial services, were also distinguished for labour productivity.

The highest levels of GDP in the EU-28 was recorded in Inner London, followed by Luxembourg (a single region at this level of analysis) and the capital regions of Belgium, Slovakia, France, Sweden and the Czech Republic. The reason behind these results is likely to be related with the presence of headquarters of large enterprises and financial services, which are often clustered in capital regions. The remaining regions in the top 10 were Hamburg and Oberbayern (which includes the city of

Munich) in Germany, and the third was Groningen (a relatively small city in Netherlands). The first two regions are characterized as main urban areas, and the third one is specialized in the production of energy and chemicals in addition to the two large seaports located in the region.

Most of the regions which recorded a relatively high average GDP per inhabitant were capital regions or regions that neighboured capital regions. The only capital region with a GDP level lower than the national average, as above-mentioned, was Berlin in Germany.

With regard to the disposable income, the highest level in 2011 was recorded in Luxemburg. Generally, capital regions accounted for the highest levels of disposable income, such as the capital regions of Spain, Italy, the Netherlands and Finland that recorded disposable income per inhabitant above their respective national averages. In Belgium and Germany, the level of the disposable income per inhabitant for the capital region was below the national average; in Austria, it reached a similar level to the national average.

The estimates made using national SBS (structural business statistics) figures, showed that there were something like 21.7 million enterprises active in the EU-28's non-financial business economy in 2011. Those employed around 133.2 million persons and generated EUR 6.142 billion of gross value added.

The weight of the industrial economy in the non-financial business economy workforce tended to be higher in Hungary, Poland and Romania according to 2011 data. This is due to low labour costs, outsourcing and foreign direct investment strategies.

A concentration of the production of chemicals and pharmaceuticals was recorded in Germany and Belgium, with several German regions specialized also in engineering together with machinery and motor vehicle manufacturing.

The retail trade sector has an important role across all regions of the EU, even though there are big differences regarding the structure of retailing between regions and countries. In Lombardia (Italy), the highest number of persons employed within retailing activities was registered, according to 2012 data.

A common feature to the capital regions and their surrounding areas is their specialization in business services and transport services. Inner London (United Kingdom) was the most specialized region for multimedia publishing, and Outer London was the region with the highest focus and specialization in air transport. In addition to London, other large metropolitan regions with a dominance in the air transport are Paris, Koln, Amsterdam and Madrid.

Other main activities with a great importance in the capital region economy are: information and communication activities, real estate activities, professional scientific and technical activities and administrative and support service activities. Particularly, Inner London was distinguished for legal and accounting activities, activities of head offices, advertising and market research, and other professional, scientific and technical activities.

Education, training, business culture are considered fundamental to developing a region's capacity to innovate. The collaboration with universities and regional businesses across the EU became more important in time accompanied by the increase in R & D expenditure per inhabitant during the last decade.

By considering the R & D intensity, an indicator which measures the ratio of R & D expenditure to GDP, it was noticed that capital regions recorded the highest level in more than half of the 22 multi-regional EU Member States for which data are available, with Finland and Sweden heading the ranking.

According to 2011 data, there were 2.55 million researchers active across the EU, concentrated particularly in capital regions characterized by having higher education establishments and research institutes.

The highest share of researchers in total employment was recorded in Inner London (4.06%) in 2011 opposed to the 2.0% of European share. Province du Brabant Wallon and the East Anglia region of the United Kingdom were the only non-capital regions in the top 10.

An indicator, often used, for determining how developed the knowledge-based economy is the stock of HRST (human resources in science and technology). HRST includes two categories: persons who have completed tertiary education (HRSTE) as university degrees and/or those that are employed in a science and technology occupation (HRSTO). Those who meet both of these criteria are referred to as core HRST (HRSTC).

Almost one third of the EU-28's population in 2012 classified as HRST. In Inner London, Helsinki-Uusimaa and Stockholm, the majority of the population was categorized as HRST. Each of these regions was a capital region: Inner London recorded the highest share (59.4%), followed by Helsinki-Uusimaa (50.9%) and Stockholm (50.0%). It was noticed that the regions that displayed high shares of HRST were characterized by a large urbanization.

A measure of invention and innovation can be provided by the count of patents. However, for their evaluation, their differences should be taken into account as the economic value and the technical one vary across the variety of activities and enterprises.

As other indicators analysed above, patent applications tend to be clustered in a limited number of regions, especially for high-tech patents, and a high concentration of patent applications was observed in Southern Germany.

The importance of communication leads to the necessity for the development of specialization strategies across the EU's regions and identifies the activities that help the strengthening a region's competitiveness and encourages interaction between businesses. The collaboration between research centres, universities and administrations would help to develop a region's capacity to innovate and ensure a better use of the resources, of public funds and exploit their diversity and unique features.

Relative to the communication, the diffusion of ICTs across the EU is considered as fundamental for improving the competitiveness of regions and the productivity levels. The spread of ITCs has led to greater flexibility in the working environment (for example, remote working place). These new developments have transformed the society in many aspects as it is now more possible than ever to share information, socialize or work without being tied to the geographical location.

With the technological developments and the digital revolution, the population started to use computers and have access to the internet. Initially, the access was restricted, but now a wide range of devices can be used. But despite the opportunity to use alternative devices, Europeans seem to rely mainly on computers to carry out the majority of their tasks.

It was recorded that in 26 regions in the EU, at least 35% of the population had never used a computer while in 62 regions, at least 90% of the population had used a computer. In Flevoland, a Dutch region, it was recorded the highest proportion of individuals who had used a computer (99%), followed by different regions spread across Denmark, the Netherlands, Finland, Sweden and the United Kingdom (98%).

Relative to the broadband access, the highest level was recorded in the Nordic Member States, Germany, the Netherlands and the United Kingdom, reaching its peak in London (94%).

In general, it was noticed that the majority of the regular internet users lived in capital regions (with the exception of Belgium, Germany, Italy, the Netherlands, Austria and Poland), and the regular use increased with the augmentation of the income.

As a result of the increasingly widespread use of the internet, online transactions have had an important development with 47% of individuals across the EU-28 who have adopted this form of purchasing in 2013.

In addition to the issues mentioned, the improvement of ICTs has given a further boost to tourism. Tourism viewed from an economic perspective includes private trips as well as business trips and incorporates many activities as accommodation, gastronomy, transport, and a range of cultural and recreational facilities. It plays a significant role as it has the potential to help in the development of European regions, contributing to employment and wealth creation, economic development with the infrastructure created for its purposes, the demand generated by tourists and the improvement of cultural heritage.

New opportunities were created by the globalization of tourism with new markets to exploit and tourists able to afford high-value vacations.

In the past decades, tourism has become one of the most important economic sectors with a high diversification and expansion. One of the most fast growing sectors, despite the financial and economic crisis that involved the global economy.

For the first time in history, in 2012, one billion international tourist arrivals (United Nations World Tourism Organization) were recorded. Europe is the most visited region in the world, due to its variety of cultures and landscapes. The tourism is most concentrated in coastal regions (with the Canary Islands leading the ranking), but also in some cities or Alpine regions, and foreign visitors seem the more interested in visiting capital regions unlike the domestic tourists. Overnight stays in these regions accounted for a majority of the total nights spent in tourist accommodation establishments.

Seven EU Member States recorded the highest number of foreign tourist visits: Spain, Italy, France, Greece, Austria, the United Kingdom and Croatia. On a total of 20 regions, ten were either Spanish or Italian (each one represented by five regions).

But considering the tourism density, defined as nights spent by tourists per km², the highest figures were recorded generally across urban regions with Inner London reaching the highest concentration of tourists. It was followed by Belgian capital of the Region de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest, the capital regions of Austria, Germany and the Czech Republic, the urban regions of Hamburg and Outer London, the island destinations of Malta, the Illes Balears and the Canary Islands.

With regard to the urban tourism, the most popular destinations include capital regions and those where large cities are located.

Closely related to the tourism and not only, is the transport policy that promotes the right of citizens to travel freely throughout the EU in safe and efficient ways. A well-functioning transport system is considered

essential not only for the population but also for the competitiveness of enterprises.

The most significant development in this area has surely been the air transport service and its fast growth in latest years with almost 832 million passengers in 2012 for the EU-28 countries. The capital regions of Western Europe were found to be those with the highest number of air passengers, as those in which were located the largest European airports. Europe's largest airport and international air traffic hub is Heathrow followed by Paris-Charles de Gaulle, Frankfurt airport and Schiphol Amsterdam airport.

As well as the air transport, the railway networks are also concentrated in capital regions and with high population density, especially the one running from the Benelux countries into Germany, continuing south into Switzerland and east into Poland, Hungary, the Czech Republic and Slovakia.

A further aspect to be considered in transportation, it is the motorization rate. The majority of the capital regions in Western Europe were characterized by low rates, probably because people living in the largest cities choose public transport in order to avoid congestion.

The exception from this pattern were Lazio (Italy), Attiki (Greece; data are for 2010) and Luxembourg, between the regions with the highest motorization rates in Europe.

Inner London and most of the capital regions of Member States in western and Northern Europe such as Germany, Denmark, Sweden, Austria, the Netherlands, France, Ireland and Belgium registered ratios of passenger cars per inhabitant below the EU-28 average. However, there were recorded high motorization rates in regions that were close to those which contained capital or large cities (large numbers of people commuting to work).

The fastest growth in motorization rates was recorded in Italian or Greek regions (during 2005–2012) while a reduction was registered in the majority of the regions in Germany or the United Kingdom (during 2005–2011). The largest declines involved large cities such as Hamburg, Inner London, Greater Manchester, Berlin and Koln. A fall in their motorization rates were registered also in the capital regions of Belgium, France, Hungary, Sweden, Spain, Austria and Slovenia.

2.5 Conclusions

Nowadays, cities are increasingly becoming the focus of global business and playing a main role on economic and social development. These

global metropolis work to develop aspects such as their social character, institutional effectiveness, as well as economic growth and financial maturity in order to increase their global appeal. They compete with each other not only nationally but also globally to attract investment flows.

There are various dimensions that matter to a potential investor and that make a city a global one. It is pretty difficult for a city to excel in each one of the different aspects, but surely it has to hold an advantage with respect to other cities in order to be considered a global one.

The aim of this chapter was to provide a view across European cities, highlight the several aspects that form cities' competitiveness and their influence in a city's development.

Relative to Europe, the most recent data show that the capital region of each of the individual EU Member States recorded the highest population densities (2012), with Paris and London in the lead. In these same regions, apart from a few exceptions, the highest concentration of healthcare resources was also registered.

A crucial aspect of a country economy is the employment rate. The highest rates were registered in countries such as Germany, the Netherlands, Austria, Sweden and the United Kingdom, followed by Denmark and Finland while relevant rates of long-term unemployment were noticed in the EU Member States that were most affected by the crisis as Greece and Spain.

With regards to labour productivity, it can be told that the most relevant figures were noticed in the most relevant financial hubs, with Inner London registering the highest level of gross value added per person employed in 2011.

Strictly related to its nature of a financial hub of Inner London is its GDP level, which is the highest in the EU-28. London was followed by Luxembourg (a single region at this level of analysis), and the capital regions of Belgium, Slovakia, France, Sweden and the Czech Republic, a result that seem related to the presence financial services and the presence of headquarters of large enterprises often clustered in such regions. Most of the regions that registered a high average GDP per inhabitant were capital regions or regions that neighboured capital regions. The only exception was Berlin (Germany), a capital region that recorded a GDP level lower than the national average.

Other common features to the capital regions and their surrounding areas are their specialization in business services, transport services, information and communication activities, real estate activities, professional scientific and technical activities and administrative and support service activities.

Inner London (United Kingdom) was the most specialized region for multimedia publishing, for legal and accounting activities, activities of head offices, advertising and market research, and other professional, scientific and technical activities; Outer London was the region with the highest focus and specialization in air transport. In addition to London, other large metropolitan regions with a dominance in the air transport are Paris, Koln, Amsterdam and Madrid: Europe's largest airport and international air traffic hub is Heathrow followed by Paris-Charles de Gaulle, Frankfurt airport and Schiphol Amsterdam airport. Thanks to the dominance in air transport, as well as in other fields (cultural and economic), Inner London also reached the highest concentration of tourists.

As education, training and research are considered fundamental to developing a region's capacity to innovate, it is interesting to notice that Inner London (4.06% in 2011) is distinguished from other European regions in this aspect too as it recorded the highest share of researchers in total employment, opposed to the 2.0% of European share. Inner London also recorded the highest share of the population that was categorized as HRST.

London also registered the highest level of broadband access and one of the highest proportions of individuals who had used a computer together with different regions spread across Denmark, the Netherlands, Finland, Sweden and the United Kingdom.

From the analysis, it seems clear that the only city that can be defined as global, with respect to all the criteria seen above, is London. Certainly, other examples of important European cities with a their relevance in different socio-economic areas, most notably Paris, can be found, but in general these cities manage to excel only in some areas unlike the global cities that must be complete in terms of a whole number of aspects.

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3

Residential Real Estate: Single and Multi-family Buildings

Angelo Marinangeli and Albana Nako

3.1 Introduction

The characteristic of the residential real estate asset class is low liquidity due to low liquidity of the residential market. While in the stock market, the current prices and bid/ask spread are known and easy to calculate, in the residential real estate market, this information can be measured on the basis of prior transactions, but unlike the securities, residential properties do not always have the same characteristics. In addition, in the stock market, there are daily data while real estate data may be weekly or monthly because, for the real estate market, high intra-year data are not frequently available. Moreover, the residential real estate prices, unlike stock prices that fluctuate more or less randomly, tend to follow a clear trend (increasing or decreasing), and price are sticky. Sometimes, price stickiness can go down when sellers tend to resist selling because they do not receive the offer desired, and they withdraw their house from the market.

The aim of this study is to analyze the performance of European residential assets, for both single family houses and multi-family buildings in the last ten years in order to compare their result. Section 3.2 provides the standard classification criteria used in literature in order to segment the house market. Section 3.3 is divided in two subsections and contains the cross-country analysis of European residential real estate; more specifically, subsection 3.3.1 analyzes single family houses while subsection 3.3.2 analyzes multi-family building. Finally, Section 3.4 summarizes the conclusion and implications.

3.2 Asset class features

Literature classifies the housing market into two or more submarkets in order to incorporate the large scale effects in valuation models. Knitter (1974) argues that segmentation tends to decrease the variance of prediction error of model; such heteroskedasticity is caused by the effects of variables that have not been included in the regression. Moreover, according to Bajic (1985), two or more submarkets along the neighbourhood line are the alternative hypothesis to a single market in short-term equilibrium.

There are various techniques that allow the identification of submarkets, and their use is often arbitrary as Des Rosiers (1991) highlights, stating that various authors argued in favour of segmentation. However, there is no consensus on the optimal level of segmentation and the criteria that should be used. In this section, we will focus on the classification criteria most commonly used in the literature.

First, we need to consider that in market segmentation, techniques based on two or more hedonic models are preferable to those based on one overall model, as we shall see studying the models used in literature. Segmentation can be spatial or based on other characteristics. The former is composed by segments of one or more areas all within the same segment while in a spatial segmentation, houses belonging to different segments could be found side by side. Regarding the spatial segmentation, retracing the history of literature starting by the second half of the 1970s, Walsh and Stenehjem (1975) suggested the use of neighbourhood characteristics rather than fixed location variables such as neighbourhood binary variable. Zerbst and Eldred (1977) said that all factors not constant over space are considered location attributes, so we can group them into two headings: accessibility and environment. Straszheim (1975) identified 81 geographic zones in the San Francisco Bay area through census tracts using the homogeneity of racial and housing stock composition. Another segmentation scheme based on the census tracts was constructed by Kendig (1976), Ball and Kirwan (1977) and Goodman (1978). Kendig made a cluster analysis on social and structural characteristics while Ball and Kirwan used census tracts and enumeration district in order to make a factor analysis followed by cluster analysis. Goodman used the Standard Metropolitan Statistical Area (SMSA) defined by U.S. Census Bureau with the aim to build a segmentation in the New Haven. His methodological approach was based on sequential disaggregation. In addition, Palm (1978) made a segmentation starting from Board of Realtors service areas.

In reviewing the subsequent period on the base of type of segmentation, the study of Tu et al. (2007) used a group of condominiums in order to construct their segmentation scheme. From the methodological point of view, the first one carried a grouping based on location and size of complex while the second one estimated correlations between OLS residual to assign each property to a cluster.

Other studies used the postcode as a market segmentation method, Maclennan and Tu (1996) and Watkins (2001) used groups of postcodes to aggregate adjacent sectors. More specifically, Maclennan and Tu focused on F Test for similarity of coefficients while Watkins based the test for submarket on the price differences for a standardized hypothetical dwelling. His method uses pairwise analysis of variance comparisons of market segments and pooled estimates of variance. While Fletcher et al. (2000), by using the English postcode area with further segmentation by property type and age, found that the benefits of this kind of segmentation are limited because an English postcode area can contain up to several hundred thousand properties.

Other types of segmentation are based on group of schools, group of sales areas and special clustering of the previous. The study of Goodman and Thibodeau (1998) was made on the base of a group of schools; the study of Bourassa et al. (2003) was made on the base of groups of sales areas; and the study of Goodman and Thibodeau (2003) and Thibodeaux (2003) are composed of combined groups. More particularly, Goodman and Thibodeaux represented a special form of clustering that uses hierarchical linear modelling on school zones, combining adjacent zip codes and census tracts until 200 sales were reached within the combined set. Thibodeaux combined adjacent census block groups for properties located in the same municipality and the same independent school district until the estimation sample totalled approximately 150 transactions.

Powe et al. (1995) examined 519 transactions in Tyne and Wear, England. Dubin and Sung (1990) provided a categorization focusing on measures of neighbourhood quality. Din et al. (2001) used a composite index of amenities relating to the situation of apartment units in Geneva, Switzerland. Thériault et al. (2003) used a variety of techniques to account for spatial variation in housing prices in the Quebec urban community.

Finally, there are studies that identified submarkets on the base of wards (Adair et al., 1996; McGreal et al., 1998), groups of planning neighbourhoods (Fuller and Huang, 2003), groups of towns (Michaels and Smith, 1990) and groups of Local Government Areas (Bourassa

et al., 1999). More specifically, they used groups of wards through the method of planning commission analysis and further subdivision by planning subareas.

Other interesting segmentation methods have been identified by Fleming and Nellis (1992) that used the housing classification definitions provided by ACORN, a commercially available geo-demographic database, and the United Kingdom's Parliamentary Constituency boundaries, which describes areas as 'inner metropolitan, Scottish, high status and metropolitan suburbs' and similar terms.

Vandell (1991) provided the basis for an operational definition of a neighbourhood in the context of describing a household's utility maximization function while Megbolugbe et al. (1996) identified four definitions of neighbourhoods obtained from prior studies.

Under the methodological aspect, Anselin (1988) defined spatial econometrics as the collection of techniques that deal with the peculiarities caused by space in the statistical analysis of regional science models. According to him, the emphasis on the model as the starting point differentiates spatial econometrics from the broader field of spatial statistics, although they share a common methodology framework.

De Koning et al. (1998) argued that if the spatial autocorrelation in the residuals cannot be excluded by adding regression variables, a spatial regression model is most appropriate.

Wilhelmsson (2002) stated that before 1990 the problems of the existence of spatial effects had been ignored in real estate analysis; nevertheless, Anselin (2002) highlighted that they seem to be gaining more attention from researchers in the past few years.

Des Rosiers (2001) outlined three main sources of problems to comprise multi-collinearity, heteroskedasticity and spatial autocorrelation. While the first two can happen in both time series and cross-sectional data, the last one is specifically related to the cross-sectional data. Thus, all three problems can occur in a cross-sectional analysis of house prices. Accordingly, it is important to consider these problems in housing market analysis if the results are not to be invalidated. Given that a cross-sectional analysis of house prices involves geographical information, it is important to give attention to the spatial elements. In considering the spatial elements in house price hedonic modelling, suitable tools are required. Two appropriate tools are Geographical Information System (GIS) and spatial statistics.

Ward et al. (1999) explained geographic information systems (GIS) as a tool to develop a surface of normalized sale price per square foot of living area. McCluskey et al. (2000) and Ward et al. (2002) provided further examples about this method. GIS applications in real estate were

born in the US and developed in the UK in 1990. They are used in residential, commercial and rural industrial sectors, but the greatest number of uses, especially since the end of 1990, is related to studies on residential real estate. The advantage of using GIS is represented by efficient data integration and spatial analysis (Hamid, 2002). GIS is a relevant technology for housing markets analysis as all residential real estate information is inherently spatial because housing is fixed in geographic space (Belsky et al., 1998). In order to identify spatial autocorrelation two ways, Hamid (2002) suggests that the first one is to display the OLS residual to detect the pattern that exists graphically, and the second one is to test the existence of significant spatial autocorrelation using spatial statistics like Moran's I and Lagrange Multiplier.

Pace and Barry (1997) said that the most statistic technique in spatial analysis is the regression. Kim et al. (2003) highlighted that much research has been carried out to solve specific econometric issues pertaining to hedonic regression such as functional form, identification and statistical efficiency; however, Cressie (1989) argued that while the applications of classical statistics in real estate research date back to the early 1970s, spatial statistics were an addition to the statistics literature only ten years later.

Hoesli and MacGregor (2000) claimed that the hedonic method has been widely used in the US and in other countries such as Switzerland and Taiwan for constructing price indices; moreover, the Office of Deputy Prime Minister (ODPM) monthly house price index, which was launched in September 2003, is also based on hedonic prices. Lum (2004) highlighted that in the UK, this technique is used in the creation of the Nationwide Anglia Building Society and Halifax Bank of Scotland (HBOS) price indices, which are the major sources of regional and national house price data in the UK. However, Can and Megbolugbe (1997) argued that a major limitation of currently available house price indices based on hedonic price models is their insensitivity to the geographic location of dwellings within the metropolitan area. Brasington and Hite (2005) suggested that a spatial hedonic model may capture spillovers through its spatial effect parameter(s), missing variables or other forms of spatial dependence. This method used in spatial hedonic modelling to solve the spatial autocorrelation problem provides more accurate, robust and reliable hedonic models. Orford (2000) claimed that if the hedonic house price function is to generate estimates that properly reflect the implicit price of attributes, the model specification must sufficiently capture the spatial elements at the local market level.

Clapp (2003) and Case et al. (2004) described the theory for a local regression model (LRM) and characterized it as a semiparametric approach to estimating a location value surface.

Fotheringham et al. (2002) described a model formulation in which the coefficients become spatially dependent. Dubin (1988) presented a formulation with spatial autocorrelation modelled in the error term and provided a further breakdown (1992) of the methods used to model the error dependencies.

Goodman (1998) used analysis of covariance methods to test the hypothesis of their existence. He also introduced a second method for testing submarkets based on valuing a 'market basket' home across the potential submarket definitions. The advantage of using the market basket value is that it resolves the issue of differing structural details across the study area.

García Pozo (2009) analysed the housing market and its structure in Málaga, which has become one of the main Spanish tourist destinations and thus one of the most active housing markets in Spain. A method is presented which segments the market into submarkets, following an ad hoc design based on two criteria: structural (vertical and horizontal dwellings) and location (proximity to the coast). The results show that this segmentation method is efficient, demonstrating implicit attribute prices as well as final house prices, which are statistically different from each other, above all when dwellings are next to the coast and between those further away.

Kauko et al. (2010) identified various location specific attributes for segmenting the housing market into submarkets, socio-economic and physical features of the location. Therefore, the authors examined one of these methods: neural network modelling with an application to the housing market of Helsinki using two neural network techniques: the self-organizing map (SOM) and the learning vector quantization (LVQ). Kauko (2013) performed the same analysis using two neural network techniques (SOM, LVQ, Kohonen) in order to identify submarkets within Amsterdam and finally generalized the principles of classification to another context, Helsinki, to enable an elaboration of institutionally sensitive housing market theory. The comparison shows that, while the price alone is an insufficient criterion for both markets, Amsterdam is more fragmented than Helsinki.

3.3 European residential real estate market

3.3.1 Single family houses

The definitions of single family houses may vary between legal jurisdictions or statistical agencies, but the general definition includes the following characteristics: a single family home, house or dwelling

means that the building is usually occupied by just one household or family and consists of just one dwelling unit or suite. In some jurisdictions, allowances are made for basement suites or mother-in-law suites without changing the description from single family. It does exclude, however, any short-term accommodation (hotel, motels, inns), large scale rental accommodation (rooming or boarding houses, apartments) or condominiums.

Numerous studies show the contrast in investor behaviour between the housing market and the capital market. They highlight a key element in the analysis of the housing market, namely the type of expectations under which the market operates. While it is generally accepted that investors in capital markets operate under rational expectations, this is not so evident in illiquid markets such as housing. A common view in the literature is that housing market participants generally display a form of extrapolative or adaptive expectations (Poterba, 1991) in that they rely extensively on recent price history.

Malpezzi and Wachter (2005) argue that myopic expectations also play a role in that participants may fail to anticipate or account for potential reversals in price trends. Given the reliance on recent history, the role played by adaptive expectations can be linked to myopic behaviour (Case and Shiller, 1989). The presence of adaptive and myopic expectations is, however, not totally irrational.

Indeed, the nature of the housing market can lead to a price behaviour that encourages the use of such expectations. The cyclical nature of the asset has already been discussed. In part, due to the illiquidity of the asset, it is commonly seen that, while prices can rise rapidly, they rarely fall in a downturn, illustrating the asymmetry present in prices (Glaeser and Gyourko, 2005). This asymmetry can be partly explained by homeowners being unwilling to trade at reduced prices, wishing instead to ride out any downturn. This would often be due to the high proportion of household wealth tied up in housing and to prevent the risk of realized negative equity.

In addition, many articles by Case and Shiller (1989) onward have reported high and significant levels of serial correlation in house prices. The presence of such characteristics may therefore lead to the intervention of rational investors entering the market in the expectation of excess capital gains (Kim and Shu, 1993; Scheinkman and Xiong, 2003). As Levin and Wright (1997) note in the context of bridging loans, if the interest charged on a bridge loan is exceeded by the expected capital gain, the costs of bridging are no longer a barrier to moving and, therefore, to speculative behaviour.

Clayton (1996) uses a rational expectations model to examine house price dynamics in Vancouver (1979– 1991) and finds that, while the model tracks the movement in real prices during ‘normal’ conditions, deviations are observed during the two boom periods included in the sample. This would suggest that prices deviate from economic fundamentals and from rational expectations during such periods.

Clauretje and Thistle (2007) examine whether out-of-state buyers pay more than instate buyers basing on single family residential properties purchased for investment (non-owner occupied). The investigation focus on the effects of search costs and anchoring using data on 2,828 Las Vegas non-owner occupied (investor) residences, 40% of which are purchased by non-local investors. The paper points out that the location of the property affects the empirical results. In a test of search costs and anchoring effects, they find that there appears to be a direct impact on the price of (investor) residential properties when using an OLS approach without regard to the property’s location. They conclude that search costs and anchoring may still be important. The costs and anchoring may, however, manifest themselves in a preference by risk averse, out-of-state buyers to purchase properties in more upscale, uniform neighbourhoods and to purchase properties sooner on a downward sloping price curve.

In the literature, there are several papers that have analysed the residential real estate under different points of view: prices, transactions, economic variables that influence the market, etc. Taking a look at a typical housing cycle, known as a metropolitan area, it experiences growing population and new housing stock replaces old and steady income growth. If the supply of land is limited, the result is inevitably the gradual increase of home prices. During a recession, house price gains diminish, sales slow, and eventually, there may even be a period during which home prices decline. In contrast, rapidly escalating prices followed by a tapering off of (irrational) exuberance and finally a precipitous fall in home values characterized the most recent cycle in numerous US housing markets. In the last decade, the US witnessed market reduced lending standards coupled with a dramatically increasing housing stock that encouraged many new buyers, who ordinarily would not have been homeowners, to make purchases. When the market peaked and subsequent price declines were coupled with an increased unemployment, numerous recent homebuyers were unable to maintain payments on their mortgage or found their loans underwater and inevitable defaulted.

Ultimately, in a number of US cities, housing markets collapsed and foreclosure activity became the majority of residential transactions (Depken et al., 2012). The authors examined the price impact of foreclosures in a downward spiralling market in which distressed sales become the norm. Actually, previous studies mainly investigate the contagion effect of a foreclosure within a neighbourhood. For example, Towe and Lawley (2013) look at parcel-level data and find that a foreclosure has the effect of increasing the hazard of additional defaults by as much as 28%. On the other hand, Campbell et al. (2011) find that a foreclosure within one tenth of a mile reduces transactions prices of single family houses by less than one half to 1%, on average. Fisher et al. (2012) provide a partial explanation for the range in estimated foreclosure spillovers by distinguishing between single and multi-family housing and condominiums. They estimate that the greatest negative spillover effects are felt in the condominium market.

A well-known fact is that one important asset class, called housing, has been a key to understanding macroeconomic developments, especially in the US. It is now clear, however, that the boom in the US housing market has ended, and it has become even more likely that construction activity in the US will slow considerably along with the deceleration of housing prices. The euro financial markets have already been strongly affected by developments in the US. But it is generally assumed that the Eurozone does not face a similar prospect of slowing consumption demand due to lower housing prices, given that areas of 'froth' (i.e., Spain) co-exist alongside areas of declining prices (i.e., Germany). The widely held assumption that housing prices in the euro area have on average behaved differently from those in the US, however, is actually not warranted. Gros (2007) concludes that the euro area experienced a boom phase similar to that in the US until 2006, and the resulting price level represents an overvaluation that is not too dissimilar from the one observed in the US housing market. In analyzing the single family housing price trend in Europe in the last ten years, we identify the price trend in three European emerging countries – Estonia, Latvia and Greece, the latter after the serious crisis of recent years has been reclassified from developed to emerging – and three European developed countries – Germany, Ireland and Luxembourg. The housing price is approximated through Residential Property Price Index Statistics, more specifically the data source is European Central Bank (ECB). Data are collected through the query 'new and existing flats' in order to obtain whole country statistics on property price index related to single family housing new and existing.

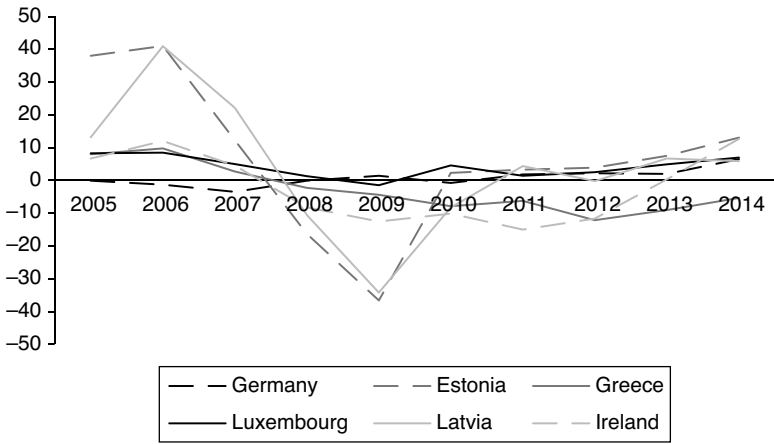


Figure 3.1 Single family price trend in European countries analysed
 Source: European Central Bank data processed by the authors.

Figure 3.1 shows that Germany and Luxembourg represent the countries with the most stable real estate market with a price deflation between 0 and 10. The Greek real estate market is quite stable, especially if compared to the other three markets, with a price deflation steady at around 10 from 2005 to 2007 and 0 since 2007 to 2014, but the trend decreased under 0 in the period 2012–2013. The recession has clearly had a greater impact on the Greek single family housing market. The Irish single family housing market decreased in the period 2008–2010 with an increasing of prices in the period 2011–2012. There is a decrease of prices in the period 2012–2013, and an increase in the period 2013–2014. Estonia single family housing market decreased in the period 2006–2009, increased in 2009–2010 and then stabilized in 2010–2014. Latvia has shown an increase in the period 2005–2008, then a greater decrease in the period 2010–2012 and finally is quite stable in the period 2012–2014.

3.3.2 Multi-family buildings

Multi-family buildings are residential houses contained in a building or in a complex of buildings, and typically each housing unit is designed for a single family and generally includes condominiums.

Buildings are composed by various flats on different floors, and there can be various flats in each floor, usually having a front entrance, foyer and stairs in common. In some cases, there can be also basements, garage

and back entrance in common; if there is not the external entrance for each housing unit, it can be considered a single unit divided on various floors.

Other types of multi-family buildings are composed by small semi-detached properties and a complex of buildings. The duplex is a semi-detached property (typical English houses) formed by two housing units, side by side in a single building with separate entrances and no common areas. Townhouse are various houses attached, each building, generally side by side, having a single family flat with own separate entrance and can be composed by different floors. The apartment community is a complex of buildings on the same land with garden and services, like pools, parking areas and a community clubhouse in common. Finally, there are buildings that represent a mix of residential and commercial properties, named mixed use buildings, in which there is a commercial area up front or on the first floors, especially when there are offices and residential areas on the upper floors.

The multi-family component of residential real estate has received relatively little attention in the existing literature on housing markets. Kavaller (1979) found that the growing acceptance of condominium and cooperative housing concepts, with federal rental assistance initiatives, changed the life style preferences. In other words, it would appear that the increased attention given to the multi-family sector may significantly enhance our understanding of housing markets in general.

Constantinescu (2010) built an empirical model in order to verify the interest-rate sensitivity of direct real estate assets in the Swiss multi-family housing market. In his contribution, the interest-rate sensitivity of the underlying assets is estimated in a dynamic DCF model. The model is estimated over two different time periods, and the estimate remains significant over both periods with values changing marginally. The long-run sensitivity is computed to be roughly 4.5%. The value is found to be statistically significant at the 1% level.

In this section, the multi-family building price trend in Europe in the last 10 years is analysed. We are going to specifically identify the price trend in three European emerging countries – Estonia, Latvia and Greece, the latter after the serious crisis of recent years has been reclassified from developed to emerging – and three European developed countries – Germany, Ireland and Luxembourg.

From the first data analysis, see Figure 3.2, it emerges that Germany and Luxembourg represent the countries with the most stable real estate market with prices ranging around 100 until 2010 and following an upward trend until 2012, with prices ranging around 120 in the last two years.

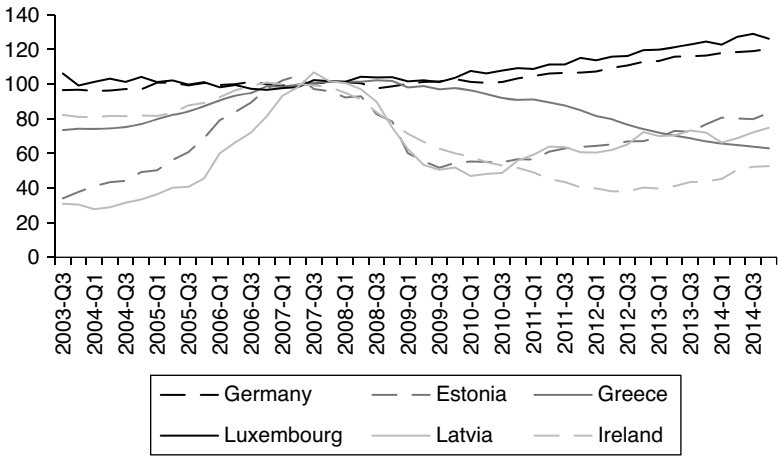


Figure 3.2 Multi-family building price trend in European countries analysed
 Source: European Central Bank data processed by the authors.

Even the Greek real estate market is quite stable, especially when compared to the other three markets, with prices steady at around 75 from 2003 to 2005. Since 2005, the trend becomes increasing until 2008 with prices that reach 100 (2007–2008). From 2009 onwards, it begins a constant decline, driven by the recession, which lasts to this day and brings the price index to nearly 60.

The case of the Irish property market is relevant; since 2008, it has been experiencing a strong decreasing trend, starting from a price index around 100 that fell in 2011 to reach 40. From 2011 to the present day, the price index fluctuated around 40. The drop in prices began in 2008 and means that Ireland was among the first countries to feel the US crisis while countries like Germany and Luxembourg continued to have a stable real estate market. The Irish real estate market decline began in the middle of the subprime mortgage crisis, while from 2011 to the present, almost following the US real estate market trend, it found a balance.

Estonia and Latvia have shown a growing trend of the real estate market until 2006, then Estonia price index began to decline while the Latvian real estate market has remained relatively stable with a price index that ranged around 100 until 2008 and then fall down in the period 2008–2010. Values tended to increase in the period 2008–2014.

Figure 3.3 shows that in 2007 the real estate market trend is about 100 in all markets analysed, but in the subsequent periods for some countries

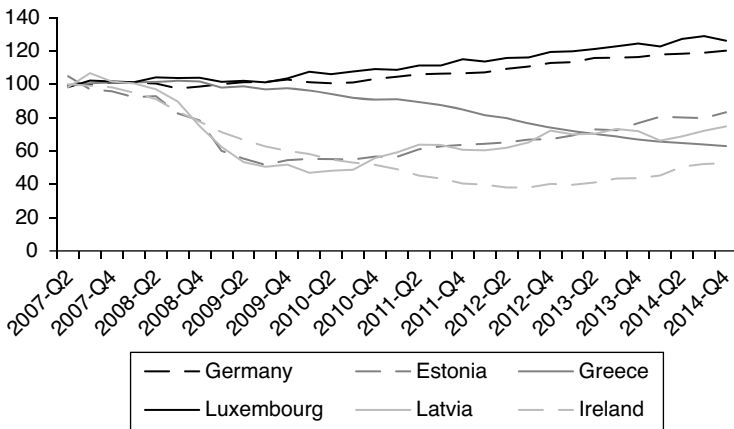


Figure 3.3 Real estate market trend between 2007 and 2014

Source: European Central Bank data processed by the authors.

(Germany and Luxembourg), the price trend is growing and regular. For other countries (Ireland and Greece), the price trend is swooping; the price trend in Latvia and Estonia is unstable.

The housing price is approximated through Residential Property Price Index Statistics, more specifically the data source is European Central Bank (ECB). Data are collected through the query 'new and existing flats' in order to obtain whole country statistics on property price index related to multi-family building new and existing.

3.4 Conclusion

The characteristic of the residential real estate asset class is low liquidity due to low liquidity of the residential market. Residential real estate prices, unlike stock prices that fluctuate more or less randomly, tend to increase with a greater probability. It was demonstrated by scholars that it is most advantageous to split the housing market into two or more submarkets in order to incorporate the large scale effects in valuation models. The segmentation tends to decrease the variance of prediction error of the model; such heteroskedasticity is caused by the effects of variables that have not been included in the regression. The various technics applied in literature in order to segment the housing market are analysed. Single family houses are illustrated by explaining the definitions and the approaches by literature, and finally, the weight of real estate

single family housing buildings investment in a portfolio composed by shares belonging to various sectors from different countries is analysed. In residential real estate, there is a distinction between single family houses and multi-family houses. More particularly, the performance of European residential assets, for both single family houses and multi-family buildings is analysed. The analysis can be seen as a cross-country analysis, in which it is verified that countries invest in single houses and multi-family buildings and with what weights. Through the analysis, it emerged that German and Luxembourg houses represent a very good investment in order to diversify the portfolio and minimize its risk in both single family housing and multi-family building because they represent the more stable European real estate market. Starting by a definition of multi-family buildings, the findings described the approaches on this research field in the literature. Moreover, a first cross-country data analysis is made in which it emerged that even the Greek real estate market is quite stable, especially when compared to the other three markets analysed, with prices steady at around 75 from 2003 to 2005. Since 2005, the trend becomes increasing until 2008 with prices that reach 100 (2007–2008). Lastly, from 2009 onwards, it begins a constant decline, driven by the recession. The Irish property market is quite relevant in that since 2008, it has been experiencing a strong decreasing trend, starting from a price index around 100 to reach 40 in 2011. The drop in prices began in 2008, which means that Ireland was among the first countries to feel the US crisis while countries like Germany and Luxembourg continued to have a stable real estate market. Estonia and Latvia have shown a growing trend of the real estate market until 2006, then Estonia price index began to decline while the Latvian real estate market has remained relatively stable, with a price index that ranged around 100 until 2008 but then a fall during the period 2008–2010.

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4

Commercial Real Estate in Europe: The Role of the Retail Market

Aamir Inam Bhutta and Marco Migliorelli

4.1 Introduction

Commercial real estate is a central component of the real estate industry, and it is the most dynamic in terms of innovation and asset management practices. Through the years, this sector has experienced a continuous evolution. First and foremost, innovation has concerned the modalities of access to the investment. If in the past commercial real estate was predominantly considered an investment in physical assets, today, thanks in particular to the rise of specialized market vehicles, this asset class has consolidated a relevant position as a proper financial investment and is an essential component in the portfolios of the majority of the institutional investors. In fact, a part of traditional direct investment, commercial real estate nowadays is extensively accessible through a wide range of indirect investments options, in particular in the most advanced countries such as, in Europe, United Kingdom and France.¹

As far as its definition, commercial real estate is usually demarcated as the whole of the properties used for business or for income generation purposes. In this light, commercial real estate is a highly heterogeneous market. This is due to the sensitive differences that characterize the various real estate amenities with regards to at least their functional destination, size, age and location. The five main commercial real estate segments are: office, retail, industrial, residential and a residual “other” category. These segments are usually considered self-standing assets classes.

Another important element that features the commercial real estate market is its traditional direct link with the banking system. In particular, the relevance of the relationship between banks and real estate economic agents is bidirectional. On the one side, buyers and developers heavily rely on banks, borrowing to finance their projects, which usually have a

long time-to-market and, hence, imply long-term relationships with the lenders. In this sense, part of the recent pressure on the commercial real estate market has been linked to the tightening of the credit standards imposed by banks, which has partially hampered buyers and developers to phase in new construction projects and has delayed the exploitation of the previewed pipelines. On the other side, a not negligible portion of the banks' asset value is dependent on the credit quality of the portfolio invested in real estate (and by the enforceability of the collaterals and the other warranties issued by their clients). In such a framework, it is evident how commercial real estate assumes an important role while assessing the stability of the banks and of the financial market as a whole. As a matter of fact, turbulences in the real estate market may impact the capital adequacy of the banks through economic losses due to the impairment of non-performing loans and mortgages. On several occasions in the past, financial distress generated in the real estate market has afterwards induced recession in the real economy.²

The rest of the chapter is structured as follows. Section 4.2 focuses on the retail real estate, the most dynamic segment within the commercial real estate industry in recent years. Section 4.3 deals with the market size of the commercial real estate in Europe. Section 4.4 analyses the performances of the sector in recent years. The last paragraph is dedicated to the conclusions.

4.2 European retail real estate

The European retail market is the second most important commercial real estate sector, following the office segment, with a market share of approximately 25% in terms of annual investments. This category includes retail stores, shopping centres (shopping malls), outlets, single sales buildings or units, retail parks, large showroom with delivery areas, sites on highway frontages and other smaller facilities suitable for direct sales to the public.

Over the last decade, two major events have had an influence on the real estate retail segment in Europe: the rise of large shopping centres and the sharp development of the e-commerce. The first phenomenon has started in the early 1980s and has experienced a pace of continuous growth which is still ongoing. Mainly located in proximity to the urban areas, shopping centres consist in large infrastructures able to host several retail units. The success experienced in almost all the European countries is mainly based to the possibility for the customers to easily reach the centre through dedicated access and parking facilities and to benefit of a large number of shops as well as leisure activities

(restaurants, cinemas, etc.). In terms of retail real estate, the rise of the shopping centre has led to two different trends. Firstly, it has shifted part of the demand of retail space from decentralized and relatively small facilities to large shopping areas. Secondly, in terms of supply, it has enforced the evolution of new the developing practices toward highly sophisticated retail projects needing long-term investments.

On 1 January 2014, the total shopping centre floor space accounts for approximately 154 million square metres all over Europe (Cushman and Wakefield, 2014). The three major European markets are the United Kingdom, Germany and France, which together count for about 60% of all the retail investment activities (BNP Paribas Real Estate, 2013a). Central Paris, Central London and Munich are the prime locations for shopping centres. Furthermore Central and Eastern Europe has emerged concerning new development areas.

As far as it concerns the development of the e-commerce, conclusive observations on the impact on the retail real estate are today not yet possible. Even if online sales are gathering more and more customers worldwide, at least from the beginning of the new century, a sensitive impact on the traditional retail business has not yet been evident. In this sense, a sensitive adjustment of the performance of the retail real estate segment cannot be observed in correspondence with the increase of the online business. Hence, substitution effects seem not to emerge so far. This notwithstanding, the e-commerce is having an important impact in terms of real estate as far as it concerns the distribution facilities used in the delivery of the goods bought online. To this extent, it is triggering relevant developments in the logistics part of the industrial real estate segment.

4.3 Market size

Several measures are available in order to assess the size of the commercial real estate market in Europe. A first one is represented by the yearly flow of investment directed to the sector. To this extent, Figure 4.1 shows the commercial real estate investment in the period 2005–2012.

The highest level of investment in the commercial real estate has been registered in 2007, before the blast of the financial crisis in the continent. In this year, the flow of incoming investment in the market peaked €246 billion, following the trend of economic boost of the first half of the century. Afterwards, the financial crisis deeply reduced the appeal of the investors in the market, with a fall of over 70% in 2009 with respect the pre-crisis highest levels and with a total investment flow of about €70 billion. After the deepest point of the crisis, in particular starting from

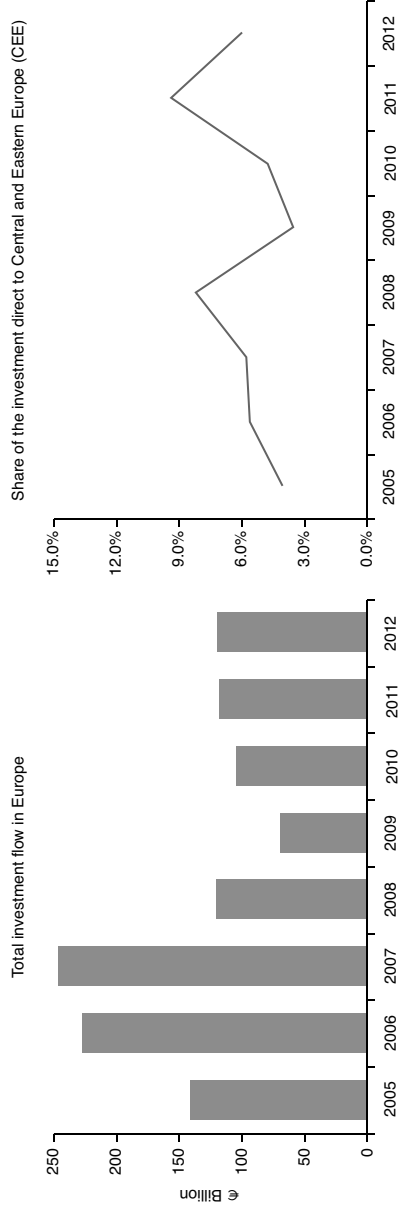


Figure 4.1 Commercial real estate investment in Europe in the period, 2005–12

Source: CBRE data processed by the authors.

2010, the total investment in commercial real estate has smoothed toward more averaged values counting about €120 billion per year.³

Western Europe remains the area of the continent in which the majority of the investments is directed, in particular thanks to the determinant contribution of the most advanced economies as United Kingdom, Germany and France.

Nevertheless, Central and Eastern Europe (CEE) has gained over time a specific and always more important role in the European commercial real estate market, thanks in particular to the possibilities of diversification that the high growth potential areas offer to the goals of the asset management. To this extent, two distinctive trends seem characterize the investment in these geographical areas. Firstly, CEE countries keep increasing their weight in the portfolios of the investors over time. In 2011, a peak was reached when 9.4% of the total flow of investment was directed to these countries, with a value of about €11 billion. Secondly, the commercial real estate segment in CEE seems especially exposed to the effects of the economic cycle. In particular, in the period 2009–2010, a deep reduction in the relative investment in these countries (below 5.0% of the total flow in Europe) has been most probably caused by fly-to-quality decisions that directed investors in a period of high volatility and increased market uncertainty. Hence, part of the fortune of the commercial real estate in Central and Eastern Europe in the years to come will be linked to the establishment of an unwavering financial environment in the continent, both in terms of sustainability of the economic recovery and of geopolitical stability.

Other than in terms of flow of investments, the market size of the commercial real estate in Europe can be assessed in terms of stock. In this regards, Figure 4.2 shows the functional destination of the commercial real estate existing assets and its partition among the different kind of investors.

The overall size of the commercial real estate market in Europe in terms of value of physical stocks may be approximate at €5.000 billion (PMRECON, 2011). Half of the commercial real estate market is not held for investment purposes. In principle, owners-occupiers predominately fall in this category.

Especially in some commercial real estate sectors, the practice that sees the final user to own the building is largely widespread, in particular when the real estate facilities are considered as distinctive core assets vis-à-vis the main business activity of a company. The practice of owners-occupiers is extensively in use in particular in the industrial segment. In this case, long-term planning, high switching costs and the fact that

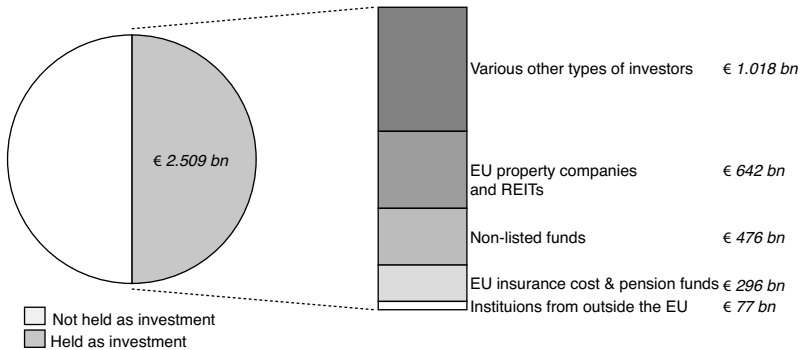


Figure 4.2 Commercial real estate stock value by destination and type of investors
Source: PMRECON, Eurostat, ECB, OECD data.

the technologies hosted in the manufacturing plants usually represent a primary source of competitive advantage for the business, lead big players to the decision of owning the plants with respect to the possibility of lease certain infrastructures. On the contrary, the office sector is the one in which the leasing option is usually prevalent. Flexibility in the occupying period, short take-up time, low initial investment and lack of internal expertise to manage large office units are among the factors that are typically at the basis of the choice of the companies to lease instead of acquiring and managing their administrative working spaces.

On the back side, about 50% of the value of the commercial real estate assets in Europe is held for investment purposes. This means a total market value of about €2.5 trillion. Property companies and REITs, not listed funds,⁴ insurance companies and pension funds are the most important institutional investors in the market. Their weight represents about 60% of the total investible market, for a total asset value of approximately €1.500 billion.

Nevertheless, an important portion of the commercial asset held for investment purposes rests in the hands of other kind of real estate investors. In this broad category, fall heterogeneous economic agents, which usually detain income generating assets for opportunity or for historical reasons linked to the evolution of their businesses over time. Among these agents are banks and other financial institutions, industrial or service companies, public intuitions, individuals and other minor economic units.

A relatively low representation in the European commercial real estate market is given by institutions based outside the continent. Only 3% of the total assets held for investment purpose are managed by foreign players.

A further assessment of the size of the European commercial real estate market is possible country-wise. To this extent, Figure 4.3 shows listed real estate investment volumes for a panel of European countries.

Several differences lay in terms of the maturity stage of the market. If few markets have gathered a solid practice in terms of market intermediation and have succeeded in establishing a solid attractive environment, in others, the commercial real estate market is still at an earlier stage of development.

United Kingdom and France together concentrate more than 50% of the mark share in terms of listed investment volumes, dominating in this dimension the European market. A certain level of attractiveness is also reached by smaller countries such as Switzerland, Sweden and the Netherlands, which lay in a second investment cluster with Germany and Spain. On the contrary, South European economies are mainly underrepresented with respect to their economic weight. In particular, Italy, the fourth economy in Europe in terms of GDP, rests well below its theoretical potential. In terms of urban areas, London is by far the most attractive market for the commercial real estate investors, followed by Paris and Stockholm.

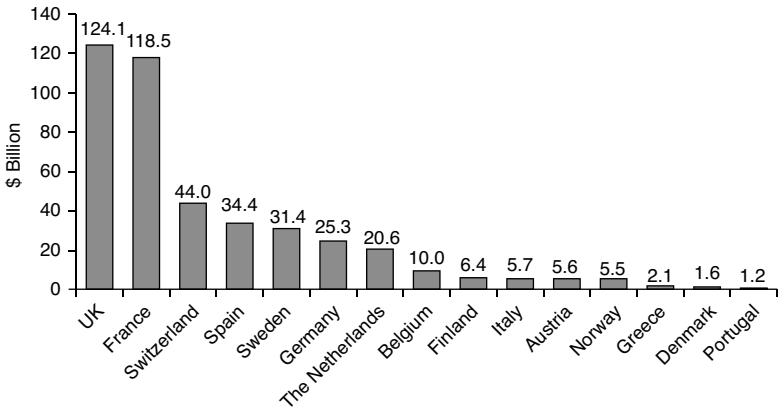


Figure 4.3 Listed real estate investment volumes for a panel of European countries
Source: EPRA data processed by the authors (2012).

4.4 Performance analysis

Different possible indicators can be used to the extent of analyzing the performances of the commercial real estate sector in Europe. In general, a broad classification is based on the difference between direct market and indirect market measurements. The firsts are based on the periodical evaluation of the market value of the physical assets, via specialized appraisal techniques. The latter is backed by the assessment of the performance of the listed real estate securities of the most important vehicles, such as REITs and other listed companies.

Table 4.1 gives a country-wise measure of total return built on the basis of the FTSE EPRA/NAREIT development Index with respect to different time periods. To this extent, it represents an indirect market measure.

Caution has to be used when utilizing indexes based on the performances of listed real estate companies in order to assess the total returns of the real estate market. In particular, the value of the securities included in the index may be sensitively impacted by the debt positions of the vehicles. Furthermore, these indices usually suffer of underrepresentation as they cannot take into account unlisted funds and the portion of the market not held for investment. Finally, in certain markets, the number and the quality of the components of the index may be

Table 4.1 Average yearly percentage total returns in the commercial real estate sector for a panel of European countries

Average yearly total returns (%)				
	3 years	5 years	10 years	20 years
Austria	1.4	17.3	-6.4	-
Belgium	6.8	10.2	6.4	6.4
France	12.6	21.5	15.1	14.1
Finland	5.4	17.4	7.3	7.7
Germany	8.8	15.6	3.9	2.0
Greece	22.6	4.4	-3.4	-
Italy	2.6	7.3	-1.5	5.3
Netherlands	0.8	9.8	6.5	8.0
Norway	-13.5	8.5	-19.8	-7.4
Spain	-45.1	-	-36.2	-14.4
Sweden	14.8	29.8	16.2	14.1
Switzerland	4.3	16.8	11.2	10.7
United Kingdom	15.9	19.8	2.2	5.9

Source: FTSE EPRA/NAREIT Development Europe Index Historical Performance. Baseline June 2014.

extremely limited, in this sense aggravating the underrepresentation problem. Taking into account these limitations, index-based analysis is useful in order to assess the trends of the market over time.

The results shown in Table 4.1 confirm a certain level of elasticity of the performances of the commercial real estate sector with respect to the phase of economic cycle. Even if by midterm the financial crisis has induced low or negative performances, after the first and deepest phase of the recession, the market has regained momentum and has showed boosted profitability. This signals how the commercial real estate market in Europe has strong foundations (at least in the western part of the continent), and it has had the ability to generate substantial recovery and performance stability.⁵

Nevertheless, significant differences emerge country-wise. France and Sweden appear to be historically high performing markets. The most important European market in terms of investment and market access, the United Kingdom, has partially suffered in the midterm mainly because of the impact of the financial crisis. Nevertheless, it has given proof of strong fundamentals, which have boosted performance in more recent years. Spain appears the country in which the effects of the crisis have impacted the commercial real estate the most.

When analyzing the performance of the real estate market via direct market indicators, two major sources of financial revenues are taken into account: the capital growth and the income return. These two components of the total return have largely different characteristics. While the most important feature of the income return is usually its cash flow generation all along the period of the lease, the capital growth mainly concerns the potentialities of the asset to generate cash flows in the middle or long term. In addition, the capital growth component of a real estate investment can be usually cashed out only at the moment of the sale of the asset.

Differences between the income return and in the capital growth component of the total returns emerge also as far as it concerns their elasticity to the phase of the economic cycle. While the income return is usually more insulated in the case of economic downturn, thanks to long-term lease contracts, the capital growth component usually react quicker and with greater magnitude to economic shocks.

To shed more light on the recent performances of the commercial real estate market in Europe in recent years, Figure 4.4 shows the average annual variation in the capital value in the overall commercial real estate sector for a panel of European countries in the period 2003–2012. The information exposed is based on valuation-based appraisals of existing assets.⁶

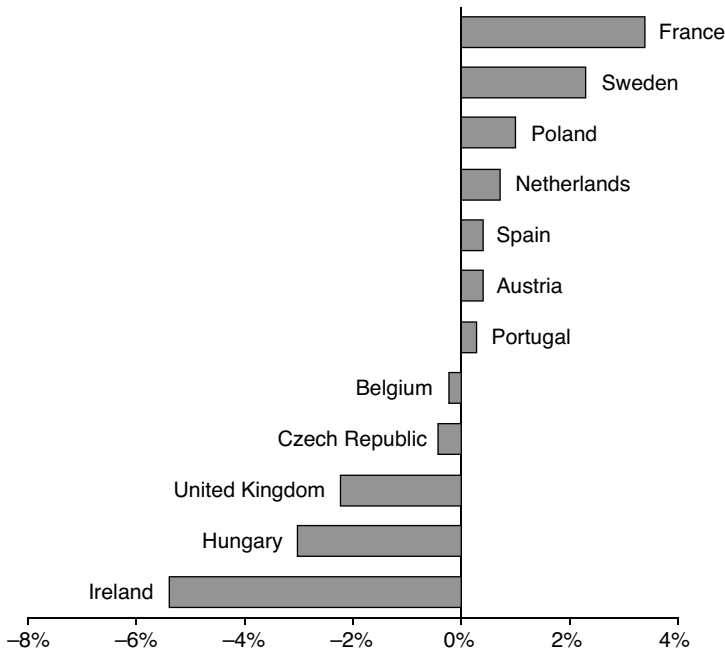


Figure 4.4 Capital value change in the overall commercial real estate sector for a panel of European countries (average annual percentage change in the period, 2003–2012)

Source: European Central Bank data processed by the authors.

The timespan analysed comprehends both the periods before and after the beginning of the crisis blasted in 2008. In this respect, the performances of the sector deeply discount the adverse phase of the economic cycle and cannot be taken as long-term performance indicators or predictors for future developments. Nevertheless, some interesting indication may arise.

First of all, a sensitive difference may be observed among European countries in terms of capital value change, highlighting to this extent a scarce correlation between economic areas as far as it concerns the commercial real estate market. The uneven impact of the crisis among European countries, asymmetries in the rights of tenants and occupiers and different trends in the development of commercial areas may have contributed to these results. Such asymmetries between European countries are also confirmed at single commercial real estate sector level. Figure 4.5 shows the capital value change for each commercial sector for a panel of selected European countries.

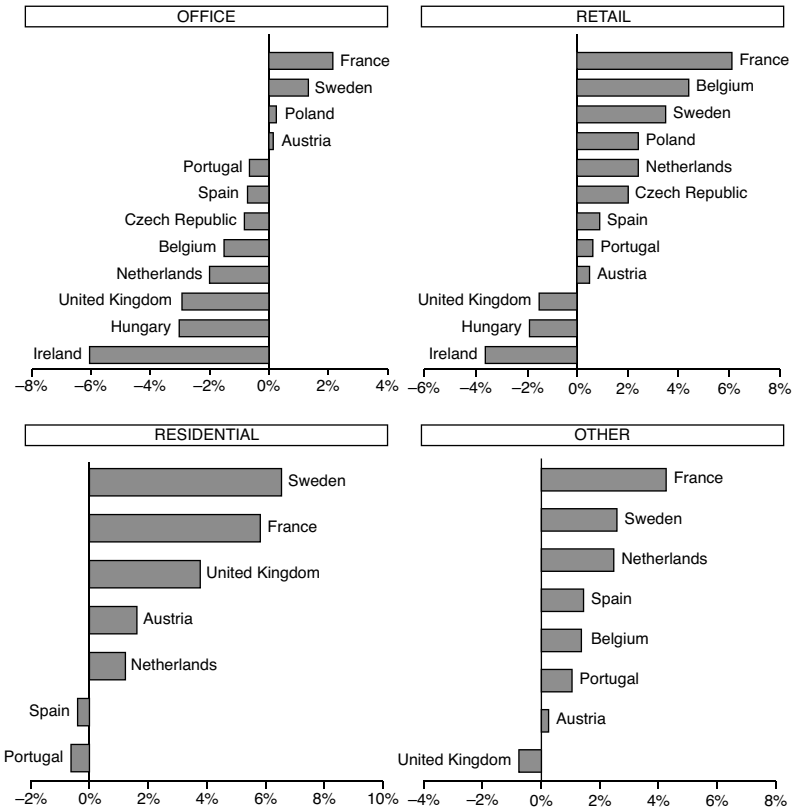


Figure 4.5 Capital value change in the commercial real estate sectors for a panel of European countries (average annual percentage change in the period, 2003–2012)

Source: European Central Bank data processed by the authors.

The geographical effect plays a widely homogenous role among different commercial real estate sectors. In fact, resilient countries such as France or Sweden have confirmed an over performance in all the sectors in the period analysed. Furthermore, similar relative trends are observable for almost all the other countries represented in the panel. The performance of the capital growth component of the total return is significantly dependent of the specific commercial sector. In particular, the recent economic crisis has had a strong impact on the value of the office buildings while the capital value of retail, residential and

other commercial assets have been more insulated from the phase of the economic cycle. Finally, the magnitude of the average capital value change rests limited (at one-digit level) and in most cases in the $\pm 4\%$ range. As a matter of fact, this is a confirmation of the low risk level of the real estate investment in the midterm, in particular vis-à-vis the investment in financial securities.

As far as it concerns the second main component of the total returns, the income return, Figure 4.6 shows the range of variation Europe-wide in the period 2002–2012.

Industrial real estate has experienced, on average, the highest levels of income return and volatility, confirming in this way an upright positioning on the risk-return frontier with respect to the other commercial real estate asset classes. The specificities of the assets involved, longer vacancy periods between two successive leasing and high sophistication of certain prime facilities used in manufacturing or in logistics may explain such a performance of the sector. On the other side, commercial residential has offered smaller income return and low variability, mainly due to a more stable demand and supply trends and the relatively low innovation that features the segment.⁷

The trends shown in Figures 4.5 and 4.6 confirm the presence of specific characteristics of each commercial real estate segment. To this

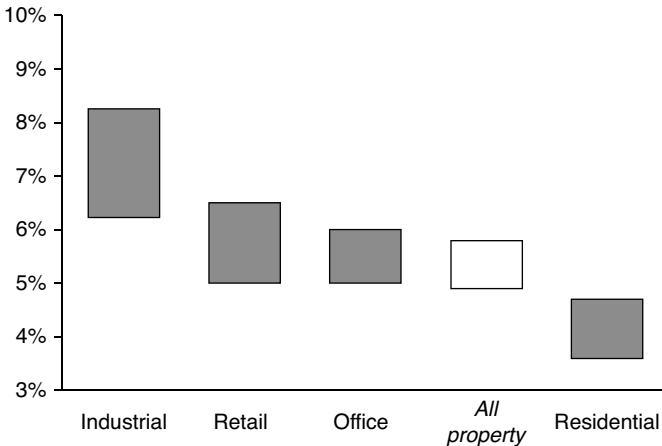


Figure 4.6 Income return range variation in the period, 2002–12

Source: IPD data processed by the authors.

extent, it is justified to consider, in optimal portfolio construction, the segmentation by functional destination as one of essential components to use to identify an asset class.

4.5 Conclusions

The commercial real estate sector is a fundamental component of the real estate market and assumes a crucial role in the economy in terms of value added, employment and financial stability. Five major segments are usually considered as self-standing asset classes: office, retail, industrial, residential and a residual 'other' category.

The largest portion of the investment flow in commercial real estate assets is directed to the office segment, which counts for about 45% of the total market. A high concentration in urban areas and sensitive differences in demand and supply between prime class A buildings and class B and C facilities characterize this market. The retail segment is the second in terms of volumes of investment, pooling about 25% of the market. The most important trend linked to this segment is the rise of the shopping centres, which at least in the last two decades have led to innovation in terms of developing projects and financing needs. The commercial real estate industrial sector is comprehensive of all buildings and facilities used in the broad manufacturing process, including research and development activities and logistics. It takes about 10% of the annual flow of investments of the commercial real estate market. Residential real estate is usually defined as the whole of residential buildings with five or more units held for income purpose. The number of units and income generation differentiate this segment from the traditional residential properties. Other commercial asset types include rural and predevelopment land and real estate facilities used in several other economic sectors such as hospitality and healthcare.

Only half of the European commercial real estate assets is held for investment purposes. To this extent, the total value of the investible commercial real estate market in terms of stock amounts at about €2.500 billion. Property companies and REITs, non-listed funds, insurance companies and pension funds are the most important institutional investors in the market.

In Europe, the flow of investment in commercial real estate has been deeply influenced by the phase of the economic cycle. It registered a peak in the pre-crisis period, with almost €250 billion in 2007. The financial crisis blasted in 2008 strongly depressed the market, which

afterwards recovered, but it is still far from the pre-crisis booming levels, counting in recent years for €120 billion on average.

The performances of the commercial real estate market over Europe have been dependent on at least three factors: the type of commercial segment, the country and the general economic outlook. First, significant differences in the value of real estate assets used in diverse economic activities have been depended on the elasticity of the particular sector to the phase of the economic cycle. To this extent, the office and the industrial segments have suffered the most due to the recent financial crisis while the retail and the commercial residential have been more insulated. Second, sensitive differences remain in terms of attractiveness of national country. While few European markets have reached a phase of maturity, in particular United Kingdom and France, others are still in an early stage of development and struggle in attracting new investments. A high level of financial intermediation, the possibility of indirect investment through listed real estate securities, favourable tax and legislation are the key elements that fashion the countries able to consistently attract investors. Third, the recent economic crisis has deeply influenced the performances of the commercial real estate sector all over Europe, in particular in countries in which the fall in production and consumption has been more relevant, such as the South European economies. Nevertheless, the European commercial real estate sector has generally given proof of a good resilience and, in many countries, the market has recovered pre-crisis performances.

Notes

1. In broad terms, the direct real estate market consists of assets directly owned and managed by investors or their agents while the indirect real estate market refers to the whole of the securities of the firms specialized in the management and in the trading of real estate properties (for example, REITs, Real Estate Investment Trusts or other securitized real estate vehicles). Private investors and institutional investors such as banks, insurance companies, pension funds, foundations and hedge funds nowadays cover the biggest part of the demand of indirect investments in commercial real estate.
2. See, for example, Syron (1991) on the causes of the credit crunch occurred in the region of New England during the 1990–1991 recessions or the subprime crisis blasted in 2007 in the United States.
3. As already mentioned, the investment in commercial real estate is mainly directed to the office segment (45%), followed by retail (25%), industrial (10%) and all other type of assets (20%) (*Source: BNP Paribas Real Estate, 2013a*).
4. European non-listed real estate funds are considered an important vehicle to invest in real estate market. They showed a consistent growth performance over Europe in the pre-crisis period. In 2011, there were total 474 funds

- registered. Core (less risky), value added and opportunity (more risky) are the main classifications for unlisted real estate funds. Core funds held about the 70% of gross asset value of the all non-listed fund, followed by value added (20%) and opportunity funds (10%) (*Source: Fuerst and Matysiak, 2013*).
5. In particular, as compared to residential housing market (*Source: RMB Capital, 2013*).
 6. In general, real estate asset value may be calculated by valuation-based or transaction-based appraisal practices. While valuation-based practices consist in periodical assessments of the value of the assets by their owners (in practice, REITs and other real estate companies), transaction-based appraisals refer to the effective price of a deal. Without going into details, it is worth mentioning that valuation-based components have been proved to cause smoothing and lagging effects on the returns with respect to transaction-based components (see, for example, Brown and Matysiak, 2000; Brooth and Matysiak, 2002).
 7. In particular, green-labels and eco-friendly patents seems to be so far less important for the commercial residential segment than for the office because of a lower attention of the tenants to these features.

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5

Industrial and Logistic Sector

Aamir Inam Bhutta and Marco Migliorelli

5.1 Introduction

The European industrial and logistic real estate sector has been facing long-term challenges. In particular, three major macroeconomic events have played a role in reshaping the demand and the supply of industrial assets in Europe in the last two decades: the shift of the manufacturing activities from the west to the east of the continent, the rise from the early nineties of innovative manufacturing and distribution models and, more recently, the jeopardized reduction in the consumption levels occurred during the last economic crisis blasted in 2008.

The first phenomenon, the production shift from the west to the east of Europe, started with the collapse of the Soviet Union and has gathered momentum all along the enlargement of the European Union toward the east. Substantial production relocations have been mainly triggered by the research of lower production costs, in particular direct labour costs. Yet the impact has been uneven among industries and countries. While unspecialized and labour intensive productions have been vastly transferred, highly specialized industries have not suffered from a deep shift, consolidating their presence in the most advanced European economies, in particular in Germany.

To this extent, Table 5.1 gives an overview of the production change that occurred in Europe by state. Countries such as Spain, Italy, Portugal and Greece have faced a significant drop in volumes of production. On the contrary, labour cost attractive eastern countries such as Poland, Romania and Bulgaria have experienced an important increase in the levels of industrial output. The shift toward east, even if relatively sharp, has been gradually absorbed in terms of reshaping of supply of real estate facilities over time. Reconversion of existing assets in the case of

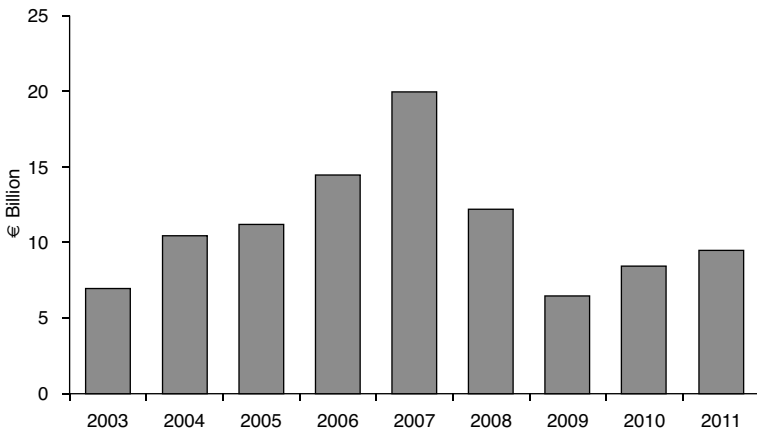


Figure 5.1 Industrial property investment in Europe in the period, 2003–11

Source: CBRE data processed by the authors.

cessation of production, specialization of facilities to suit new industrial requirements and development of new manufacturing areas in fast growing countries have been the structural responses to a long-term changing demand of industrial amenities over Europe.

A second important element of influence on the industrial real estate sector in the last decades has been business model innovation. The continuous sophistication in the modern manufacturing practices over times has changed the required characteristics of the physical assets necessary to perform the production and the distribution activities. Particularly in logistics, recent developments linked to the rise of global sourcing in the 1990s and of the e-commerce at the beginning of the new century have created the basis for the introduction of innovative prime real estate facilities.

The last factor that has deeply influenced the dynamics of the European industrial real estate market in recent years has been the generalized but uneven fall in the demand of consumer consumption products during the crisis that started in 2008. As a consequence of a significant fall in the demand, a substantial review of the pre-crisis production plans have taken place. In South European countries, more than everywhere else on the continent, this has led to several cases of over dimensioning of existing facilities and high vacancy rates, especially as far as it concerned production and distribution amenities of the service of local markets not included in international production networks. In terms of performances of the industrial real estate market,

the great crisis has had the same effect of a large exogenous demand shock. To this extent, it has inevitably depressed the overall sector returns. In particular, a relevant drop in the total returns has been registered in the years 2008–2009, led principally by a fall in the capital value of the existing facilities.

Despite the challenges experienced by the sector, industrial real estate remains a valuable investment option, in particular for specialized real estate investors. In this respect, it represents a consolidated asset class in many portfolios.

Table 5.1 Volume index of production for European countries (base year 2010)

	2000	2007	2013
EU (28)	99	111	100
Euro area (18)	100	112	100
Austria	78	104	107
Belgium	71	96	102
Bulgaria	70	119	106
Croatia	81	111	92
Cyprus	94	107	73
Czech Rep.	69	109	105
Denmark	110	117	103
Estonia	60	112	125
Finland	94	114	96
France	112	114	99
Germany	90	107	106
Greece	124	123	89
Hungary	70	110	105
Ireland	69	100	96
Italy	117	119	92
Latvia	69	109	114
Lithuania	60	104	113
Luxembourg	91	115	94
Malta	106	112	100
Netherlands	89	100	99
Norway	118	100	94
Poland	57	91	111
Portugal	116	112	93
Rumania	80	105	118
Serbia	97	112	106
Slovakia	53	94	119
Slovenia	84	111	99
Spain	117	127	90
Sweden	98	115	96
UK	114	111	96

Source: Authors' elaboration on Eurostat data.

The rest of the chapter is structured as follows. Section 5.2 discusses definition, market size and performances of the European industrial real estate market. Section 5.3 deals with the same arguments with a focus on logistics real estate, highlighting its uniqueness. The last paragraph is dedicated to the conclusions and to the discussion of the possible future evolutions of these sectors.

5.2 European industrial market

5.2.1 Definition

The fundamental necessity to adopt an accurate definition of industrial real estate lays in the need of identifying a unique asset class, in particular with respect to its potential usage in optimal portfolio constructions strategies and in the asset management.

To this extent, the leading criterion to classify an asset as industrial is its functional destination. In general terms, all the real estate properties linked to the production processes shall be included in this asset class. In this respect, facilities hosting upstream and downstream activities, vis-à-vis the core manufacturing processes such as research and development and distribution, also have to be considered as being part of the overall industrial real estate category.

In more detail, industrial real estate covers manufacturing plants, assembly facilities, service land, large and small warehouses, light storage units, distribution amenities, research spaces and administrative units directly connected with the manufacturing facilities.

In consideration of the variegated nature of the properties potentially included in the industrial real estate asset class, many practitioners have recently begun to investigate the different elements that characterize this sector. Especially in the last years, it has shed some light on the peculiarities of the performances of industrial real estate facilities used in logistics. Being characterized by distribution purposes, these assets seem to be featured with specific qualities with respect to the overall industrial real estate sector. In this sense, Table 5.2 reports the average total returns (comprehensive of income return and capital growth) for different time spans for the overall industrial market, for the logistics assets and for all other industrial assets for a panel of properties in the United Kingdom.

As it emerges from the observation of Table 5.1, in recent years, logistics assets performances have started differentiating in a sensitive way from the general industrial sector. Differences in the refining needs

Table 5.2 Differences in returns within the industrial real estate asset class

Average yearly total returns				
	3 years	5 years	10 years	20 years
All industrial	7.3%	-1.2%	6.6%	9.0%
Logistics	8.6%	-0.8%	6.6%	9.2%
All other industrial	6.8%	-1.4%	6.5%	9.0%
Δ Logistics versus All other industrial	+1.4%	+0.6%	+0.1%	+0.2%

Source: IPD (2012). Last year included in the analysis: 2011. Data concerning the UK market only.

and in the equipment of the properties, as well as peculiar demand and supply trends are among the factors that have contributed to feature the returns of logistics assets within the overall industrial real estate sector. Starting from these considerations, the practice to consider logistics as a self-standing separate sub-asset class within the industrial real estate market has gathered consensus.

5.2.2 Market size

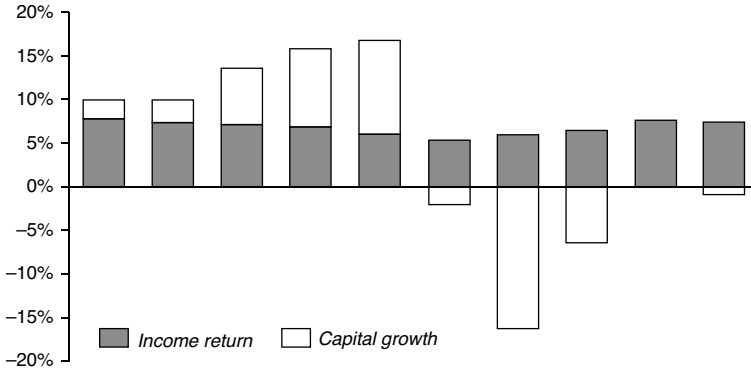
One preliminary observation is necessary in order to assess the market size of the industrial real estate sector. In this segment more than in others, owners and tenants often coincide. This practice of owners-occupiers is particularly in use in certain European countries and in highly specialized industrial sectors. As a matter of fact, the owners-occupiers substantially cut a significant portion of the existing industrial facilities off from the market. In these cases, industrial real estate assets lay in the balance sheets of manufacturing companies for all the economic duration of the property. Furthermore, high switching costs and long-term planning make it extremely difficult for these companies to phase their assets in the market to benefit from potential price opportunities. In addition, owners-occupiers traditionally base their valuations on the historical cost and on the accounting depreciation of the initial investment. Acting in this way, they are substantially unable to properly calculate the effective return of the investment of their fixed assets, which is then confused within the overall return of the company.

For these reasons, any evaluation of the size of the industrial real estate sector in terms of physical stock risks to be imprecise or limited in its spectrum. On the contrary, an appreciation in terms of investment flows directed to the industrial real estate is relevant to have a grasp of the average dimension of the sector. To this extent, Figure 5.1 highlights

INDUSTRIAL REAL ESTATE PROPERTY

Total returns

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
9.8%	10.2%	13.6%	15.9%	16.9%	3.1%	-10.3%	-0.1%	7.5%	6.3%



ALL PROPERTY

Total returns

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
6.5%	6.4%	8.1%	10.2%	12.1%	6.6%	-4.4%	1.3%	8.0%	6.6%



Figure 5.2 Industrial real estate and all property total returns (income and capital growth) in Europe in the period, 2002–11

Source: IPD data processed by the authors.

the development of the industrial property investment in Europe from 2003 to 2011 (in the figure, the values indicated also include the portion of investments estimated to be directed to the logistics sub-asset class).

Industrial real estate investments in Europe experienced a substantial peak in 2007, before the outbreak of the crisis all over the continent. During that year, the total investment reached €20 billion, at the end of a consistent trend of growth all along the previous years. The lowest level of investments was touched in 2009, in correspondence with the most intense period of the crisis. In that year, the total investment in the European market fell down to about €6 billion. In the nine years analysed, the average yearly investment in the industrial real estate sector has been around €11 billion. Overall, one consideration clearly emerges from the analysis of the investment in this sector. Industrial real estate is strongly dependent on the phase of the economic cycle, with relevant fluctuations in correspondence with periods of economic growth and downturn.

The two most important European countries in terms of flow of investments are the United Kingdom and Germany. These countries together traditionally count for half to about two thirds of the European industrial real estate market. This evidences a high level of concentration in the European market. Such a level of concentration is in particular the result of important structural differences among countries in terms of maturity stage of the market. In parallel with what can be observed in the overall commercial real estate, the United Kingdom remains the most attractive national market. Its competitive advantage lays in the high level of development reached by market intermediation, especially through specialized real estate investment vehicles (REITs, real estate operating companies, etc.) and in a less consolidated practice of owners-occupiers. In these terms, the gap with the South European countries and with the emerging Central and Eastern European economies is today still particularly marked.

5.2.3 Performance analysis

Before going into details with the analysis of the recent performances of the industrial real estate sector in Europe, it is worth mentioning the main issues linked to the investibility in such asset class nowadays (in other words, to the concrete possibility for an investor to hold positions in industrial real estate assets) and to the reliability of the performance indicators available in the market.

Firstly, the access to the direct real estate industrial market remains today extremely difficult for non-specialized investors, even in

comparison with other commercial real estate asset classes. This is mainly due to the marked specificity of the physical facilities under discussion. In fact, specific property management is necessary all along the life of the asset, and high trading costs and highly professionalized evaluation practices are indispensable as part of the acquisition and sale processes. For these reasons, private and not specialized investors are often pushed to discard this investment option.

Secondly, the financial market does not offer accessible listed industrial-focused real estate securities, even in the most developed financial hubs. In fact, the leading practice of the majority of the listed securitized real estate vehicles is to invest at the same time in different real estate asset classes to benefit from diversification. Furthermore, these companies are usually engaged in a broad spectrum of businesses activities, including short-term property trading, asset management and brokerage services, which many investors might consider as not relevant in the view of investing in an individual asset class. As a matter of fact, the large scope of action adopted by listed securitized real estate vehicles mainly hampers a focused access to industrial real estate through available market instruments.

As far as it concerns the measurement of the performance of the sector, some limitations arise with regards to the reliability and the usability of the indicators available in the market. To this extent, industrial real estate suffers the same limitation as other real estate asset classes. The investigation of the risk-return performances starting from direct market databases is often backed by valuation-based components,¹ which have been proved to cause smoothing and lagging effects on the returns and, hence, on the reference indices (e.g., Brown and Matysiak, 2000).² In addition, indirect investment indices might be biased by the debt positions of the component entities, which usually lead to a higher volatility and can impede the full appreciation of the real risk-return profile of the underlying assets. Finally, partial representativeness of the indices usually occurs for both direct and indirect investment existing indices as a drawback of the data sets currently available in the real estate sector. As a matter of fact, industrial real estate may suffer even more than other real estate asset classes of the partial representativeness problem as a consequence of the high level of owners-occupiers that fashions the segment.

Notwithstanding the above-mentioned limitations, a general appreciation of the performance profile of the industrial real estate market is possible and meaningful. Figure 5.2 compares total return, income return and capital growth for industrial real estate properties and for

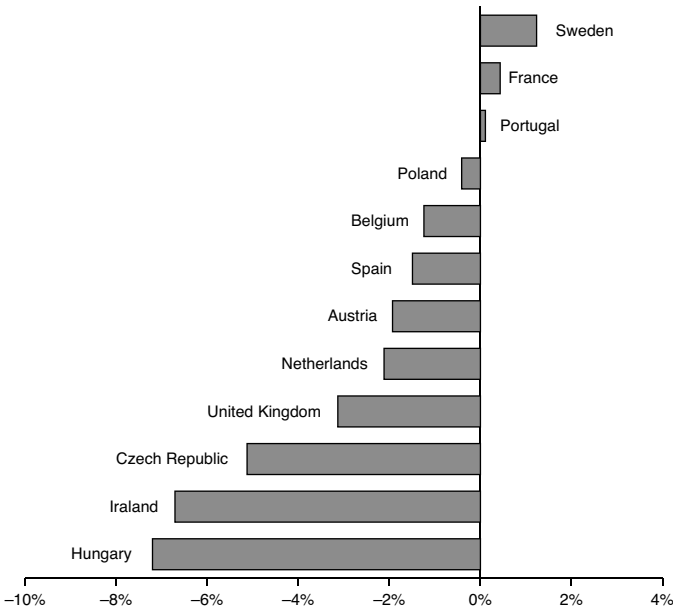


Figure 5.3 Capital value change in the industrial sector for a panel of European countries (average annual percentage change in the period, 2003–2012)

Source: European Central Bank data processed by the authors.

all property for a panel of European industrial real assets in the period 2002–2011.

The period analysed is of particular interest. In fact, it includes a few years of economic expansion followed by the economic crisis blasted in Europe in 2008. Even if limited in span, Figure 5.2 sheds some light on recent trends³ of the industrial real estate sector and, more importantly, on its distinguished characteristics with respect to the general real estate market.

Overall, in the period analysed, the industrial real estate sector over performed with respect to the property market (which comprises housing, office, retail and other commercial facilities). The average total return of the industrial real estate segment was 7.3% against a performance of the all property index equal to 6.1%. On the backside, the volatility of the segment has been higher for the industrial real estate sector than for the entire real estate market. In the period under discussion, the standard deviation of the total returns has been 8.2% for the industrial segment against 4.6% for all property index. As a matter of fact, a certain

difference in volatility has to be expected simply as a consequence of the higher intrinsic diversification which characterizes the overall real estate market with respect to the industrial sector. Based on assets covering several function destinations, the all property index naturally benefits from the effects of a high but uneven correlation between the different sectors of the market.

In terms of the distinguished characteristics of the industrial real estate assets, a first important element to be pointed out is represented by the extremely high volatility of the capital growth value over time. A strong increase in the capital value boosted the total returns in the pre-crisis period. As a reverse effect, the reduction in the value of the assets played a decisive role in depressing the sector since the beginning of the crisis. In particular, capital growth fell sensitively in the period 2008–2009.

These developments are evidence of a great elasticity of the value of industrial real estate assets with respect to the phase of the economic cycle. This characteristic is strongly dependent from the factual consideration that fluctuations in the manufacturing production cannot be immediately followed by a corresponding increase or decrease in the supply of industrial real estate facilities in the market. As it seems clear, developing or retrofitting requires a certain planning, cost and time. Hence, high vacancy rates are usually expected during periods of economic downturn. In parallel, high levels of take-up feature the periods of economic recovery. Such mismatch between supply and demand is even stressed in periods of sluggish growth and increased unpredictability in the demand of consumption products, as Europe has been experiencing since the beginning of the crisis. Because of the relative rigidity of the supply of industrial real estate assets in the short term, market adjustments are forced to occur primarily through changes in the asset prices of existing facilities and only in the middle term through a more generalized reconfiguration of the supply. As a result, this can explain why the capital growth component of the total returns typically represents the major source of volatility for the industrial real estate sector.

A significant fall in the capital value of the industrial real estate assets has been observed in almost all the European countries as a consequence of the recent economic and financial crisis. In this respect, Figure 5.3 highlights the change in the annual average percentage variation of the capital value of a panel of industrial real estate assets for a set of 12 European countries. The period analysed spans from 2003 to 2012.

As clearly shown by the figure, the long wave of the recession has produced a substantial fall in the asset values in the market. In fact,

the observed capital losses mainly reflect the reduced production of consumption goods during the crisis and the lack of a substantial recovery. Furthermore, this repositioning seems not yet completed at the end of 2013.⁴

Even if in the majority of the European countries industrial capital value dropped significantly, with only a few exceptions, sensitive differences among countries remain evident. This proves the still strong regional character of the European market despite the advanced phase of the economic integration process.

A second distinctive feature which significantly styles the returns of the industrial real estate sector is the high resilience of the income return. In particular in this dimension, the industrial real estate sector has consistently over performed with respect to the rest of the real estate market. The range of the yearly total return span from 6.2% to 8.2%, on average about 200 basis points above the overall real estate market (IPD, 2012).

This characteristic of industrial real estate assets is the result of at least two distinct factors. The first is the high level of specialization required by certain industrial facilities to properly support the production activities. As a consequence, and in order to attract demand, owners may be exposed to additional construction costs and to a longer time-to-market. Furthermore, specialized assets are subject to longer vacancy periods between two consecutive leases. For these reasons, a market premium to the tenant with respect to other real estate sectors, all along the lease duration, may be justified. To this extent, the practice of built-to-suit, which has recently gained a certain level of consensus, may in the future contribute to ease these issues and reduce, at least in part, the risk profile of the investment for the owner. In fact, in these kinds of contracts, the owner of the land and the perspective occupier agree on the specific outfit of the facilities even before they are built and sign an agreement which includes also the economic terms of the future lease.

A second element that may contribute to the resilience of the income return in the industrial real estate market is the wide use of long-term contracts. In particular, lease duration in the industrial real estate sector may be sensitively higher than in other real estate segments, in particular with respect to housing and offices. Long-term agreements are usually suitable both for owners and tenants. The latter in particular, through long-term leases, aim at assuring a production capacity in line with the general strategy of the company. Furthermore, long-term contracts facilitate the amortization of initial take-up and rearrangement costs. Long-term agreements reveal to be particularly important in terms of

resilience of the income return especially in periods of economic downturn. In fact, in the absence of specific covenants regarding the financial results of the tenant, income returns for investors may be widely insulated from the phase of the economic cycle.

In this framework, a long-term lease can widely overcome the effects, previously described, of the variability of the capital value of the industrial facilities. Hence, the capacity of the industrial real estate assets to generate consistent income returns and a relatively stable cash flow over time may feature the sector as a defensive investment. As a consequence, in a comprehensive portfolio strategy, industrial real estate assets may represent for many investors a medium or long-term component. On the contrary, the high volatility of the capital growth component, in particular during periods of uncertain economic outlook, may lead many to consider the sector suitable also for shorter-term investments with a higher level of risk. Nevertheless, high trading cost and long negotiation periods weaken or even eliminate, in practice, the possibility of a more dynamic utilization of these facilities in asset management.

Despite its interesting risk-return profile, in the prevalent portfolio allocations, industrial investments are less represented than their theoretical potential. To this respect, this segment suffers an under representation even in comparison with the general real estate market.⁵ Several factors, some of them already discussed in the previous pages, can be listed in order to explain this phenomenon.

First, the necessity to deal with specialized facility types may discourage even institutional real estate operators to enter the market. In fact, industrial amenities differ considerably from other real estate facilities. The required due diligence on the assets to manage and the necessary knowledge of the operational practices in use in the sector require a long-term engagement and a constant presence in the market. Hence, in the case of lack of internal expertise, REITs and other real estate companies may prefer privileging investments in more traditional real estate segments such as residential or offices. Second, a low rate of representation of the industrial real estate market may be another consequence of the high level of owners-occupiers. In fact, this practice sensitively reduces the investment opportunities of the portfolio managers with respect to the effectively existing physical stock of industrial facilities. Third, low unit value may also play a role in discouraging market players to invest in the industrial sector. In fact, in many cases, industrial facilities available in the market are relatively small units, not included in well-developed commercial areas. Investing in such facilities may cause a high incidence of the transaction costs as regards the total investment.

As a result, the investors' interest in these types of transactions may be weak. Finally and maybe more importantly, the industrial real estate sector is still perceived by some practitioners as a niche segment and not always as a core assets category. Hence, for this kind of market agents, the investment in this asset class may still be driven by convenience more than as a result of a proper and systematic asset allocation.

5.3 European logistics market

5.3.1 Definition

Logistics, within the industrial real estate, is by far the sub-sector that more than others has gained consensus in order to become a new self-sanding sub-asset class. In particular, in the last decade, logistics real estate has gained a significant consideration and, in some countries, even substantial critical mass in terms of the flow of investments. Today, it can be estimated that logistics counts for about 25% of the overall industrial real estate sector (IPD, 2012). This evolution of the logistics has occurred primarily as a consequence of a new appreciation of the specificities of the assets involved in the processes of circulation and delivery of the industrial output.

To the extent of identifying a first definition of logistics real estate assets, the distribution purpose of the building or of the land shall be used. In particular, all fixed assets used in the activities finalized to the circulation and to the storage of raw materials, work in progress and final goods may be included in this category. In general, the distinction 'distribution warehouses' is widely used in the industry to label this kind of industrial facilities.

As mentioned, the affirmation of logistics as an independent real estate category is mainly a consequence of the continuous developments and the increased sophistication of the logistics operations which have occurred over the years. Logistics has become, at least starting from the early 1980s, one of the key levers used by national and multinational companies in order to compete in an always more globalized market place.

In the attempt to summarize the main evolutions which took place in logistics in recent years and to highlight the impacts of these evolutions in terms of physical facilities used in distribution, at least four business models and subsequent logistics paradigms can be listed:

- Industrial districts: share stocking and distribution facilities to reduce operative costs;

- Mass productions and centralization of sourcing: concentrate distribution operations to maximize retained value;
- Multinational companies and global sourcing: centralize international distribution operations to offer a lever of competitive advantage;
- E-commerce: move goods as fast as possible to timely reach the customer.

All the mentioned business models and logistics paradigms have introduced either incremental features to the existing unspecialized distribution facilities or have created the necessity to conceptualize and develop absolute innovative asset types.

Figure 5.5 synthesizes the impact on logistics of the most important business models in use in the market. To this extent, it attempts to highlight the most important logistics assets involved, by distinguishing between unspecialized and specialized logistic facilities.

As it can be observed from Figure 5.4, logistics real estate assets started to significantly leverage their specificity with the development of the global sourcing, pushed by multinational companies. The holistic vision of a centralized supply chain management induced the introduction of new large regional logistics centres with fast-in-fast-out amenities. As a matter of fact, this event more than others has identified the modern logistics facilities as specific and distinctive assets with respect the industrial ones. A few years later, the boom of the e-commerce has come along with (or even it was based on) the creation of mega e-fulfilment centres, in which the flows of e-orders and of physical goods is matched and the delivery to the final client is organized. To the same extent, not less important in the e-commerce impact on logistics have been the introduction of specialized restitution sorting centres and local stand-by areas, necessary to manage the flow of products returned by the clients (on the basis of its contract resolution rights) or to temporarily store products in the case of the impossibility for the delivery vector to reach the customer.

Even if, as previously debated, a general definition of the logistic real estate sector can be based on the sole functional destination of the assets (distribution warehouse), in reality more stringent parameters are often used. Thresholds concerning size, age and number of occupiers of the building are commonly applied before labelling a real estate property as a logistics asset.⁶ This practice has been put in place in order to identify only those assets able to suit higher quality standards and, hence, to help better segregate a distinctive assets class with respect to the overall industrial real estate market. In these terms, the effort is to

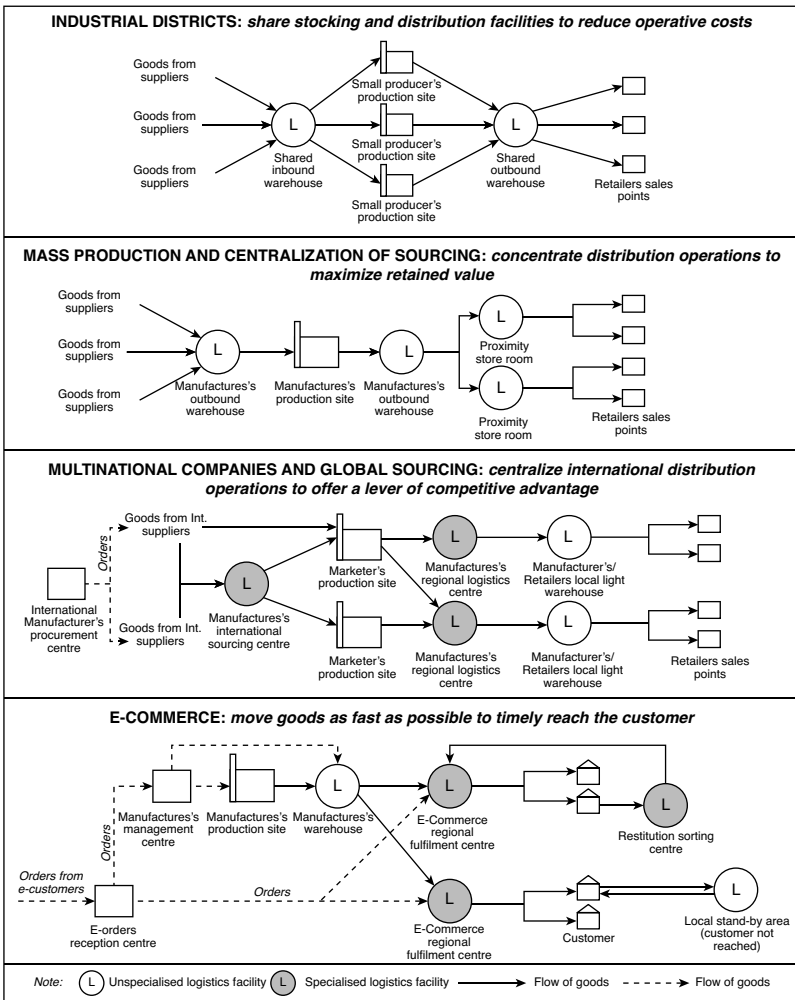


Figure 5.4 Business models, logistics paradigms and logistics facilities

Source: Authors' elaboration.

detect those innovative assets able to suit the necessities business models innovation.

More in general, and in the view of a further development of the practice of identifying logistics as a unique, self-sanding real estate asset class, the full comprehension of the implications of the assets identification

(in other words, of the rules to use in order to classify a specific facility as a logistics asset) is essential. In fact, as of today, the opportunity of considering logistics as an asset class relies in particular in the presence of a different, even if similar, risk-return profile with respect to the overall industrial real estate. This is linked, at a single asset level, to the appreciation of a high level of sophistication reached by certain facilities used for distribution purposes (as in the examples discussed of the large regional logistics fast-in-fast-out centres or the e-fulfilment areas). In this light, a too lax identification of an asset as logistics facility risks to smooth or even eliminate the distinctive characterization of the sub-sector. In fact, many older existing distribution warehouses do not have the necessary qualities to fit modern standards of efficiency and are not suitable for retrofitting. On these bases, indices calculated on broad asset identification contemplating only the distribution purpose of a facility may result in the inclusion of a majority of properties effectively used in distribution but which may not benefit of sufficiently distinctive characteristics with respect to the other industrial assets. In these cases, performance indices would be exposed to the risk of mainly replicate the returns of the overall industrial market. For these reasons, the problem of the asset identification of logistics as an asset class should be solved by using a definition able to capture only the prime portion of the segment. In these terms, the consideration of a minimum size and a lower bound for the year of construction is mainly justified. Nevertheless, a unique set of rules and parameters is not yet widespread among practitioners.

5.3.2 Market size

Logistics real estate counts for about one fourth of the industrial real estate market, ranging between €5 billion and €2 billion per year in terms of investments over Europe. In line with the overall industrial real estate sector, United Kingdom is by far the largest European market, being the destination of about 45% of the total investment flow. Germany follows with a 22% market share. Nevertheless, some areas of the continent have shown an increasing relative interest in recent years. In particular, Central and Eastern Europe is gaining momentum and in 2012 attracted about 10% of the logistics investments continent-wise with respect to a market share of only 5% two years before. On the contrary, the South European countries, Italy, Spain, Portugal and Greece have kept reducing their attractiveness since the beginning of the crisis, almost shrinking to zero the flow of investment in these markets in 2012 (IPD, 2012).

In terms of demand, logistics real estate presents a more variegated spectrum of occupiers than the rest of the industrial sector, which is

largely dominated by manufacturing companies. In fact, in addition to manufacturers, a first alternative kind of occupiers is represented by large retailers. In particular during the last decades, retailers have increased over time their exposition to the logistics business, with the aim of assuring a sufficient stock of merchandize in proximity of their sales points and to smooth the distribution process. To this extent, the biggest players of the market have increasingly started to control upstream operations. The size and the complexity of the facilities occupied by retailers is a function of the volume of sales and their geographical presence in the market.

A second element of innovation in terms of demand of logistics facilities with respect to the industrial real estate market has emerged with the rise of specialized third-party logistics providers (also called 3LPLPs). These companies serve prevalently small firms lacking of technical expertise to deal with complex logistics operations or larger corporations which have decided to outsource non-core activities. To this extent, specialized vectors have succeeded in providing a service which combines the activities of physical distribution and of stocking of products. At a systemic level, what 3PLs contribute is twofold. On the one hand, they facilitate the reduction of the production costs by pooling together distribution activities for several companies. On the other hand, they strengthen the evolution of the logistics facilities in use both in terms of size and sophistication. In fact, decentralized small warehouses tend to be substitute by larger, well equipped amenities. In these terms, the development of third-party logistics providers may play a role in the further sophistication of the logistics assets and in the consolidation of logistics real estate as a specific asset class.

5.3.3 Performance analysis

A proper and definitive analysis of the risk-return profile of the logistics real estate segment is today not yet possible. This is mainly due to the short time span on hand since the first characterization for this sub-asset class in the market and the consequent lack of a long-term identification of the assets in the most important databases available in the industry. Furthermore, widespread understanding suggests that risk-return differentiation between the overall industrial sector and its logistics segment is a relatively recent phenomenon.

This notwithstanding, a first analysis of the European logistics segment based on recent trends allows to draw some interesting preliminary observations. To this extent, Figure 5.5 shows total return, income return and capital growth for a panel of logistics properties over Europe

LOGISTICS REAL ESTATE PROPERTY

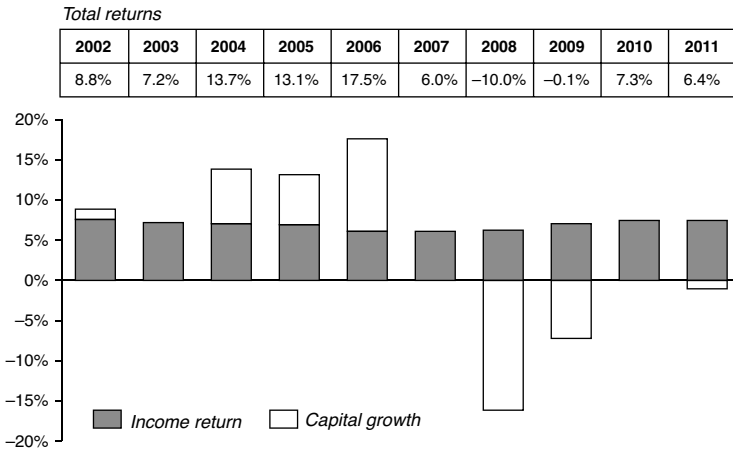


Figure 5.5 Logistics total returns (income return and capital growth) in Europe in the period, 2002–11

Source: IPD data processed by the authors.

in the period 2002–2011. The panel is composed by large, recently built distribution facilities. As a matter of fact, such kind of logistic constructions reflects specialized state-of-the-art amenities positioned on the high-end of the segment.

Logistic real estate return developments mainly follow, as predictable, the ones of the overall industrial real estate sector previously described (see Figure 5.3). From 2002 to 2011, the total annual return of the logistics properties averaged 7.0%, slightly underperforming with respect to the reference return of the industrial market index.

Before the crisis, the logistic sector was growing at two-digit pace, with a significant peak reached in 2006 (+17.5%). Afterwards, the economic downturn which invested Europe touched logistics at the same extent as it did for the overall industrial sector. In particular, a pronounced contraction has been experienced in the years 2008–2009, in which total return has been negative (in particular in 2010, it signed a -10.0%). From 2010, more stable performances have been restored.

In parallel with what has been seen in the industrial real estate market as a whole, in logistics, a decisive role in shaping the returns of the market is played by the effect of the capital value variation. The incidence of the fall in facility prices was particularly important in the period immediately before and during the financial crisis.

Figure 5.6 confirms the high degree of resilience of the income return for logistics properties, again in line with what observed in the overall industrial sector. Nevertheless, a certain difference as far as it concerns the variability of the income return emerges. To this extent, Figure 5.6 shows how logistics real estate assets have produced, in the period analysed, more stable income returns than the total industrial assets, with a minimum value of 6.5% and a maximum value of 8.0%. Even if this evidence cannot immediately be generalized as a long-term characteristic of the logistics assets due to the short time frame under discussion, it may signal more stable demand and supply conditions with respect to the industrial real estate market as a whole. Part of the explanation of a lower variability of the income return may be sought in the consequence of the identification of the logistics asset class through large, recently built, state-of-the-art facilities.⁷

The figure also confirms the substantial difference in absolute return of the logistics real estate sub-segment with respect to the all property index. The same considerations already discussed in relation to the overall industrial real estate market (premium required to face longer vacancy periods between two leases, high refining costs, long-term contracts) may be also valid for the logistic sub-segment in order to shed light on its risk-return profile.

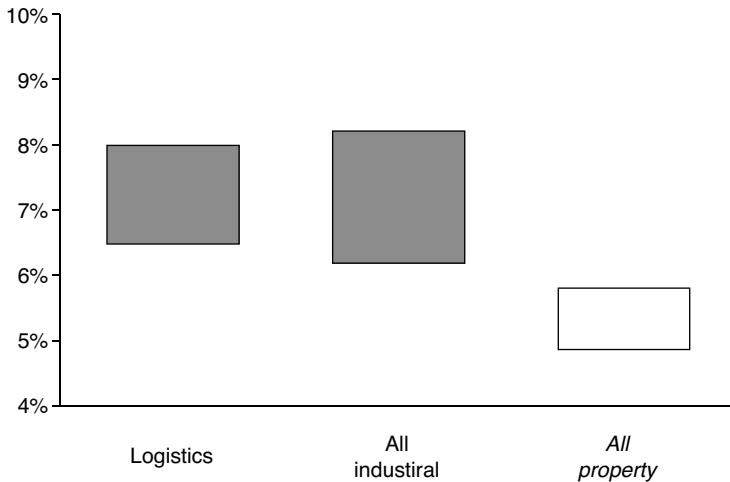


Figure 5.6 Income return range variation in the period, 2002–12

Source: Authors' elaboration on IPD data.

Overall, the preliminary analysis of the performances of the logistic real estate sub-segment, based on the still limited available data, indicate a substantial similarity with the overall industrial sector, at least as far as it concerns the general risk-return profile of this kind of investment. Nevertheless, logistics facilities might be fashioned by a less variable income return than the other industrial assets. Furthermore, logistics real estate assets see, at the same extent as the other industrials, a high incidence and resilience of the income return with respect to the other real estate asset classes. Hence, the possibility to benefit from a robust cash flow may push investors to consider logistics as a defensive, long-term option.⁸

At any rate, a more comprehensive analysis of logistics as an asset class will be possible only when a more consolidated practice will be established in the market and more complete datasets will be available.

5.4 Conclusions

Even if considered by many as a small, niche market, industrial real estate is an important and distinctive asset class within the commercial real estate universe. This notwithstanding, the investibility in industrial real estate for unspecialized economic agents is today extremely difficult. On the one hand, industrial real estate assets require professional property management practices, and they imply high trading costs and qualified valuation practices at the moment of the acquisition and of the sale transactions. On the other hand, the market does not offer indirect access to this asset class via specialized publicly traded securities. In fact, REITs and other real estate operating companies usually invest in a broader range of real estate assets and do not limit their activity to the industrial real estate segment. For these reasons, investment in the industrial real estate market is nowadays largely restricted to specialized and institutional investors.

The most important feature of the industrial real estate as an asset class is the resilience of the income return. On the contrary, capital growth has given proof of a particularly high volatility, in this way fashioning the overall total return of the industrial real estate category. The volatility of the capital value of the industrial real estate assets is directly dependent on the variability of the demand of industrial amenities, which is mainly a function of the stage of the economic cycle. Resilient income returns, high volatility of the capital growth and long negotiation periods have pushed many operators to consider this asset class primarily as a long-term, defensive investment option.

In Europe, over the last years, the industrial sector has been fashioned by higher total return and volatility than the overall real estate market. More in particular, industrial real estate income return has proved to be about 200 basic points higher than the income return of the entire real estate market. At the same time, the total returns have been more volatile due to its capital growth component. In fact, the average capital value grew considerably in the years before the crisis, but it fell in a sensitive manner afterwards, especially in the years 2008 and 2009. In general, in almost all the European countries, the capital value of industrial real estate assets has registered a sensitive reduction with respect to the years before the crisis. Furthermore, uncertainty about the phase in of the recovery in many countries of the continent has created the conditions of a weak demand of industrial real estate assets, which risks continuing to influence the performance of the sector in the years to come.

In general, industrial investments in the portfolio allocations are less represented than their theoretical potential. In this regard, this segment suffers from an under representation even with respect to the general real estate market.⁹ Several factors may contribute to explain this phenomenon. In particular, the need of specialized management practices all over the life of the asset, the high degree of owners-occupiers, the low unit value of certain facilities and most of all a generalized tendency to consider industrial real estate as a specialized niche market seem to be among the cause of such under representation.

Within the industrial real estate segment, logistics has gathered consensus to be considered as an innovative self-standing sub-asset class. In fact, facilities used in distribution seem to be able to express distinctive (even if similar) risk-return fundamentals with respect to the more general industrial sector. This recent development in logistics has been phased in by important innovation in the leading business models, such as the rise of global sourcing and the consolidation of the e-commerce.

Nevertheless, the effective utilization of logistics as a distinctive asset class in portfolio management in the years to come seems possible only if the asset identification problem would be solved in the light to select only specialized, high-end facilities. To this extent, in the widespread practice, limitations in terms of size, year of construction and number of occupiers are already in use to segregate prime distribution facilities to the lower-end of the sector. In the future, the debate on the asset identification of the logistic real estate asset class should consolidate these practices and lead to a widespread acceptance of the parameters to use.

Industrial real estate fortune in Europe in the next ten years will be strictly dependent of the establishment of a substantial economic

recovery. Nevertheless, certain areas of the continent are expected to benefit more than others in case a positive economic trend would be established. On the one hand, the most developed countries in terms of the maturity stage of the real estate market (and as a consequence in terms of investment options and property management practices), such as the United Kingdom and Germany, are well positioned to attract a boosted flow of investments. On the other hand, East European countries such as Poland, Romania and the Baltics may keep following their path of increasing industrialization undertaken in the last decades and attract foreign investments.

Concerning specific trends, logistics seems again the sector in which a higher level of dynamism may be expected. Restructuring of operations to reduce costs, improve competitiveness and to support the growth of multi-channel retailing will probably continue to drive the demand. Furthermore, these developments will probably further boost the distinctive characteristics of the sub-segment and will permit the consolidation of logistics as a unique asset class.

Notes

1. The majority of the available market indices for the real estate sector are based on data collected from participant market-makers, in particular institutional investors. In several cases, the assets in the portfolios of these investors are not traded intra-year, and their property value is assessed once or twice a year by professional appraisers.
2. However, techniques such as the hedonic price approach and the repeat sales approach allow to limit the incidence of the smoothing and lagging effects of valuation-based appraisals.
3. As of today, European-based return calculations that are able to compare, in the long term, the industrial real estate sector with the overall real estate market are rare. A recent calculation based on the IPD UK Annual Index estimate a long-term yearly return of the industrial real estate sector equal to 10.1% against a return equal to 9.2% for the overall real estate market.
4. In 2013, all the countries in the panel registered negative year-over-year variations in terms of capital value, ranging from the -0.6% for Hungary to -7.3% for the Netherlands. Source: European Central Bank experimental valuation-based calculations on IPD data.
5. The discrepancy between suggested and actual allocations to real estate in institutional portfolios is a well-known, unsolved dilemma. Several studies have shown that the allocation to real estate should be in the 15%–25% range, but actual allocations are well below 10% in most countries (see, for example, Hoesli et al., 2003).
6. IPD (2012) classifies the asset on the basis of age (facilities completed after 1998), functional destination (distribution warehouses) and size ($>10,000$ sq. m). BNP Paribas Real Estate (2012) classifies logistic real estate assets by

- functional destination (distribution warehouses), numbers of occupier (single occupier) and size (>50.000 sq. ft).
7. Another possible explanation for the low variability of the returns of logistics rather than industrial real estate can be the fly-to-quality effect that may be often observed in periods of economic uncertainty. As mentioned, the identification problem for logistic is solved with the consideration of specialized, prime facilities, which assure high levels of quality. These assets may then be perceived as relatively less risky as compared to the general industrial facilities and may attract a more stable flow of investments, especially in periods of uncertain economic outlook. This effect can explain part of the lower variability of the returns for logistics real estate than for the industrial real estate.
 8. As a matter of fact, when looking at the actual stage of the logistics real estate market, further observation is needed before drawing final considerations of the relation between the industrial and logistic asset classes. The absence of proper measures of correlation and the above-mentioned problem of time series availability suggest a certain level of prudence while using logistics in portfolio constructions.
 9. The discrepancy between suggested and actual allocations to real estate in institutional portfolios is a well-known, unsolved dilemma. Several studies have shown that the allocation to real estate should be in the 15%–25% range, but actual allocations are well below 10% in most countries (see, for example, Hoesli and Lekander, 2005).

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6

European Indirect Investors and Asset Allocation

Angelo Marinangeli and Albana Nako

6.1 Introduction

There are two main vehicles in Europe for investing in indirect real estate: real estate investment funds and listed real estate companies. With these instruments, not only does the investor take a position in the real estate market, he/she also acquires different risk/return structures, which may vary according to the instrument being used.

This chapter will analyse REITs (Section 6.2) and real estate funds (Section 6.3), and each type of real estate indirect investment will be treated under the aspects of the main European markets and performance; Section 6.4 will investigate the asset allocation for both REITs and real estate funds, and finally, the conclusion will be developed.

6.2 REITS

In many European countries, real estate companies have modified their financial structure and tax position by adopting a legal form based on REITs (Real Estate Investment Trusts), which originated in the US; this has changed their position compared to real estate funds. In this chapter, we compare real estate funds and REITs in Europe and their impact on the real estate industry.

REITs were traditionally considered as an appetizing investment for the lower standard deviation and the low correlation with other asset classes in a portfolio (Goetzmann and Ibbotson, 1990). After the mortgage crisis (started in the years 2006–2007), the prices of real estate went down, REIT returns lowered significantly and the lenders started to require much tougher verifications and higher credit scores to qualify for home loans currently. The mortgage crisis also affected the US stock

market and consequently the stock exchange of other countries, and in this crisis context, the real estate investment is no longer considered by investors as a safe investment.

Thus, in European countries new contexts are springing up in order to boost the real estate investment fund. In Italy, questions are emerging about the quotation of real estate funds and whether or not to open real estate funds. This is the opening of the Italian real estate funds in innovative contexts closer to European and US REITs.

In the UK, there were already available vehicles for indirect investment real estate with a corporate or capital structure, from limited partnerships (LPs) to the UK Property Unit Trusts, either in the authorized (APUT) and not authorized form, the Jersey offshore Unit Trust (JPUT), usually reserved to qualified investors, the corporate form itself with the Irish offshore open-ended investment companies. On 22 March 2006, the Finance Law, by the British government, confirmed the creation of UK REITs, and first vehicles were exchanged on 1 January 2007.

In France, Société immobilières cotées Investment Corporation (SIIC) was introduced by the Finance Law 2003 and then amended in 2004 (SIIC2) and 2005 (SIIC3). OPCI are mutual funds that invest in real estate directly or indirectly at least 60% of total assets and liquidity management for at least 10% of total assets. They are regulated by Autorité des Marchés Financiers (AMF) and were introduced in the years 2006–2007.

In Germany, Finanzstandort Initiative Deutschland (IFD) has proposed a regulatory scheme for the G-REIT. As in the case of the French SIIC, the unlisted subsidiaries can request the status of G-REIT if they meet all the requirements except for the listing. Unlike the English discipline, there are not present restrictions regarding the financial structure. REITs are also available in other countries such as Bulgaria and Finland.

Investment vehicles as real estate funds and REITs follow and in some cases anticipate the global real estate scenery. Indeed, in the economic downturn, real estate funds generally preferred a prudent management of the assets. At the first signs of recovery in the housing market, they have begun to invest to take advantage of opportunities offered by the market. In fact, as emerged in a real estate fund and REIT report published by Scenari Immobiliari, real estate funds (including listed and unlisted, closed and open real funds and REITs) in 2013 saw a growth of 14.7% globally, reaching a total asset of 1950 billion euros.

6.2.1 Main European markets

In 2013, REIT capitalization showed a strong growth all over Europe and reached the historical record both due to market trend and consolidation

of the main companies operating in this sector. Capitalization arrived to near 50% in the UK, where an increasing number of companies entering in the market is encouraged by the recent legislative interventions. Moreover, the growing investments and the increase in high level real estate prices in London led to an increase of total assets. The less strategic properties were sold with the aim to reduce debt while recording a performance homogenization of the various companies. Also, Belgium and the Netherlands show an evolution under this aspect. In Belgium, the number of operational vehicles is increasing, and a law/bill is being analysed that proposes to transform the current SICAFIs in regulated companies that are REITs. In the Netherlands, there are still a few large companies whose weight on the total assets of European REITs continues to decline. In recent years, the Dutch FBIs have been affected by significant sales aimed at improving quality and raising funds; their return is growing, and in 2013, it was the highest one in Europe with a value close to 6%. A further evolution is expected in this country as the Netherlands approved a legislative amendment aimed at aligning the FBIs with European REITs. Even in Germany capitalization has increased, but the number of REITs is stable, amounting to only four units. In this country, the growing interest by institutional investors finds a barrier in the legislation still constraining the development of the market into question. REITs capitalization is much increased in Greece and Russia where, however, the market remains marginal and difficult to compare with those of other European States. About the less relevant markets, there has been a boom in the Turkish one, which in 2013 stood at the third place in Europe after France and the UK. In 2013, the first vehicles were launched in Finland and Ireland. A legislation on REITs was approved in other countries such as Spain and Lithuania where, however, the market is still not operational because some legislative questions must be solved.

6.2.2 Performance

In recent years, European REITs have gained competitiveness in the global market, and their current weight on the total capitalization is equal to 15.3%. The European market for REITs is smaller than the US one, as in Europe only two companies reach more than ten billion euros while in the US, 15 companies have a capitalization higher than the amount mentioned. France drives the European market in terms of total assets, even if in last years, French SIIQs are showing some liquidity problems. This question led to several merger operations, and despite difficulties, these entities are appearing to show positive perspectives.

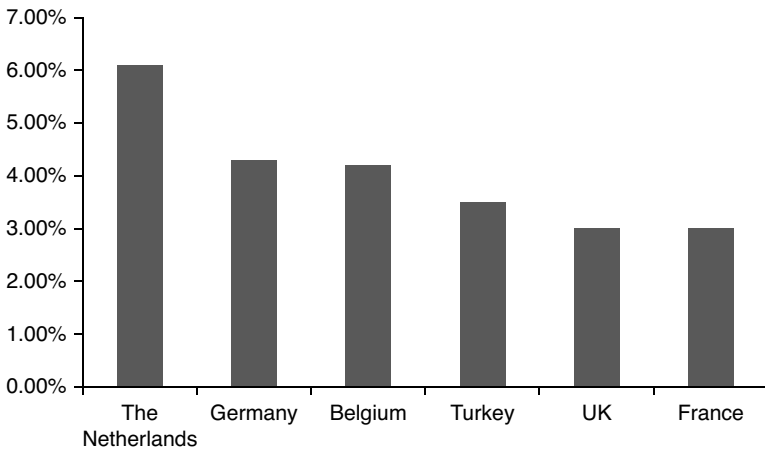


Figure 6.1 Average return of European REITs, 2013

Source: Scenari Immobiliari data processed by authors.

About average returns, the first place in the European ranking is occupied by the Netherlands, followed by Germany and Belgium. Figure 6.1 shows the average return of European REITs in 2013.

European returns increased until 2007 and then, in conjunction with crisis, declined until 2013. REITs return trend in each one of the European countries shows a direct relation with the local real estate markets trends. In 2013 Belgium, showed a growth both in total assets and average return, but the total capitalization of SICAFIs reached its historical maximum.

In the last nine years, the mean performance of European real estate funds has progressively reduced; it has passed from a mean return of 5.8% to a mean return of 1.3%. But as emerged by the real estate funds report by Scenari Immobiliari, each country has had a different trend depending on its economic characteristics as has their real estate market features. This section investigates the performance of European indirect investment in real estate industry in order to verify the trend of the performance of European real estate funds.

Suárez and Vassallo (2005) study the main characteristics of the large indirect investment vehicles taking the form of listed companies and real estate investment funds in Europe. The result highlights that listed real estate companies in the UK outperform the other two types of investment. These companies hold the top position in the European market

in both investment volume and market capitalization. Investment in real estate stocks produced a 2.5% higher return than investment in funds or direct investment. In the Netherlands, by contrast, they were the funds which performed best. In fact, Dutch and German funds have the longest tradition in this market, although German funds investing in Germany had very low returns due to the recession in this market. In Spain, real estate companies produce the highest returns, followed by direct investment in real estate. It should be also emphasized that although there are very few real estate investment funds in Spain, they offer relatively high returns compared to their counterparts in other countries, such as Germany, Switzerland and Italy.

In our analysis, CAPM is compared with other multifactor models in order to identify which methodological approach is more suitable and compares the findings obtained through different methodological approaches as well as carries out a cross-country analysis of results. CAPM formula is:

$$R_{pt} - R_f = \alpha_i + \beta_i (R_{mt} - R_{ft}) + \varepsilon_{it} \quad (6.1)$$

where:

R_{pt} is the monthly return on a portfolio of real estate funds;

R_{ft} is the risk free portfolio represented by Treasury Bonds;

R_{mt} is the market return, represented by the Index composed by all shares traded on each market;

α is the measure of the average excess of monthly portfolio return.

ε_{it} is the stochastic variable.

The Fama and French model formula is:

$$R_{pt} - R_f = \alpha_i + \beta_{1i} (R_{mt} - R_{ft}) + \beta_{1i} (SMB_t) + \beta_{1i} (HML_t) + \varepsilon_{it} \quad (6.2)$$

where:

SMB (Small Minus Big) is the average return on three small portfolios minus the average return on three big portfolios;

HML (High Minus Low) is the average return on two value portfolios minus the average return on two growth portfolios (see Fama and French, 1992).

European real estate funds dataset are extrapolated from the European Central Bank (ECB) database. The R_{ft} , R_{mt} , SMB and HML data on European countries used in order to build CAPM, and the Fama and French model are extrapolated by Kenneth R. French Data Library taking into account the time period 2009–2014.

Table 6.1 shows the results on capital asset pricing model, β represents the covariance of real estate funds of each country analysed divided by the variance of the entire market so the index taken as benchmark. When β is higher than 1, the funds analysed, in the past, have been a greater volatility than the benchmark index so they have a higher risk than the market; when β is lower than 1, the funds analysed have a lower volatility and are less risky. The α parameter represents the regression intercept, if it is closed to zero or statistically insignificant, the CAPM and Fama and French model correctly predict the risk premium. Real estate funds of all countries analysed have an α parameter close to zero or statistically insignificant and β value of regression is always close to 1 then, if the future will resemble the past trend, they tend to move together to the market because, by definition, beta of the market is equal to 1.

Table 6.2 shows the results of the Fama and French model for the same countries and the same time period analysed in the CAPM. SMB and HML assume values on a scale that ranges between 0 and 1.

When the SMB value is near to 0, that would be a large capitalization; when this value is close to 1, it would be a small cap portfolio. Clearly, when the HML value is equal or close to 1 it would be a portfolio with a high book price ratio.

Regarding the real estate fund portfolio of Austria, Czech Republic, France, Italy and Luxembourg, the value of SMB and HML are statistically

Table 6.1 Analysis of CAPM about European REITs in the period, 2009–14

Countries	α	P	β	ρ
Austria	0.00	0.16	1.00	0.00
Czech Republic	0.02	0.53	1.00	0.00
Estonia	0.01	0.17	1.04	0.00
Finland	-0.01	0.18	1.01	0.00
France	0.01	0.20	1.00	0.00
Germany	-0.01	0.29	1.00	0.00
Greece	0.02	0.27	1.01	0.00
Ireland	0.00	1.19	1.02	0.00
Italy	0.00	0.53	1.01	0.00
Luxembourg	-0.00	0.86	1.01	0.00
Netherland	0.00	0.75	1.02	0.00
Portugal	-0.01	0.24	1.01	0.00
Slovakia	0.02	0.30	1.01	0.00
Spain	-0.02	0.28	1.01	0.00

Source: Data processed by the authors.

Table 6.2 Analysis of the Fama and French model about European REITs in the period, 2009–14

Countries	α	ρ	$R_{mt}-R_{ft}$	P	SMB	ρ	HML	ρ
Austria	0.01	0.24	1.02	0.00	-0.00	0.01	-0.00	0.05
Czech Republic	0.00	0.17	1.03	0.00	-0.01	0.02	-0.00	0.01
Estonia	0.01	0.20	1.05	0.00	-0.01	0.32	-0.00	0.84
Finland	0.02	0.17	1.03	0.00	-0.01	0.38	0.01	0.01
France	0.00	0.18	1.00	0.00	-0.00	0.09	-0.00	0.03
Germany	0.01	0.33	1.01	0.00	-0.00	0.20	-0.00	0.04
Greece	0.01	0.32	1.00	0.00	0.02	0.14	0.00	0.77
Ireland	0.01	0.30	1.01	0.00	0.01	0.52	-0.01	0.25
Italy	-0.00	0.58	1.01	0.00	-0.00	0.10	-0.00	0.05
Luxembourg	0.00	0.54	1.02	0.00	-0.00	0.07	-0.00	0.06
Netherlands	0.01	0.16	1.00	0.00	-0.00	0.83	-0.00	0.07
Portugal	-0.00	0.26	1.01	0.00	-0.00	0.18	-0.00	0.06
Slovakia	0.01	0.21	1.00	0.00	-0.00	0.21	-0.00	0.01
Spain	-0.01	0.16	1.01	0.00	-0.00	0.59	-0.00	0.17

Source: Data processed by the authors.

significant and close to 0, so the portfolio would be influenced by large capitalization shares.

Regarding other countries analysed, the value of the intercept is statistically insignificant. So the Fama and French model is valid, but also the two additional variables are statistically insignificant, so in these cases the analysis find that SMB and HML have no relationship with the dependent variable, therefore CAPM seems to be right in its prediction.

6.3 Real estate funds

A real estate fund is a mutual fund that invests assets mainly in securities offered by public real estate companies. In the past, even with small assets, it was considered as a way to access the real estate market. The investment in real estate funds offers all the advantages of funds, as the diversification or the experience of professional and the possibility of investing in real estate enterprises and obtaining their high yields even to small investors. The strength of this type of investment is that it allows the ability to invest in real estate to various investors that do not hold the asset needed for real estate direct investment. In addition, the investment in real estate funds allows a saving on the tax not found in a direct investment in real estate. This aspect is very interesting, especially for the tax-conscious investors. Despite the

diversification, which generally is done only in the real estate sector, these type of funds are heavily hit in case of real estate market crash, but most are or should be aware of this aspect. For this reason, the type of mutual fund in question became very popular, but after the collapse of the housing market occurred in 2008, this fund has been considered less safe and has become less desirable. Another factor that deters investors from real estate funds is the introduction of REITs in many European countries due to their more favourable tax regime, as publicly quoted companies are more liquid than real estate funds which generally are closed-end funds. In Europe, there are about 1,500 vehicles that invest in real estate with a total asset of 710 billion euros. Figure 6.2 shows the distribution of total assets of a European real estate fund. They are composed of 55% by unlisted funds, 37% by REITs and only 8% by listed funds.

The attention is focused on high standard properties and trophy assets. Some companies are specialized in one or maximum two types of products while others tend to a progressive diversification, aimed at finding favourable cycles and market segments.

In Europe, the attention is focused on nations characterized by a positive market cycle, especially Germany and the United Kingdom. There are increased investments in Sweden, especially in the office segment, while in the retail sector, the vast majority of investments is addressed to Eastern Europe, especially Poland and Bulgaria.

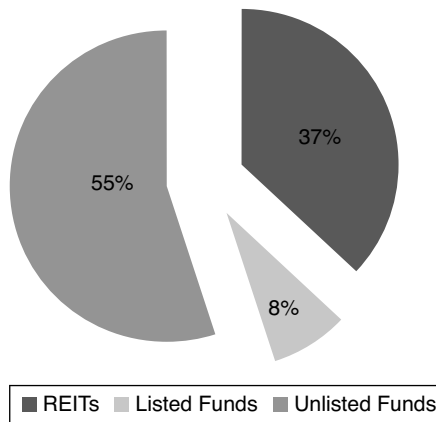


Figure 6.2 Distribution between European real estate funds and REITs, 2013

Source: Scenari Immobiliari data processed by authors.

For these reasons, the aim of this work consists of investigating the performance of European indirect investment in the real estate industry in order to verify the sector performance trend in both traditional real estate funds and REITs, as well as to verify if there is a competitive aspect in the performance of the two types of indirect investments (real estate funds and REITs). So our analysis is based on the cross-country comparison of the two indirect investments and was made through the CAPM and Fama and French models.

6.3.1 Main European markets

The real estate fund market in Europe is very competitive, even compared to other types of funds. The fund and REIT report published by Scenari Immobiliari showed that the number of operating funds went up in 2013 to 1258, and the NAV reached the amount of 379 billion euros.

Germany continues to hold the more consistent total assets. It has further accentuated the gap between the assets of German open-end funds and Dutch ones, the third place is occupied by UK while Italy is the fourth. The funds characterized by the largest structures are typically the German one, with six funds, and the Dutch one, with assets in excess of two billion euros. In the past, there has been an alignment of markets with a NAV value very close between German, France, Switzerland and Luxembourg funds, despite the considerable differences in the number of companies operating and the structural setting of the market.

Italy is characterized by the smallest funds' structures with an average market capitalization of 107 million euros.

The market trend for funds in different countries is influenced by a variety of factors, such as changes in economic and local real estate, the policy of acquisitions and disposals of individual companies, the life stage of the funds and the market entry of new instruments.

Luxembourg, Switzerland and France represent countries whose funds have the best trend. In Luxembourg, even though some difficulties in 2009, the fund sector has experienced a steady and particularly high growth. Switzerland has seen a real collapse in 2007, when the yield fell for the first time below zero, due to a reorganization of the fund sector and the impact of the US economic crisis. Starting from the year following, the performance came back positive, albeit at much lower levels than at the beginning of the decade. The years 2011–2012 showed a downward trend while 2013 saw a strong recovery. France is the only country to have maintained a fairly constant trend. With more details, Figure 6.3 shows the performance of real estate funds for each European country.

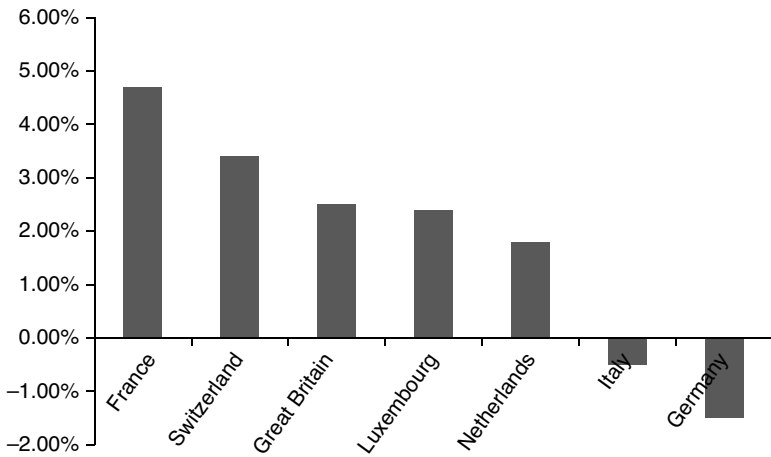


Figure 6.3 European real estate fund performance
 Source: Scenari Immobiliari data processed by the authors.

6.3.2 Performance

In the last nine years, the mean performance of European real estate funds has progressively reduced; it has passed from a mean return of 5.8% to a mean return of 1.3%. But as emerged by the real estate funds report by Scenari Immobiliari, each country has had a different trend depending on its economic characteristics and their real estate market features. This section investigates the performance of European indirect investment in the real estate industry in order to verify the trend of the performance of European real estate funds. Other analysis have been made in order to verify the performance of real estate funds. Morri and Lee (2009) analyze the performance of Italian real estate funds by estimating the relationship between the Sharpe Ratio and funds features using the OLS regression. The findings show that active management, fund typology and the Herfindhal Index for property typology have a significant impact on the risk-adjusted performance. Also, Giannotti and Mattarocci (2012) verify the performance of Italian real estate funds in the period 1999–2009 by comparing the ranking based on the Sharpe Ratio with that one achieved using different RAP measures constructed using different risk measures. They find that the rankings obtained are not strictly correlated and that the measures not assuming the normality of returns identify rankings with a higher degree of stability over time.

There are studies on the REMF that highlight the importance of asset allocation in the pursuit of performance and show that a higher fund performance is attributable to fund managers' decisions. O'Neal and Page (2000) examine the relationship between the 'abnormal performance' REMFs and the characteristics of these funds, by using a cross-sectional regression. Gallo et al. (2000) analyze the performance of REMFs in the period 1991–1997.

Lin and Yung (2004) analyze the performance of real estate mutual funds for 1993 through 2001. The results indicate that real estate mutual funds do not provide positive abnormal performance on average; performance funds persist in the short term. In addition, risk-adjusted real estate fund returns are affected by fund sizes but unrelated to expense ratio, management tenure and turnover.

In our analysis, CAPM is compared with other multifactor models in order to identify which methodological approach is more suitable, and the findings obtained are compared through different methodological approaches as well as a cross-country analysis of the results. The CAPM formula is specified as follows:

$$R_{pt} - R_f = \alpha_i + \beta_i(R_{mt} - R_{ft}) + \varepsilon_{it} \quad (6.3)$$

where:

- R_{pt} is the monthly return on a portfolio of real estate funds;
- R_{ft} is the risk free portfolio represented by Treasury Bonds;
- R_{mt} is the market return, represented by the Index composed by all shares traded on each market;
- α is the measure of the average excess of monthly portfolio return;
- ε_{it} is the stochastic variable.

The Fama and French model formula is:

$$R_{pt} - R_f = \alpha_i + \beta_{1i}(R_{mt} - R_{ft}) + \beta_{1i}(SMB_t) + \beta_{1i}(HML_t) + \varepsilon_{it} \quad (6.4)$$

where:

SMB (Small Minus Big) is the average return on three small portfolios minus the average return on three big portfolios;

HML (High Minus Low) is the average return on two value portfolios minus the average return on two growth portfolios (see Fama and French, 1992).

The European real estate funds dataset are extrapolated from the European Central Bank (ECB) database. The R_{ft} , R_{mt} , SMB and HML data

on European countries used in order to build CAPM and the Fama and French model are extrapolated by Kenneth R. French Data Library taking into account the time period 2009–2014.

Table 6.3 shows the results on capital asset pricing model; β represents the covariance of real estate funds of each country analysed divided by the variance of the entire market so the index taken as benchmark. When β is higher than 1, the funds analysed, in the past, have been a greater volatility than the benchmark index so they have a higher risk than the market; when β is lower than 1, the funds analysed have a lower volatility and then they are less risky. The α parameter represents the regression intercept. If it is closed to zero or statistically insignificant, CAPM and the Fama French model correctly predict the risk premium. Real estate funds of all countries analysed have an α parameter close to zero or statistically insignificant and β value of regression is always close to 1, then, if the future will resemble the past trend, they tend to move together to the market because, by definition, beta of the market is equal to 1.

Table 6.4 shows the results of the Fama and French model for the same countries and the same time period analysed in the CAPM. SMB and HML assume values on a scale that ranges between 0 and 1.

When the SMB value is near to 0, it would be a large capitalization, and when this value is closed to 1, it would be a small cap portfolio.

Table 6.3 Analysis of CAPM about European real estate funds in the period, 2009–14

Countries	α	P	β	ρ
Austria	0.01	0.18	1.01	0.00
Czech Republic	0.03	0.61	1.00	0.00
Estonia	0.01	0.21	1.03	0.00
Finland	0.03	0.18	1.02	0.00
France	0.01	0.22	1.01	0.00
Germany	-0.00	0.38	1.01	0.00
Greece	0.02	0.27	1.01	0.00
Ireland	0.02	0.27	1.02	0.00
Italy	-0.00	0.65	1.01	0.00
Luxembourg	-0.00	0.95	1.01	0.00
Netherland	0.01	0.17	1.01	0.00
Portugal	-0.01	0.27	1.01	0.00
Slovakia	0.02	0.30	1.01	0.00
Spain	-0.02	0.22	1.01	0.00

Source: Data processed by the authors.

Table 6.4 Analysis of the Fama and French model about European real estate funds in the period, 2009–14

Countries	α	P	$R_{mt}-R_{ft}$	P	SMB	ρ	HML	ρ
Austria	0.01	0.15	1.01	0.00	-0.00	0.01	-0.00	0.06
Czech Republic	0.03	0.13	1.01	0.00	-0.01	0.02	-0.00	0.03
Estonia	0.01	0.18	1.03	0.00	-0.00	0.33	-0.00	0.84
Finland	0.03	0.17	1.03	0.00	-0.01	0.35	0.01	0.01
France	0.01	0.19	1.01	0.00	-0.00	0.10	-0.00	0.03
Germany	-0.00	0.39	1.01	0.00	-0.00	0.20	-0.00	0.05
Greece	0.02	0.33	1.01	0.00	0.02	0.15	0.00	0.81
Ireland	0.02	0.33	1.02	0.00	0.00	0.57	-0.00	0.24
Italy	-0.00	0.70	1.01	0.00	-0.01	0.09	-0.00	0.06
Luxembourg	0.00	0.98	1.01	0.00	-0.01	0.08	-0.00	0.06
Netherland	0.01	0.15	1.01	0.00	-0.00	0.97	-0.01	0.07
Portugal	-0.01	0.29	1.01	0.00	-0.00	0.18	-0.00	0.06
Slovakia	0.02	0.22	1.01	0.00	-0.00	0.21	-0.01	0.01
Spain	-0.02	0.19	1.01	0.00	-0.00	0.69	-0.00	0.11

Source: Data processed by the author.

Clearly, when the HML value is equal or close to 1, it would be a portfolio with a high book price ratio.

Regarding the real estate fund portfolio of Austria, Czech Republic, France, Italy and Luxembourg, the value of SMB and HML are statistically significant and close to 0, so the portfolio would be influenced by large capitalization shares.

Regarding the other countries analysed, the value of the intercept is statistically insignificant. The Fama and French model is valid, but also the two additional variables are statistically insignificant; in these cases, the analysis find that SMB and HML have no relationship with the dependent variable, and then CAPM seems to be right in its prediction.

6.4 Asset allocation

6.4.1 REITs

Asset allocation shows an increasing selectivity in both quality and location, with a growing attention toward trophy assets. The main sector in portfolios is the residential one, and many REITs have invested in specialized residences. However, this sector is currently showing a decline because UK REITs that in 2013 saw an increase in their own weight cannot hold residential properties. In the UK, about 70% of assets are focused

in offices and retail. Consistently with real estate funds, REITs focus on high level offices and the most innovative shopping centres. The industrial sector is in decline, even if many funds have acquired logistic properties. This sector shows a high turnover because logistics spaces have a rapid obsolescence and a short life cycle. Moreover, European REITs have, similarly to what happens outside Europe, increasing amounts of portfolio invested in healthcare and infrastructure. The high proportion of investments is addressed to offices, while decreasing the share of commercial real estate and remaining stable the share of logistics. In the Netherlands, commercial investments, including shopping centres, prevail. The Belgian SICAFIs mainly invest in the commercial sector in offices and also in retirement homes, logistics areas, solar panels, buildings and bars. The French SIICs mainly invest in commercial real estate, offices and conference centres and residually in the residential sector and in the industrial one. The latter is being disinvested due to the increasing interest toward logistics, healthcare and free time spaces together with sustainable buildings. In Finland, the first REIT, listed in Autumn 2013, holds a residential asset composed by about 800 flats located in 23 Finnish cities. In Ireland, one of the two listed vehicles is specialized in sustainable real estate while the second is composing a diversified portfolio in Dublin real estate. Figure 6.4 shows the average asset allocation of European REITs.

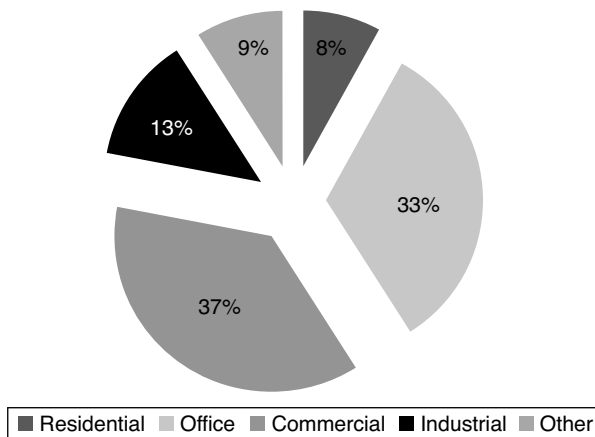


Figure 6.4 Average asset allocation of European REITs

Source: Scenari Immobiliari data processed by the authors.

From the geographical point of view, REITs have a greater propensity to cross-border investments if compared to real estate funds. European REITs portfolio is focused in the main countries of Europe: Germany, the UK and France.

6.4.2 Real estate funds

Real estate funds invest in residential property investments like multi-family units and commercial real estate such as industrial buildings, office spaces and retail stores.

Figure 6.5 shows the asset allocation of European real estate funds. According to a real estate funds report by Scenari Immobiliari, offices are again increasing, with a concentration of 45% of total, while commercial real estate is decreasing but still has a concentration of asset equal to 29%.

Residential is considered an attractive asset class, particularly in Europe and Asia, with a concentration of 14%. The funds gradually moved from the traditional residential sector to that of specialized residences.

Homes for the elderly are one of the segments with the highest potential for development around the world, in view of the ageing population, while the houses for students attract significant investments in the regions where the student population is very concentrated.

Asset allocation of European real estate funds is based on residential segment, thanks to the growing interest across Europe for residences

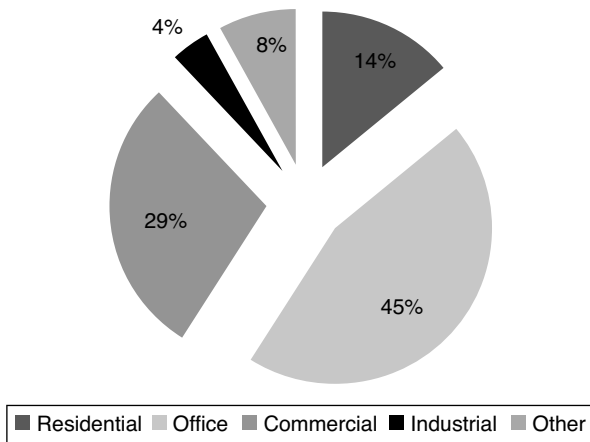


Figure 6.5 Income return range variation in the period, 2002–12

Source: Scenari Immobiliari data processed by the authors.

specialized, especially homes for elderly and students, and sustainable real estate, with an activity of restructuring and asset values that are gradually increasing.

Some companies hold a large number of car parking that offers a good profitability in front of few management efforts; in addition, the funds also play an increasingly active role in infrastructures and spaces for leisure.

The industrial production has been in trouble for several years, and most of the companies have abandoned a good part of their heritage.

The funds tend to sell the production property, except for some particular quality or well localized areas, and focus on logistics with reference to high technological complex.

A decrease in the hospitality industry seems to accompany an increase in the interest in space-related utilities and innovative properties, related to issues such as sustainability and energy savings.

The growth is attributable to the best prospects for the sector linked to the widespread decline in vacancy rate thanks to the combined effect of the increased demand and the lack of building activity. The slight decrease in commercial real estate, especially for the alienation of many spaces in small distribution, is due to the lower demand, but the interest is concentrated on the innovative business centres while the industrial segment continues to decline and represents a modest share of assets.

An interesting aspect is that the main objective of the funds is to improve the overall quality level of the assets. The policy of purchases and disposals involves the sale of properties of a medium level and the purchase of luxury products and trophy properties in prime areas of major cities.

Regarding the asset allocation of French real estate funds, it is constantly changing because various new types of funds are born every year. In 2013, SCPI and OPCI focused more than 20% of the total volume of investments made in France by institutional investors, ranking second after the insurance companies. Offices continue to represent the largest share, despite a slow but steady decline, with a strong concentration on the properties of high level in Paris. Also down is retail, which focuses about 30% of the assets and includes upscale spaces, possibly innovative, in both Île-de-France and the other major French cities, such as Marseille, Lyon, Lille and Bordeaux. The offices and commercial spaces are in the portfolio of diversified funds and, above all, of the 31 funds specialized in offices and 23 funds specializing in retail.

German real estate open funds hold about five million square metres. Changes in asset allocation are limited compared to the previous year,

since both purchases and disposals are concentrated in sub-offices and commercial. A slight increase in top location logistics is verified while the exposure continues to decline in the hospitality industry. From the geographical point of view, one third of the assets are located in Germany, followed by 20% in Belgium and Holland and 13% in France and London. The percentage of properties in Eastern Europe and the Nordic countries is increasing.

In UK real estate funds, there is a return to the traditional sectors, especially office and commercial centres, but there is a decline in residential investment. There is an increasing in the investment in London and the cross-border buy looking for positive market cycle. But the asset allocation is also focusing on German properties while there is a decline of investment in French properties due to the complex conjuncture of French real estate market.

Dutch real estate funds have always preferred commercial and office sectors because they offer higher yields, but in 2013, there has been an increase in purchases of logistics properties, following the growing demand for space related to e-commerce. In the next years, there will be an increase in residential investments due to the recent change in the law which reduced the number of homes included under social housing. The legislation requires owners of social housing on the open market to sell those that rent for more than 699 euro per month, greatly expanding the size of the unregulated market and transforming the residential sector in a potentially interesting asset class for institutional investors. It continues the trend toward geographical diversification by Dutch funds. In residential and office compartments, most of the purchases in Europe are concentrated in Germany and the UK while in the commercial and logistics ones, increasing attention is paid to Eastern European countries, where the market offers the greatest potential for development. The trend of purchases to Russia suffered a slowdown due to political issues.

The assets of Swiss real estate funds are concentrated in the residential sector. There is an increasing of investment in energy saving projects applied by green property funds. Offices are on the rise while business is stable. A slight increase also emerges in logistics real estate and other uses, including a high number of seats, cars and hotels, also thanks to the wealth of the Hospitality Fund and spaces dedicated to leisure. Most assets are located in Switzerland, with a particular concentration in Zurich, Geneva and other major cities. Investments abroad are increasing, mainly due to the diversification of the last funds created by *Crédit Suisse Real Estate Fund International Cs* and *Cs Real Estate*

Fund Global. These two funds have assets located entirely outside of Switzerland, with a fairly even split between Europe, Asia and the Americas.

6.5 Conclusion

There are two main vehicles in Europe for investing in indirect real estate: real estate investment funds and listed real estate companies. Investment vehicles as real estate funds and REITs follow and in some cases anticipate the global real estate scenery. REITs were traditionally considered as an appetizing investment for the lower standard deviation and the low correlation with other asset classes in a portfolio. At the first signs of recovery in the housing market, they have begun to invest to take advantage of opportunities offered by the market. In fact, as emerged by a real estate fund and REIT report published by Scenari Immobiliari, real estate funds (including listed and unlisted, closed and open real funds and REITs) in 2013 saw a growth of 14.7% globally reaching a total asset of 1950 billion euros. For these reasons, the aim of this work consists of investigating the performance of European indirect investment in the real estate industry in order to verify the sector performance trend in both traditional real estate funds and REITs, as well as to verify if there is a competitive aspect in the performance of the two types of indirect investments (real estate funds and REITs). Our analysis is based on the cross-country comparison of the two indirect investments, and it was made through the CAPM and Fama and French models. Through the analysis, it emerged that for both real estate funds and REITs portfolios of Austria, Czech Republic, France, Italy and Luxembourg the value of SMB and HML are statistically significant and close to 0, so the portfolio would be influenced by large capitalization shares; while in the other countries analysed, these variables are statistically insignificant and they have no relationship with the dependent variable. The Fama and French model is still valid because the intercept assumes a value statistically insignificant. We can conclude that CAPM is right in its prediction. The real estate fund market in Europe is very competitive, even compared to other types of funds. Thus, in European countries, new contexts are springing up in order to boost the real estate investment fund. In Italy, questions about the quotation of real estate funds and whether or not to make open real estate funds emerge. The number of operating funds went up in 2013 to 1258, and the NAV reached the amount of 379 billion euros. Residential is considered an attractive asset class, particularly in Europe and Asia, with a concentration of 14%. The real estate funds

gradually moved from the traditional residential sector to that of specialized residences. Asset allocation of European real estate funds is based on residential segment, thanks to the growing interest across Europe for residences specialized, especially homes for elderly and students, and sustainable real estate, with an activity of restructuring and asset values in gradually increasing. The slight decrease in commercial real estate, especially for the alienation of many spaces in small distribution, is due to the lower demand, but the interest is concentrated on the innovative business centres while the industrial segment continues to decline and represents a modest share of assets.

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7

Performance Comparison among Real Estate Asset Types and Geographical Areas

Dilek Pekdemir

7.1 Introduction

The benefit of geographical diversification across real estate markets is well documented and has been a guiding feature of portfolio management (Miles and McCue, 1982; Hartzell et al., 1986; Deng et al., 2003). As several researchers have pointed out, since fundamentally different economic forces influence the various regions, diversification across regions can help to reduce the overall risk of real estate portfolios (Goetzmann and Wachter, 1995). It is aimed to develop homogeneous groupings for real estate portfolios.

The real estate market can be classified into various submarkets using various variables including building, location economic and so on. Most of the studies focused on discovering the relationship between prices in different geographic areas and demonstrating how portfolio risk can be reduced by diversifying across various geographic categories.

Different methods are used in these studies while cluster analysis has been frequently employed in the study of real estate and urban economic issues. Many of those efforts were made in an attempt to identify meaningful similarity measures on which to confirm the existence of MSA or regionally based economic clusters that can be used to predict real estate investment performance.

In this study, the aim is to investigate the relationship between performance indicators, rental and capital growth, yield and total return, to compare the performance of European markets by geographically and by asset types.

7.2 Sample and summary statistics

The European real estate market is analysed considering a representative sample of countries. Cushman and Wakefield European Performance Indices are used in the analysis to investigate the performance of real estate markets. The performance indices are available for rental growth, yield, capital growth and total return for office, retail and industrial markets and also aggregate an average of all markets covering 31 European countries, except the industrial market for which no data is available for Luxemburg (see Appendix 7.1). The quarterly performance indicators are available for over the period 2001 to 2013. First, an aggregate average of all indicators are used to analyse geographical variations among countries by markets. Later, two periods are examined, pre-crisis (2001–2008) and post-crisis (2009–2013), to see any significant impact on the real estate markets performance by countries in these distinctive periods.

Summary statistics of the indexes are presented in Table 7.1.

Table 7.1a Summary statistics (all markets)

Variable	Observations	Minimum	Maximum	Mean	Standard deviation
Rental growth	31	-0.04	0.09	0.01	0.03
Yield	31	0.05	0.15	0.08	0.02
Capital growth	31	-0.05	0.14	0.04	0.04
Total return	31	0.01	0.29	0.12	0.06

Table 7.1b Summary statistics (office market)

Variable	Observations	Minimum	Maximum	Mean	Standard deviation
Rental growth	31	-0.05	0.06	0.00	0.03
Yield	31	0.05	0.14	0.08	0.02
Capital growth	31	-0.06	0.15	0.03	0.04
Total return	31	0.00	0.30	0.11	0.06

Table 7.1c Summary statistics (retail market)

Variable	Observations	Minimum	Maximum	Mean	Standard deviation
Rental growth	31	-0.05	0.12	0.02	0.04
Yield	31	0.05	0.15	0.08	0.03
Capital growth	31	-0.03	0.15	0.06	0.04
Total return	31	0.02	0.30	0.14	0.06

Table 7.1d Summary statistics (industrial market)

Variable	Observations	Minimum	Maximum	Mean	Standard deviation
Rental growth	30	-0.09	0.09	-0.00	0.03
Yield	30	0.07	0.15	0.10	0.02
Capital growth	30	-0.13	0.16	0.03	0.06
Total return	30	0.01	0.31	0.12	0.07

7.3 Methodology

Principal Component Analysis (PCA) is conducted to investigate performance of the European countries by asset types and to create a cluster mapping of the countries which demonstrates the correlations between them and classifies with similar performances.

PCA is probably the most popular multivariate statistical technique, and it is used by almost all scientific disciplines (Herve and Williams, 2010; Bryman and Cramer, 1996; Oven and Pekdemir, 2006). PCA is a multivariate technique that analyses a data table in which observations are described by several inter-correlated quantitative dependent variables. Its goal is to extract the important information to represent it as a set of new orthogonal variables called 'principal components' and to display the pattern of similarity of the observations and of the variables as points in maps.

PCA is also a tool for further analysis which aims to classify or reduce data. There are various overlapping usages that will be related to several aspects of scientific method: deduction, description, causation, explanation and classification. One of the common usage of the PCA is classification or description. It can be used to group interdependent variables into descriptive categories. It can also be used to classify variables into types with similar characteristics or behaviour.

The data matrix to be analysed by PCA comprises " n " observations described by " j " variables, and it is represented by the " $i \times j$ " matrix, whose generic element is ' x_{ij} '. The technique ranks the variance of independent variables (eigenvalues) from high to low. The number of variables providing the greatest portion of the total variance (>70%) determines the number of factors. With the matrix of correlation coefficients, called the factor structure matrix, each variable must have a high correlation coefficient with only a single factor. In case this cannot be clearly defined, a rotation technique must be employed to transform the initial factor structure matrix, named the rotated correlation matrix. Rotation methods are

either orthogonal or oblique. Simply put, orthogonal rotation methods assume that the factors in the analysis are uncorrelated; in contrast, oblique rotation methods assume that the factors are correlated (Gorsuch, 1983; Bryman and Cramer, 1996). In this study, the oblique rotation is applied due to performance indicators and are highly correlated to each other; for example, total return is based on yield and capital growth.

After rotation, small factor loadings or rotated correlation coefficients ($<|0.5|$) can be omitted to reveal clusters of variables belonging to each factor group. This also helps to assign a meaning to the factors generated. Finally, variables are grouped regarding factor loadings which have a high correlation coefficient with only a single factor.

PCA is often performed before a regression as an initial step of factor analysis to avoid using correlated variables or before clustering the data to have a better overview of the variables (Jackson, 1991; Jolliffe, 2002). In the further analysis, factor score coefficients are calculated, and the analysis can continue with factor analysis and regression analysis with the number of factors instead of the original number of variables. In this case, PCA is used to find highly correlated variables to group them and to identify geographical clusters; therefore, analysis is not continued with further steps.

7.4 Results

In the first step, Barlett's Sphericity Test is used for the appropriateness of the method.

Barlett's measure tests the null hypothesis:

H₀: There is no correlation significantly different from 0 between the variables.

H_a: At least one of the correlations between the variables is significantly different from 0.

As given in Table 7.2, the computed *p*-values for all datasets are lower than the significance level $\alpha = 0.05$, which means there are highly correlations between variables. This result is confirmed the appropriateness of all market datasets to get meaningful groups using PCA.

Analysis of variance is conducted using performance indicators (rental growth, capital growth, yield and total return) of 31 countries for office, retail, industrial and all market data, with the exception of Luxemburg for which no industrial data is available. The results of the analysis are given in the following sections by geographical features for all markets and by asset types.

Table 7.2 Barlett's sphericity test

	All	Office	Retail	Industrial
Chi-square (Observed value)	139.54	131.64	125.12	177.22
Chi-square (Critical value)	12.59	12.59	12.59	12.59
DF	6	6	6	6
<i>p</i> -value	<0.01%	<0.01%	<0.01%	<0.01%
Alpha	0.05	0.05	0.05	0.05

Note: Test interpretation:

H0: There is no correlation significantly different from 0 between the variables.

Ha: At least one of the correlations between the variables is significantly different from 0.

As the computed *p*-value is lower than the significance level $\alpha = 0.05$, one should reject the null hypothesis H0 and accept the alternative hypothesis Ha.

7.4.1 Geographical features

The aggregate data for all markets are used in the PCA to examine geographical variations among all European countries. The result of the PCA is help to understand the common trends among the countries. As given in Figure 7.1, the factor loading plot can be the ultimate goal of the PCA which enables to look at the data on a two-dimensional map and identify trends. As seen in the figure, characteristics that are highly interrelated cluster together. By inspecting the configuration, it can be discerned the distinct clusters of vectors reflecting the patterns of relationship in the data, based on the market performance of the each country, here.

It is clear that the performance of Ukraine, Greece, Serbia and also Russia and Turkey, which share common characteristics, is unique compared to the rest of the countries. Indeed, Russia and Turkey are outperformers with an average total return of over 25%, which is quite above the market average. Similarly, Greece, Ireland and Ukraine have posted the lowest total return, below 10%, in the same period. The core western countries, on the other hand, tend to cluster together, which are known as less riskier markets with lower yields and the average total returns ranging between 10–15%. The CEE markets, Bulgaria, Romania, Poland and Slovakia, have an average of 15–20% total return and are close together representing their similar real estate market characteristics, which are presented in detail in Chapter 1.

As explained above, the performance of the countries is examined by two distinctive periods, pre-crisis and post-crisis, to understand impact of the financial crisis on real estate markets. As seen in Figure 7.2, there is a clear 'rotation' among country clusters. For example, Russia and

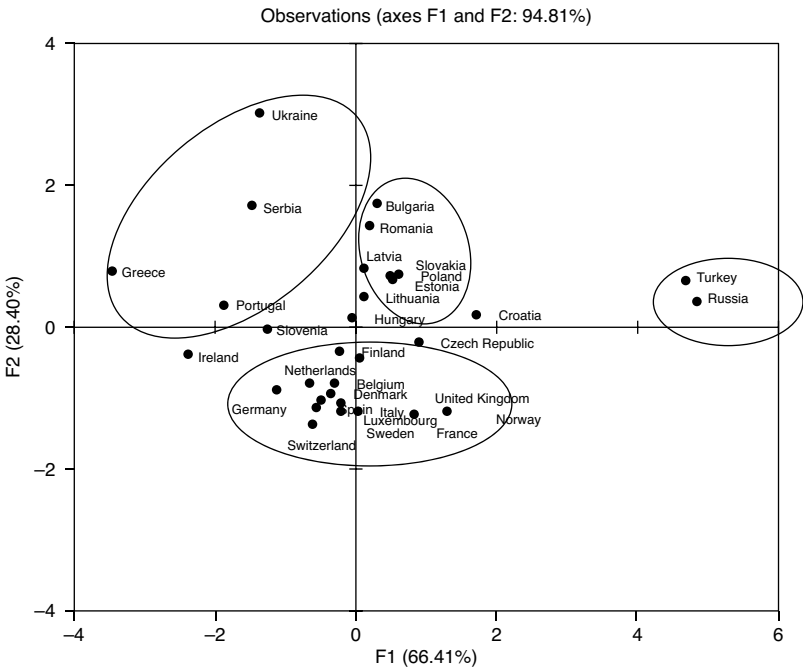


Figure 7.1 Factor loading plot (all markets)

Source: Cushman and Wakefield data processed by the author.

Turkey are outliers as outperformers in the pre-crisis period, and most of the western countries are together with small variances reflecting market characteristics during the pre-crisis period. On the other hand, the differences between western countries are become more apparent in the post-crisis period. It is confirmed that the investors are turning to safe core markets, like the UK, Germany and Sweden. In addition, Greece and Ireland are clustered together, reflecting decline in rentals, capital growth and also a negative total return with the negative impact of the crisis.

7.4.2 Type of assets

Principal component analysis is also conducted to group countries by asset types. For this purpose, office, retail and industrial real estate market indicators are used in the analysis to examine similar and different performance behaviours among countries.

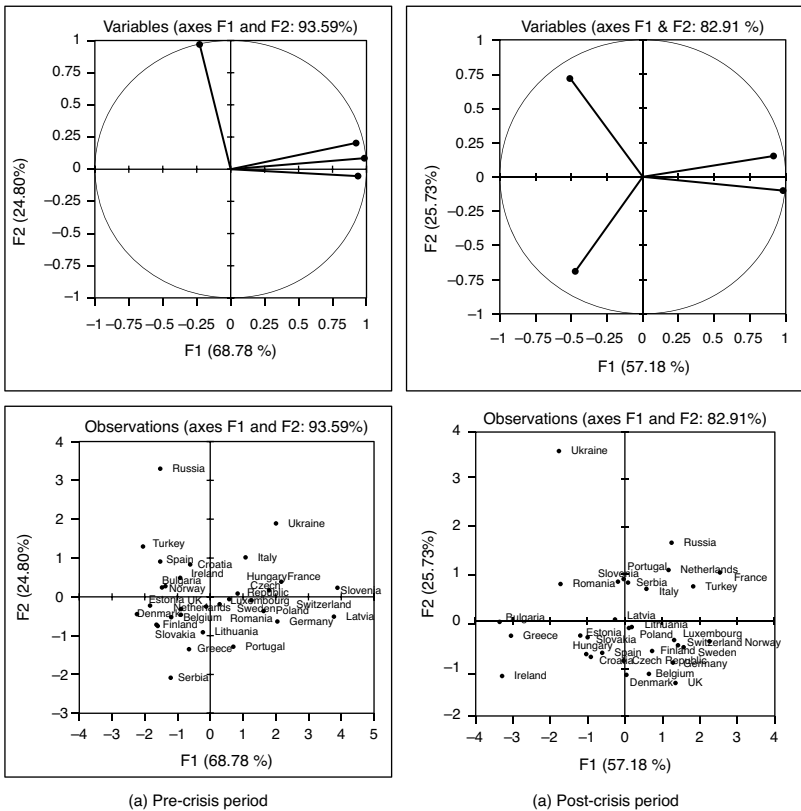


Figure 7.2 Circle of correlation and factor loading plots (all markets: pre-crisis and post-crisis)

Source: Cushman and Wakefield data processed by the author.

In the office market, there is a polarization among emerging eastern countries, Russia and Turkey, Southern Europe countries, Greece, Spain and Portugal, the CEE and the core western countries, as seen in Figure 7.3. Russia and Turkey perform as outliers, posting quite above European average of the total return, with the highest rental and capital growth and relatively higher yields. On the other hand, the CEE countries tend to cluster together while the core western countries displayed similar behaviour with small variances among countries regarding rental and capital growth performances.

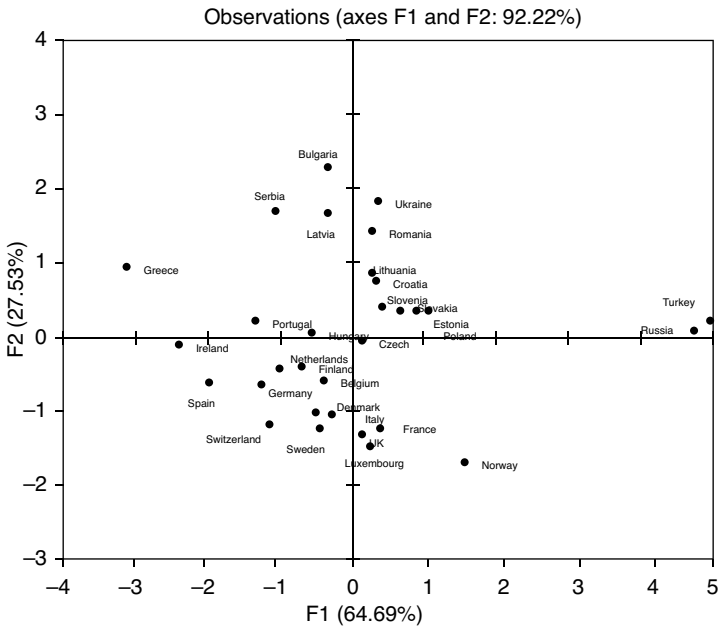


Figure 7.3 Factor loading plot (office market)

Source: Cushman and Wakefield data processed by the author.

As explained in the methodology, small factor loadings (<0.45) are omitted from the analysis, after rotation. As presented in Table 7.3, countries are classified into four groups. The core markets, known as safe haven for the investors, Germany, the UK and Switzerland are located in the same group (Group 2). The emerging markets, Czech Republic and Poland, and also Greece, Ireland and Portugal are located in the same group (Group 1), reflecting the risk perception of the investors. The former, emerging CEE countries, offered high return with higher risk and hit by the financial crisis are still in the recovery process.

Similar to the office market, a polarization among southern, eastern, emerging and core countries are observed in the retail market, as presented in Figure 7.4. The shining stars of Eastern Europe, Russia and Turkey, are outperformers with their large population and market size.

As mentioned above, Russia and Turkey are not associated in any country group, as outliers. Besides, France, having a unique retail market,

Table 7.3 Country group (office market)

Group 1	Group 2	Group 3	Group 4
Czech Republic	Croatia	Belgium	Denmark
Estonia	Finland	Latvia	France
Greece	Germany	Lithuania	Hungary
Ireland	Switzerland	Luxembourg	Romania
Poland	UK	Norway	Slovenia
Portugal	Ukraine	Serbia	Sweden
Russia			
Spain			

Note: Netherlands, Slovakia, Turkey, Bulgaria and Italy are omitted from the analysis.

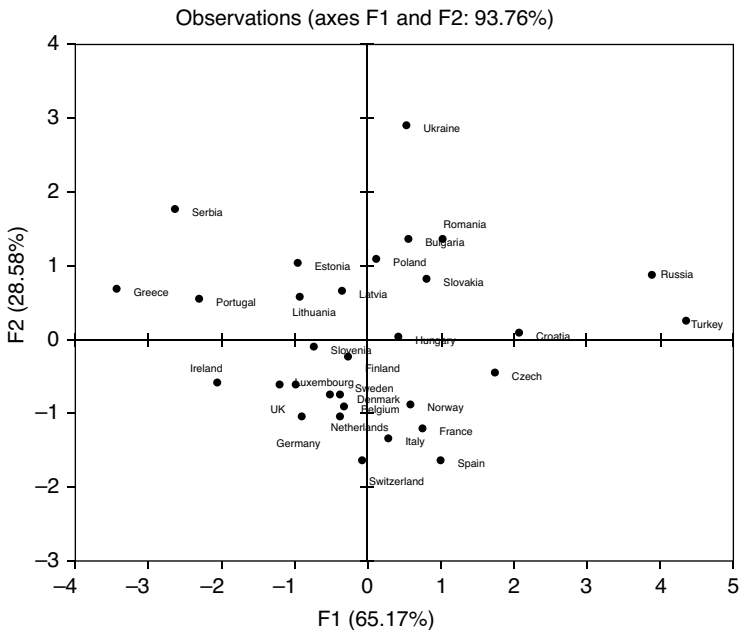


Figure 7.4 Factor loading plot (retail market)

Source: Cushman and Wakefield data processed by the author.

is excluded from the analysis. The country groups for retail market is given in Table 7.4. Group 1 countries are represented a mix combination of north, south and the CEE countries, which requires additional indicators to understand the underlying causes of this pattern. Most of

Table 7.4 Country group (retail market)

Group 1	Group 2	Group 3	Group 4
Croatia	Belgium	Estonia	Hungary
Czech Republic	Bulgaria	Italy	Ireland
Lithuania	Denmark	Spain	
Norway	Finland		
Portugal	Germany		
Serbia	Luxembourg		
Slovenia	Netherlands		
	Poland		
	Romania		
	Switzerland		
	UK		
	Ukraine		

Note: France, Greece, Latvia, Slovakia, Russia and Turkey are omitted from the analysis.

the western countries are located in the same group (Group 2) along with Poland, Romania and Ukraine from the CEE region. These countries offer alternatives to investors regarding their investment strategies, either core or opportunistic, but they posted a sustainable level of return, close to European average returns, ranging 10–15%. Italy and Spain, which have relatively well-developed retail markets but were hit by the financial crisis, are located in Group 3, and smaller markets, Hungary and Ireland, are located in Group 4.

For the industrial market, Russia, Turkey and Ukraine are again outliers with distinctive market performance compared to the rest of the European countries. The core western markets and the CEE countries are tend to cluster together (Figure 7.5).

The country groups for the industrial market displayed a slightly different pattern compared to office and retail markets (Table 7.5). It can be explained by similarities and differences in their logistics market characteristics and also by geographical features, reflecting their investment performance. The northern countries, Finland and Estonia, and Russia and Ukraine are located in Group 1, while the central countries, Czech Republic, Hungary and Slovakia, are located in Group 3. Similar to the office and retail markets, the gateway cities, Germany, the UK and Switzerland are located in the same group (Group 2), reflecting their dominance in the European market. The majority of the Group 4 countries benefit from their port facilities, like Belgium, Denmark, Sweden, Greece and Turkey.

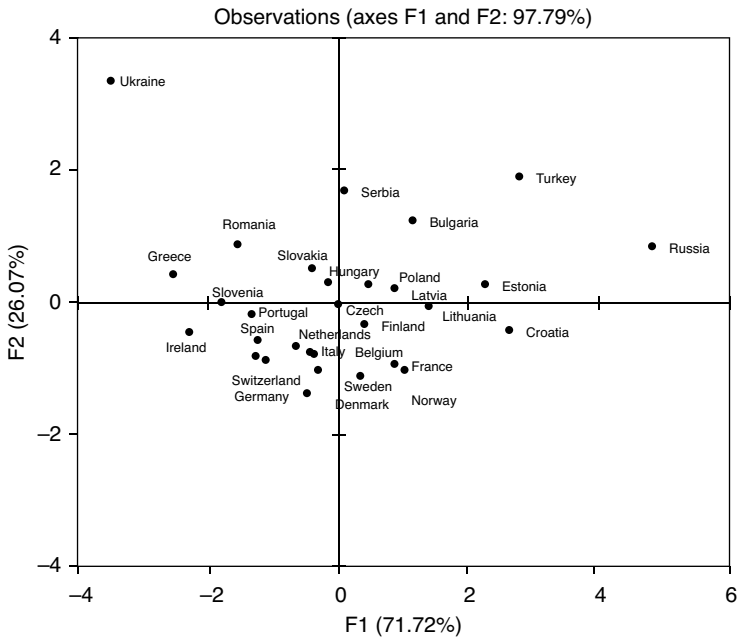


Figure 7.5 Factor loading plot (industrial market)
 Source: Cushman and Wakefield data processed by the author.

Table 7.5 Country group (industrial market)

Group 1	Group 2	Group 3	Group 4
Croatia	Germany	Czech Republic	Belgium
Estonia	Norway	Hungary	Bulgaria
Finland	Serbia	Italy	Denmark
Ireland	Switzerland	Lithuania	Greece
Russia	UK	Netherlands	Latvia
Ukraine		Slovakia	Poland
		Slovenia	Sweden
			Turkey

Note: Romania, Portugal and Spain are omitted from the analysis.

7.5 Conclusion

The investment performance of the European countries by asset types has been examined. The performance indicators, rental and capital

growth, yield and total return, are considered in the analysis. PCA is conducted to investigate the correlations among countries in term of investment performance and to classify them into the groups.

The results have revealed that there is a geographical rotation among countries in the distinctive periods, pre-crisis and post-crisis. It is clear that the investment strategies are shaped by return expectations and risk perceptions. The changing economic and business environments are shaped by the investors' sentiments, which affect their investment strategies. They prefer to change their portfolio structure regarding and rotating between safe core markets to opportunistic markets.

It is clear that investment performance can change by assets types. Although office and retail market country groups look quite similar with some variations, the industrial market has displayed a different pattern. It is confirmed that some basic fundamentals are the same for office and retail markets, but some external factors, which have an impact on investment strategies, can affect the industrial market.

There is a need to investigate other factors which can be influential on investment performance and reflect investor behaviour and portfolio optimization. Therefore, some other economic-related to market-related factors should be included into the analysis for further study.

Appendix

Appendix 7A.1 List of the countries

Countries

Belgium	Germany	Netherlands	Slovenia
Bulgaria	Greece	Norway	Spain
Croatia	Hungary	Poland	Sweden
Czech Republic	Ireland	Portugal	Switzerland
Denmark	Italy	Romania	Turkey
Estonia	Latvia	Russia	United Kingdom
Finland	Lithuania	Serbia	Ukraine
France	Luxembourg	Slovakia	

Source: Cushman and Wakefield European Performance Indices (2001–2013).

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8

Optimal Asset Allocation for European Real Estate

Gianluca Mattarocci

8.1 Introduction

The Markowitz theory (Markowitz, 1952) is the standard framework considered in the asset management industry, and the literature has already evaluated the usefulness of these approaches for the real estate industry. Due to the lack of normality of returns, the mean-variance approach used in the Modern Portfolio theory does not work properly in the real estate industry (Cheng and Liang, 2009), and optimal portfolios constructed on the mean-variance framework frequently are suboptimal with respect to other solutions available (Byrne and Lee, 1997).

The lack of normality of return is not a unique feature of the real estate sector: other financial instruments are characterized by the non-normal distribution, and literature provides alternative criteria for identifying the optimal investment strategy. Empirical evidence on these financial instruments shows the lower performance of portfolios constructed using the mean-variance framework (Sharpe index) with respect to portfolio constructed on the basis alternative Risk Adjusted Performance measures (hereinafter RAP) (e.g., Carretta and Mattarocci, 2013).

The chapter considers the usefulness of alternative RAPs for identifying the optimal portfolio allocation with respect to the standard mean-variance scenario. Section 2 presents the main theories proposed in literature for the portfolio optimization process in the real estate industry and underlines the main 'lackness' of the standard mean-variance framework. Section 3 presents an analysis on the main European real estate markets and evaluates the effectiveness of a portfolio optimization process on the single and multiple year time horizon. Results obtained show that alternative RAP measures with respect to the Sharpe

Ratio allow the performance of the investment strategy to increase even if there are some differences among European countries.

8.2 Portfolio optimization and real estate

The portfolio optimization theory in the real estate sector is different with respect to the strategy adopted for other financial investment opportunities. Empirical evidence demonstrates that real estate assets are so heterogeneous that the systematic risk can be reduced at the minimum using only few assets (up to ten) (Miles and McCue, 1984).

The application of the Markowitz diversification principles to the real estate sector is not a new issue for the literature, and there is evidence that the optimal portfolio strategy is affected by the time horizon used (e.g., Myer and Webb, 1991). Since the beginning of the 1990s, empirical analyses show that some institutional investors use this approach for constructing the optimal portfolio or at least their strategic asset allocation (Louargand, 1992).

In order to apply the Markowitz theory to the real estate investment, it is necessary to take into account:

- the differences between the real estate market and the financial market
- the unique features of the direct real estate investment
- the distribution of real estate returns
- the usefulness of appraisal data

The real estate market is characterized by a low number of transactions and a lack of standardization of assets traded. The information necessary for proper evaluating investment opportunities is incomplete and expensive, and the transaction price can be different with respect to the fair one. Moreover, the market is by definition locally fragmented and the final price of the transaction depends on purchaser-to-seller negotiation and the time or price constraint that could affect their decisions (Liu et al., 1990).

Real estate assets are capital intensive investments, and in a capital constraint scenario, the high cost per unit can negatively affect the diversification opportunities due to the fact that direct real estate assets are indivisible by nature. Moreover, the assumption of short selling opportunities cannot be applied to such investments because regulators want to avoid speculative trading in the market (Giannotti and Mattarocci, 2008).

The assumption of a normal distribution of returns for direct real estate investments is criticized in literature, and some authors consider this assumption stronger for the real estate industry with respect the rest of the asset management industry (Young et al., 2006). Empirical studies demonstrate that the real estate return distribution is normally leptokurtic and negative skewed (Young and Graff, 1995), and the role of systematic risk with respect of idiosyncratic risk is lower (Young, 2008).

Due to the low frequency of transactions, real data are frequently proxies using appraisal judgement that are continuously available over time and allow to compare over time the performance of the same real estate asset. These proxies are normally lagged behind the actual evolution of prices (lagging effect) (Lizieri and Ward, 2000), and appraisals' evaluation tend to be strictly correlated to each another (smoothing effect) (Geltner, 1991).

Literature shows that there are significant differences between the ex-post (actual) efficient portfolio with the ex-ante (assumed) efficient portfolios constructed according to available historical data (Pagliari et al., 1995). The portfolios that are ex-ante assumed as optimal are often placed below the efficient frontier as it is measured at the end of the holding period.

Articles recently published in the literature demonstrate the usefulness of alternative frameworks with respect to the standard mean-variance analysis that consider the unique features that characterize real estate returns. The estimation error that characterize the MPT applied to real estate data demonstrates the usefulness of more complex measures for identifying the optimal portfolio (Lee and Stevenson, 2005). Few studies available in literature applied new Risk Adjusted Performance defined for riskier markets (like hedge funds) for evaluating real estate investment vehicles and pointed out some interesting differences with respect to the mean-variance proxies (Sharpe Ratio) (Giannotti and Mattarocci, 2013). No empirical evidence considers the effect of the portfolio optimization parameter (RAP) and the portfolio allocation strategy.

8.3 Sample and summary statistics

The analysis of the European real estate market considers a representative sample of all European countries looking at the trend that characterizes different types of real estate investments (office, industrial and retail) normally considered by European institutional investors. Data are collected from the Cushman and Wakefield database, and the frequency is quarterly. Summary statistics of the indexes used are presented in Table 8.1.

Table 8.1 Sample

Country name	Country code	Country name	Country code
Austria	AT	Luxembourg	LU
Belgium	BE	Netherlands	NL
Denmark	DK	Norway	NO
Finland	FI	Portugal	PT
France	FR	Spain	ES
Germany	DE	Sweden	SE
Greece	GR	Switzerland	CH
Ireland	IE	Turkey	TR
Italy	IT	United Kingdom	UK

Source: Cushman and Wakefield data processed by the author.

For each type of asset and for each country, both the capital growth and the rent income indexes are available, and we compute a total return index for each type of asset in each country. A preliminary analysis of the index performance confirms the hypothesis of lack of normality of returns for almost all real estate index used in the analysis for the time horizon 2004–13 (Table 8.2).

None of the market analysed shows a normal behaviour for all three real estate market indexes for the overall time horizon, and so for each national investor, there could be an advantage related to constructing the optimal investment strategy on the basis of RAPs that avoid the normality of returns assumption.

8.4 Methodology

Starting from the RAP scale independent based on the mean-variance scenario (Sharpe index), the paper tests the effect of possible changes on the investment's risk profile on the portfolio allocation among the three real estate sectors. On the basis of the available literature (i.e. Eling, 2008), we identify 12 RAP measures that are constructed based on the excess return with respect to the risk-free rate (as in the Sharpe Ratio). The RAPs considered are the following:

$${}_t \text{Sharpe}_{t_2} = \frac{{}_t R_{t_2} - {}_t R_{t_2}^{Rf}}{\sigma(R_t)} \quad (8.1)$$

$${}_t \text{ROPS}_{t_2} = \frac{{}_t R_{t_2} - {}_t R_{t_2}^{Rf}}{\frac{1}{t_2 - t_1} \sum_{t=t_1}^{t_2} \max |R_t^{Rf} - R_t, 0|^0} \quad (8.2)$$

Table 8.2 Shapiro and Wilk test for normality of returns

	Retail & Commercial	Office	Industrial & Logistic
AT	5.59***	0.87	5.11***
BE	3.31***	2.04**	0.01
DK	4.38***	4.46***	1.60**
FI	3.32***	0.12	1.60**
FR	0.43	-0.70	0.97**
DE	2.27**	0.14	2.32***
GR	-0.08	1.72**	1.53*
IE	0.77	1.08	1.55*
IT	1.33**	1.49**	0.85
LU	1.19	-	2.78***
NL	2.56***	1.87**	3.05***
NO	1.92**	2.06***	5.62***
PT	2.15**	0.43	3.41***
ES	2.55***	2.36***	1.25*
SE	0.21	1.27*	0.19
CH	4.55***	1.81**	1.83**
TR	3.041***	5.42***	3.82***
UK	1.94**	1.13	2.56***

Notes: ***Statistically significant at 99% level; **Statistically significant at 95% level; *Statistically significant at 90% level.

Source: Cushman and Wakefield data processed by the author.

$${}_{t_1}ROAS_{t_2} = \frac{{}_{t_1}R_{t_2} - {}_{t_1}R_{t_2}^{Rf}}{\frac{1}{t_2 - t_1} \sum_{t=t_1}^{t_2} \max(R_t^{Rf} - R_t, 0)^1} \tag{8.3}$$

$${}_{t_1}Sortino_{t_2} = \frac{{}_{t_1}R_{t_2} - {}_{t_1}R_{t_2}^{Rf}}{\sqrt[2]{\frac{1}{t_2 - t_1} \sum_{t=t_1}^{t_2} \max(R_t^{Rf} - R_t, 0)^2}} \tag{8.4}$$

$${}_{t_1}Kappa_{t_2}^{n=3} = \frac{{}_{t_1}R_{t_2} - {}_{t_1}R_{t_2}^{Rf}}{\sqrt[3]{\frac{1}{t_2 - t_1} \sum_{t=t_1}^{t_2} \max(R_t^{Rf} - R_t, 0)^3}} \tag{8.5}$$

$${}_{t_1}Kappa_{t_2}^{n=4} = \frac{{}_{t_1}R_{t_2} - {}_{t_1}R_{t_2}^{Rf}}{\sqrt[4]{\frac{1}{t_2 - t_1} \sum_{t=t_1}^{t_2} \max(R_t^{Rf} - R_t, 0)^4}} \tag{8.6}$$

$${}_{t_1} \text{Calmar}_{t_2} = \frac{{}_{t_1} R_{t_2} - {}_{t_1} R_{t_2}^{Rf}}{|{}_{t_1} \text{MDD}_{t_2}|} \quad (8.7)$$

$${}_{t_1} \text{Sterling}_{t_2} = \frac{{}_{t_1} R_{t_2} - {}_{t_1} R_{t_2}^{Rf}}{\sum_{i=1}^n \frac{1}{n} |{}_{t_1} \text{MDD}_{t_2}^i|} \quad (8.8)$$

$${}_{t_1} \text{Burke}_{t_2} = \frac{{}_{t_1} R_{t_2} - {}_{t_1} R_{t_2}^{Rf}}{\sqrt{\sum_{i=1}^n \frac{1}{n} ({}_{t_1} \text{MDD}_{t_2}^i)^2}} \quad (8.9)$$

$${}_{t_1} \text{VaR Ratio}_{t_2} = \frac{R_t - R_{rf}}{{}_{t_1} \text{VaR}_{t_2}} \quad (8.10)$$

$${}_{t_1} \text{CVaR Ratio}_{t_2} = \frac{{}_{t_1} R_{t_2} - {}_{t_1} R_{t_2}^{Rf}}{{}_{t_1} \text{CVaR}_{t_2}} \quad (8.11)$$

$${}_{t_1} \text{MVaR Ratio}_{t_2} = \frac{{}_{t_1} R_{t_2} - {}_{t_1} R_{t_2}^{Rf}}{{}_{t_1} \text{MVaR}_{t_2}} \quad (8.12)$$

$${}_{t_1} \text{Sharpe Omega}_{t_2} = \frac{{}_{t_1} R_{t_2} - {}_{t_1} R_{t_2}^{Rf}}{e^{-r_f} E[{}_{t_1} \max({}_{t_1} R_t - {}_{t_1} R_t^{Rf}, 0)]_{t_2}} \quad (8.13)$$

In all the equations, the numerator $({}_{t_1} R_{t_2} - {}_{t_1} R_{t_2}^{Rf})$ represents the extra return of the real estate portfolio with respect to the risk-free rate while the denominator changes with each measure. In accordance with the literature and the sample's characteristics, the risk-free rate is the yearly equivalent of a three-month Treasury bill issued in Europe.

Equation (9.1) represents the Sharpe index, a measure of excess return with respect to the risk-free rate for each unit of risk assumed (Sharpe, 1994). This measure takes into account the overall distribution of results and assumes the normality of returns to summarize the investment's risk profile, considering only the first and second moments of the return distribution.

Equations (9.2)–(9.6) are constructed using the lower partial moments of the performance distribution, thus considering only the distribution

of results lower than a given threshold (the risk-free rate). Equation (9.2) defines the Return on Probability of Shortfall (ROPS) constructed using the lower partial moment of order zero that represents the excess return with respect to the probability of losses (Pedersen and Rudholm-Alfvén, 2003). Equation (9.3) defines the Return on Absolute Shortfall (ROAS) using the lower partial moment of order one that measures the excess return with respect to the mean expected loss (Pedersen and Rudholm-Alfvén, 2003). Equation (9.4) proposes the Sortino measure that uses the lower partial moment of order two that measures the excess return with respect to downside risk (Sortino and Forsey, 1996). Equations (9.5) and (9.6) consider the lower partial moments, respectively, of order three and four to define the investment's return-risk profile (κ), considering, respectively, the distribution's skewness and kurtosis (Kaplan and Knowles, 2004).¹

Equations (9.7)–(9.9) are constructed considering only the maximum amount of losses (maximum drawdown) on the yearly time horizon. Equation (9.7) considers only maximum losses and defines a measure (Calmar ratio) that computes the excess return with respect to the worst performance achieved (Young, 1991). Equation (9.8) takes into account the fund's worst performances and defines an index (Sterling ratio) equal to the ratio of the excess return to the arithmetic mean of these n losses (Kestner, 1996).² Equation (9.9) considers the square root of the sum of the squares of n drawdowns and defines a measure (Burke ratio) as the ratio between the excess return with respect to a risk-free rate and this average of maximum drawdowns (Burke, 1994).³

Equations (9.10)–(9.12) use the value at risk (VaR) as a proxy of risk exposure for the yearly time horizon, using a confidence level of $\alpha\%$.⁴ Equation (9.10) computes the ratio between the VaR and the investment at time zero and defines a measure (VaR ratio) of the ratio of excess return to this risk exposure (Dowd, 2000). Equation (9.11) considers the average loss for a given threshold – the so-called conditional variable (cVaR) – and computes an index (CVaR ratio) as the ratio between excess return and the mean VaR (Agarwal and Naik, 2004). Equation (9.12) takes into account the non-normality of the distribution for extreme losses as well, using the Cornish–Fisher expansion to modify the VaR estimates, and defines a measure (MVaR ratio) as the ratio between excess return and the maximum corrected exposure (Gregoriou and Gueyie, 2003).

Equation (9.13) is derived from the Omega measure, the ratio between the area of returns and losses related to the investment (Shadwick and Keating, 2002). It is possible to rewrite the Omega using the put–call parity rule proposed by Black and Scholes (Kazemi et al., 2004). A Sharpe–Omega measure could thus be written as the ratio between excess return

and the value of a put option with strike price equal to R_f and a time horizon coherent with the evaluation period (one year).

For each for the 13 RAPs and for each of the 18 countries, in order to test the effectiveness of ex-post optimization in subsequent periods, efficient portfolios were formed in a number of sub-periods and the portfolio weights held into the next period. In order to evaluate the difference of the portfolio composition strategy between the two optimal investment portfolios, following the approach proposed by Mattarocci and Siligardos (2013), we compute a distance measure between the current and past optimal asset allocation. In formulas:

$$d_{t,t-1}^{k,m} = \sqrt{\sum_{i=1}^3 (w_{it}^{k,m,*} - w_{it-1}^{k,m,*})^2} \quad (8.14a)$$

$$d_{t,t-2}^{k,m} = \sqrt{\sum_{i=1}^3 (w_{it}^{k,m,*} - w_{it-2}^{k,m,*})^2} \quad (8.14b)$$

$$d_{t,t-3}^{k,m} = \sqrt{\sum_{i=1}^3 (w_{it}^{k,m,*} - w_{it-3}^{k,m,*})^2} \quad (8.14c)$$

where higher values of the distance measures computed for the k RAP m imply an higher difference among the two optimal portfolios considered and a lower stability of the weights and an higher relevance of yearly portfolio rebalancements.

As Pagliari et al. (1995), the paper compares the performance achieved by past best portfolios with current optimal one considering results achieved after one, two or three years. In formulas:

$$r(w_{i,t-1}^{k,m,*})_t - r(w_{i,t}^{k,m,*})_t \quad (8.15a)$$

$$r(w_{i,t-2}^{k,m,*})_t - r(w_{i,t}^{k,m,*})_t \quad (8.15b)$$

$$r(w_{i,t-3}^{k,m,*})_t - r(w_{i,t}^{k,m,*})_t \quad (8.15c)$$

where $r(w_{i,t-j}^{k,*})_t$ is the return achieved at time t by the optimal portfolio allocation (w_i^*) identified on the basis of k RAP on the year $t-j$ (with j that varies from 1 to 3).

All the results are presented assuming a pure home biased strategy in which the portfolio manager invest only on domestic assets (Section 8.4) and removing all constraints for international diversification opportunities (Section 8.5).

8.4 Results for home biased strategy

In order to evaluate the usefulness of RAPs in order to construct ex-ante portfolio that are coherent with ex-post optimal one, the analysis compute for each year the median value of the distance measures between the ex-ante and the ex-post asset allocation (Table 8.3).

The distance between ex-ante and ex-post portfolios is the maximum for almost all the RAPs considered in 2009, 2010 and 2012, and it increases with the increase of the lag between the ex-ante and the ex-post optimization process.

The mean-variance framework identified by the Sharpe Ratio is not the optimal solution in order to reduce at the minimum the difference between the optimal ex-ante and ex-post portfolio. On the one year time horizon, almost all other RAPs show a lower median turnover of the optimal portfolio, but the Sharpe index is characterized by the yearly minimum (0.00) and maximum turnover (1.41) of all the optimal portfolios constructed. On a multiple year time horizon, only the Sterling ratio and the Modified VaR allow to obtain a lower median turnover with respect to the mean-variance approach for both the 2 and 3 year time horizon.

The comparison of the yearly performance (median values) obtained by ex-ante and ex-post optimal portfolios allows to show some interesting differences among countries on the basis of the proxy used for measuring the investment risk (Table 8.4).

Independently with respect to the RAP measure selected, ex-ante optimization identifies portfolio that underperform with respect to ex-post optimal ones especially at the beginning of the crisis (2007 and 2008) and in the last year considered (2013). During the years of the most severe crisis in the European real estate sector, the optimal portfolio identified the year before offer a return at least equal to the ex-post optimal portfolio. As expected, the longer the lag between the estimation period for the optimal portfolio, the higher the (median) underperformance obtained by ex-ante optimal portfolio with respect to ex-post optimal ones.

The analysis of the standard mean-variance scenario released using the Sharpe Ratio shows that the ex-ante portfolios normally underperform

Table 8.3 Distance measures of ex-ante and ex-post optimal portfolio

	2007		2008		2009		2010		2011		2012		2013		All		
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
Sharpe	1Y	0.13	0.87	0.12	0.81	0.00	1.01	0.00	1.41	0.00	1.02	0.29	1.29	0.04	1.33	0.08	1.33
	2Y	-	-	0.00	1.26	0.20	1.02	0.00	1.41	0.00	1.41	0.56	1.38	0.12	1.47	0.81	1.47
	3Y	-	-	-	-	0.00	1.26	0.18	1.37	0.00	1.41	0.42	1.40	0.00	1.47	0.82	1.47
ROPS	1Y	0.00	1.55	0.00	0.10	0.00	1.41	0.00	1.41	0.00	1.33	0.00	1.42	0.00	1.73	0.06	1.73
	2Y	-	-	0.00	1.58	0.00	1.41	0.00	1.73	0.00	1.73	0.00	1.56	0.00	1.73	1.00	1.73
	3Y	-	-	-	-	0.83	1.73	0.00	1.73	0.00	1.64	0.00	1.73	0.00	1.73	1.23	1.73
ROAS	1Y	0.00	1.41	0.00	1.41	0.00	1.41	0.00	1.41	0.00	1.05	0.00	1.41	0.00	0.43	0.06	0.43
	2Y	-	-	0.00	1.41	0.00	1.46	0.00	1.41	0.00	1.41	0.00	1.41	0.00	1.41	0.57	1.41
	3Y	-	-	-	-	0.00	1.41	0.01	1.46	0.00	1.41	0.00	1.41	0.00	1.41	1.00	1.41
Sortino	1Y	0.00	1.41	0.00	1.26	0.00	1.61	0.00	1.16	0.00	1.26	0.00	1.41	0.00	0.64	0.04	0.64
	2Y	-	-	0.00	1.41	0.00	1.70	0.00	1.62	0.00	1.41	0.00	1.41	0.06	1.41	1.00	1.41
	3Y	-	-	-	-	0.07	1.73	0.00	1.71	0.00	1.61	0.00	1.42	0.04	1.41	1.10	1.41
Kappa (n = 3)	1Y	0.00	1.41	0.00	1.41	0.00	1.41	0.00	1.41	0.00	1.41	0.00	1.41	0.00	1.41	0.00	1.41
	2Y	-	-	0.00	1.41	0.00	1.41	0.00	1.41	0.00	1.41	0.00	1.41	0.00	1.41	1.00	1.41
	3Y	-	-	-	-	0.00	1.41	0.00	1.73	0.00	1.41	0.00	1.41	0.00	1.41	1.07	1.41
Kappa (n = 4)	1Y	0.00	0.60	0.00	1.35	0.00	1.41	0.00	1.48	0.00	1.73	0.00	0.44	0.00	1.37	0.07	1.37
	2Y	-	-	0.00	1.46	0.00	1.57	0.62	1.41	0.00	1.41	0.00	1.73	0.00	1.41	0.87	1.41
	3Y	-	-	-	-	0.00	1.43	0.13	1.61	0.00	1.41	0.00	1.41	0.00	1.68	0.95	1.68

Continued

Table 8.3 Continued

		2007		2008		2009		2010		2011		2012		2013		All		
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Median	
Calmar	1Y	0.00	1.41	0.01	1.73	0.00	1.50	0.00	1.41	0.00	1.27	0.00	1.41	0.00	1.41	0.00	1.41	0.06
	2Y	-	-	0.00	1.41	0.01	1.65	0.00	1.50	0.00	1.41	0.00	1.41	0.00	1.41	0.00	0.89	0.89
	3Y	-	-	-	-	0.00	1.41	0.01	1.46	0.00	1.50	0.00	1.73	0.00	1.41	0.00	1.41	1.00
Sterling	1Y	0.00	1.41	0.00	0.49	0.00	1.38	0.00	1.41	0.00	0.92	0.00	1.41	0.00	1.41	0.00	0.41	0.07
	2Y	-	-	0.00	1.41	0.00	1.38	0.00	1.57	0.00	1.41	0.00	1.47	0.00	1.41	0.00	1.41	0.60
	3Y	-	-	-	-	0.00	1.41	0.00	1.73	0.00	1.57	0.00	1.71	0.00	1.47	0.00	1.47	0.73
Burke	1Y	0.00	1.38	0.00	1.27	0.00	1.26	0.00	1.41	0.00	1.17	0.00	1.41	0.00	0.36	0.00	0.36	0.07
	2Y	-	-	0.00	1.38	0.00	1.26	0.00	1.73	0.00	1.41	0.00	1.41	0.00	1.41	0.00	1.41	0.75
	3Y	-	-	-	-	0.00	1.38	0.00	1.73	0.00	1.73	0.00	1.62	0.00	1.42	0.00	1.42	0.93
VaR	1Y	0.00	1.23	0.00	1.41	0.00	1.14	0.00	1.41	0.00	0.76	0.00	1.41	0.00	1.41	0.00	1.41	0.07
	2Y	-	-	0.00	1.73	0.00	1.73	0.00	1.41	0.00	1.41	0.00	1.41	0.00	1.31	0.00	1.31	0.85
	3Y	-	-	-	-	0.00	1.73	0.00	1.73	0.00	1.41	0.00	1.73	0.00	1.54	0.00	1.54	1.00
CVaR	1Y	0.00	1.41	0.01	1.73	0.00	1.50	0.00	1.41	0.00	1.27	0.00	1.41	0.00	1.41	0.00	1.41	0.06
	2Y	-	-	0.00	1.41	0.01	1.65	0.00	1.50	0.00	1.41	0.00	1.41	0.00	0.89	0.00	0.89	0.89
	3Y	-	-	-	-	0.00	1.41	0.01	1.46	0.00	1.50	0.00	1.73	0.00	1.41	0.00	1.41	1.00
MVar	1Y	0.02	0.94	0.16	0.88	0.00	1.11	0.00	1.41	0.00	1.28	0.09	1.08	0.07	1.20	0.08	1.20	0.08
	2Y	-	-	0.00	1.25	0.09	1.06	0.00	1.41	0.00	1.41	0.17	1.25	0.23	1.50	0.75	1.50	0.75
	3Y	-	-	-	-	0.00	1.25	0.09	1.04	0.00	1.41	0.27	1.37	0.28	1.50	0.87	1.50	0.87
Omega	1Y	0.00	1.41	0.00	1.41	0.00	1.41	0.00	1.41	0.00	1.41	0.00	1.59	0.00	1.03	0.04	1.03	0.04
	2Y	-	-	0.00	1.73	0.01	1.41	0.00	1.73	0.00	1.73	0.00	1.44	0.00	1.41	1.00	1.41	1.00
	3Y	-	-	-	-	0.00	1.73	0.00	1.73	0.00	1.41	0.00	1.41	0.00	1.41	0.00	1.41	1.00

Note: The table presents the yearly minimum, median and maximum distance between current and optimal portfolio performance considering a 1-3 year time horizon. The distance measure is computed using formulas 15a, 15b and 15c.

Source: Cushman and Wakefield data processed by the author.

Table 8.4 Differences between performance of ex-ante and ex-post optimal portfolio

	2007			2008			2009			2010			2011			2012			2013		
	Median	N		Median	N		Median	N		Median	N		Median	N		Median	N		Median	N	
Sharpe	1Y	-1.15%	6	-1.33%	5	0.00%	11	0.00%	13	0.00%	14	0.00%	10	0.00%	10	0.00%	10	0.00%	10	-0.01%	7
	2Y	-	-	-0.45%	5	-1.08%	5	-0.04%	8	0.00%	10	-0.15%	9	-0.23%	6	-	-	-	-	-	-
	3Y	-	-	-	-	-1.38%	7	-1.69%	5	-0.64%	7	-0.12%	9	-0.09%	7	-	-	-	-	-	-
ROPS	1Y	2.16%	17	0.00%	17	0.00%	16	0.00%	16	0.00%	17	0.00%	15	0.00%	18	0.00%	15	0.00%	15	0.00%	18
	2Y	-	-	0.00%	13	0.41%	14	0.00%	13	0.00%	16	0.00%	14	0.49%	17	0.00%	14	0.00%	14	0.49%	17
	3Y	-	-	-	-	0.07%	12	0.76%	11	0.00%	13	0.00%	13	0.00%	17	0.00%	13	0.00%	13	0.30%	17
ROAS	1Y	0.00%	11	-0.11%	8	0.00%	11	0.00%	15	0.00%	14	-0.39%	8	0.00%	13	0.00%	8	0.00%	8	0.00%	13
	2Y	-	-	-1.11%	4	-0.78%	6	0.00%	10	0.00%	13	-0.31%	9	-0.21%	9	-	-	-	-	-	-
	3Y	-	-	-	-	-2.16%	6	0.00%	9	-0.23%	9	0.00%	10	0.00%	12	0.00%	10	0.00%	10	0.00%	12
Sortino	1Y	0.00%	11	0.00%	12	-0.02%	9	0.00%	12	0.00%	10	0.00%	10	0.00%	14	0.00%	10	0.00%	10	0.00%	14
	2Y	-	-	-3.27%	7	0.00%	10	0.00%	12	0.00%	11	-0.44%	8	0.00%	10	-0.44%	8	0.00%	8	0.00%	10
	3Y	-	-	-	-	-0.03%	9	0.00%	11	-1.44%	8	-0.25%	6	-0.01%	9	-	-	-	-	-	-
Kappa (n = 3)	1Y	0.00%	13	0.00%	13	0.00%	13	0.00%	13	0.00%	14	0.00%	12	0.00%	12	0.00%	12	0.00%	12	0.00%	12
	2Y	-	-	-3.61%	7	0.00%	11	0.00%	14	0.00%	10	0.00%	10	0.00%	10	0.00%	10	0.00%	10	0.00%	10
	3Y	-	-	-	-	-0.07%	9	0.00%	12	0.00%	11	0.00%	11	0.00%	11	0.00%	11	0.00%	11	0.00%	11
Kappa (n = 4)	1Y	0.00%	11	-0.05%	9	0.62%	15	0.00%	14	0.00%	15	0.00%	11	0.01%	15	0.00%	11	0.00%	11	0.01%	15
	2Y	-	-	-0.01%	9	1.52%	14	0.34%	12	0.00%	16	0.00%	10	0.06%	14	0.00%	10	0.00%	10	0.06%	14
	3Y	-	-	-	-	1.17%	14	0.17%	11	0.00%	11	0.00%	11	0.24%	12	0.00%	10	0.00%	10	0.24%	12

Continued

Table 8.4 Continued

		2007		2008		2009		2010		2011		2012		2013	
		Median	N	Median	N	Median	N	Median	N	Median	N	Median	N	Median	N
Calmar	1Y	0.00%	11	-0.55%	7	0.00%	12	0.00%	15	0.00%	15	0.00%	12	0.00%	14
	2Y	-	-	-0.51%	8	-2.55%	4	0.00%	11	0.00%	12	0.00%	11	0.00%	10
	3Y	-	-	-	-	-2.41%	4	-2.03%	7	-2.23%	8	0.00%	11	0.00%	13
Sterling	1Y	0.00%	16	0.00%	11	0.00%	10	0.00%	11	0.00%	14	0.00%	12	0.00%	13
	2Y	-	-	0.00%	11	-1.46%	8	0.00%	11	-0.01%	9	0.00%	12	0.00%	11
	3Y	-	-	-	-	-1.33%	8	0.00%	8	0.00%	8	0.10%	10	1.00%	13
Burke	1Y	0.00%	12	-0.02%	9	0.00%	13	0.00%	12	0.00%	14	0.00%	13	0.00%	12
	2Y	-	-	-0.23%	8	-0.69%	8	-0.29%	8	-0.18%	8	0.00%	12	0.00%	10
	3Y	-	-	-	-	-1.77%	7	-3.44%	7	-3.00%	7	0.03%	10	0.17%	12
VaR	1Y	0.00%	12	-1.72%	6	-0.36%	8	0.00%	14	0.00%	14	0.00%	14	0.00%	12
	2Y	-	-	-0.44%	6	-4.23%	4	0.00%	10	0.00%	12	0.00%	12	0.00%	11
	3Y	-	-	-	-	-3.48%	4	-0.58%	9	-2.11%	7	0.00%	12	0.00%	13
CVaR	1Y	0.00%	11	-0.55%	7	0.00%	12	0.00%	15	0.00%	15	0.00%	12	0.00%	14
	2Y	-	-	-0.51%	8	-2.55%	4	0.00%	11	0.00%	12	0.00%	11	0.00%	10
	3Y	-	-	-	-	-2.41%	4	-2.03%	7	-2.23%	8	0.00%	11	0.00%	13
MVar	1Y	-0.92%	6	-0.87%	6	-0.39%	7	0.00%	13	0.00%	15	-0.07%	9	-0.09%	5
	2Y	-	-	-0.51%	7	-1.79%	2	0.00%	11	-0.01%	9	-0.16%	9	-0.68%	6
	3Y	-	-	-	-	-1.35%	5	-2.25%	6	-1.12%	7	0.00%	11	-0.05%	8
Omega	1Y	0.00%	11	-0.54%	8	0.00%	13	0.00%	16	0.00%	18	0.00%	13	0.00%	14
	2Y	-	-	-5.60%	5	-1.34%	7	0.00%	11	0.00%	16	0.00%	14	0.00%	13
	3Y	-	-	-	-	-1.12%	8	0.00%	12	0.06%	14	0.00%	10	0.00%	14

Note: The table presents summary statistics of the performance difference between current and optimal portfolio performance considering a 1 to 3 year time horizon. For each year, the table presents the median value of the performance gap and the number of countries for which the gap is positive or equal to zero. Source: Cushman and Wakefield data processed by the author.

with respect to the ex-post one and, independently with respect of the lag (from 1 to 3 years), the number of countries that are able to outperform is the lowest among other RAPs that could be used for the optimal portfolio construction.

The ROPs, the Kappa corrected for the kurtosis and the Sharpe Omega are the two RAPs that allow to obtain (for all the lag considered) a median positive performance and an higher number of countries for which the ex-ante portfolio optimization allow to obtain at least the same performance of the ex-post one. The ROPs allow to maximize the extra-performance on the one year lag time horizon while the Kappa and the Omega perform the best when the gap is longer than one year.

In order to identify difference among countries, the same analysis is released considering separately each country and comparing the asset allocation differences between optimal portfolio defined ex-ante and ex-post (Table 8.5).

French market is characterized by the higher turnover on the one year time horizon while on multiple year time horizon, the distance between ex-ante and ex-post optimal portfolios is normally higher in the Netherlands with respect to other markets.

Independently with respect to the measure selected, differences on the usefulness of RAP measures in reducing the portfolio rebalancements are clearer when ROPs and Omega ratio are taken into account for which depending of the country the median value of portfolio turnover could be vary from 0% to 100%.

The analysis of the performance differences among countries allows identifying those for which the portfolio misalignment implies a significant lower average return and a higher probability of losses on the one year time horizon (Table 8.6).

Only Austria, Greece and Spain show a median difference of the ex-ante and the ex-post returns that is higher for the mean and variance framework (Sharpe Ratio) while for all other countries there is at least another RAP that perform better. Independently with respect to the RAP selected, the countries for which the ex-ante allocation outperforms more frequently the ex-post optimal portfolios are the Netherlands, Spain and Greece.

The RAP that most frequently performs the best in identifying ex-ante the optimal portfolio is the ROPs and results are confirmed for both the median extra-performance and the number of years with ex-ante performance higher than ex-post one.

The comparison of ex-ante and ex-post optimal portfolios on multi-year time horizon shows that there are some differences in the best

Table 8.5 Performance difference between ex-ante and ex-post optimal portfolio by country

	AT	BE	DK	FI	FR	DE	GR	IE	IT	LU	NL	NO	PT	ES	SE	CH	TR	UK	
Sharpe	1Y	0.79	0.81	0.84	0.51	0.59	0.41	0.13	0.59	0.58	0.31	0.52	0.61	0.44	0.53	0.28	0.37	0.40	
	2Y	0.97	0.85	0.69	0.54	0.58	0.62	0.69	1.00	1.00	1.22	1.08	1.03	0.95	0.88	0.90	0.49	0.42	0.78
	3Y	0.97	0.78	0.73	0.59	0.57	0.66	0.81	1.09	0.98	1.21	0.93	0.82	0.81	1.07	1.14	0.82	0.65	1.02
ROPS	1Y	0.00	0.00	1.00	0.00	0.31	1.00	0.44	0.51	0.51	0.17	0.61	0.61	0.00	0.00	1.00	0.09	1.00	0.94
	2Y	0.00	0.50	1.00	1.41	1.22	1.01	1.29	0.99	0.99	0.68	1.03	1.21	1.41	1.00	1.00	1.37	1.54	1.22
	3Y	0.00	0.00	1.00	1.41	1.64	1.41	1.41	1.16	1.17	1.17	1.07	1.38	1.41	1.00	1.37	1.33	1.41	1.41
ROAS	1Y	0.00	0.00	0.00	0.00	0.19	0.01	0.01	0.27	0.00	0.00	0.70	0.70	0.38	0.38	0.00	0.20	0.38	
	2Y	0.01	1.00	1.28	1.28	0.95	0.39	0.39	0.81	0.49	0.63	1.02	1.02	0.90	0.69	0.69	0.00	0.14	0.49
	3Y	0.01	1.00	1.41	1.41	1.04	0.39	0.39	1.04	1.00	1.41	1.04	1.05	0.38	0.44	0.43	0.00	0.92	1.27
Sortino	1Y	0.00	0.00	0.00	0.00	0.45	0.07	0.10	0.33	0.14	0.00	0.89	0.89	0.39	0.85	0.80	0.08	0.06	0.06
	2Y	0.71	1.00	1.41	1.41	1.00	0.47	0.54	0.84	0.99	1.29	1.18	1.00	0.80	0.97	0.97	0.57	0.39	0.39
	3Y	1.41	1.41	1.41	1.41	1.10	0.64	0.64	1.00	1.00	1.36	1.36	1.01	0.16	0.97	0.97	0.07	1.00	1.41
Kappa (n = 3)	1Y	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.46	0.65	
	2Y	0.00	1.00	1.41	1.41	1.00	0.71	0.71	1.00	0.00	0.00	1.00	1.41	1.00	1.00	0.00	1.00	1.13	
	3Y	0.00	1.00	1.41	1.41	1.41	1.41	1.41	1.00	1.00	1.41	1.00	1.00	1.41	1.00	1.00	0.00	1.00	1.41
Kappa (n = 4)	1Y	0.00	0.06	0.50	0.41	0.60	0.52	0.44	0.97	0.69	0.52	0.38	0.55	0.00	0.43	0.47	0.53	0.31	0.60
	2Y	0.09	0.10	0.76	0.89	0.90	0.99	0.92	1.25	1.06	1.32	1.05	1.17	0.78	0.94	0.64	0.69	0.69	0.54
	3Y	0.10	0.07	0.65	0.97	1.06	1.06	1.17	1.43	1.15	1.23	1.00	1.10	1.41	1.02	1.26	0.83	0.57	0.78

Calmar	1Y	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.41	0.41	0.29	0.16	0.00	1.00	0.50	0.53	0.38	0.00	
	2Y	0.00	0.95	1.34	1.34	0.99	0.73	0.73	1.00	0.82	1.23	1.16	1.15	0.71	1.00	0.75	0.62	0.75	0.25
	3Y	0.00	1.00	1.41	1.41	1.18	0.89	0.89	1.00	0.72	1.11	0.85	1.00	1.41	1.12	1.07	0.53	1.00	1.41
Sterling	1Y	0.03	0.02	0.42	0.00	0.33	0.00	0.00	0.23	0.16	0.00	0.00	0.00	0.00	0.84	0.98	0.23	0.16	0.00
	2Y	0.54	0.46	0.77	0.71	0.57	0.08	0.00	0.67	0.58	0.69	0.98	1.00	1.41	1.21	1.06	0.67	0.48	0.27
	3Y	0.56	0.75	1.08	1.41	1.00	0.16	0.00	0.00	0.00	0.00	1.00	1.00	1.41	1.41	1.00	0.23	0.70	0.53
Burke	1Y	0.06	0.16	0.26	0.22	0.33	0.00	0.00	0.21	0.16	0.16	0.12	0.21	0.00	0.71	1.00	0.00	0.00	0.03
	2Y	0.21	0.28	0.66	0.71	0.70	0.24	0.00	0.47	0.66	1.11	1.06	1.00	1.41	1.23	1.13	0.84	0.65	0.37
	3Y	0.27	0.85	1.18	1.32	1.04	0.49	0.00	0.73	1.00	1.03	1.24	1.00	1.41	1.41	1.00	0.42	0.84	0.69
VaR	1Y	0.38	1.01	0.73	0.72	0.60	0.51	0.36	0.34	0.54	0.00	0.00	0.00	0.00	0.76	0.76	0.79	0.68	0.00
	2Y	0.92	1.07	0.93	1.23	0.94	0.90	0.60	1.00	1.07	1.23	0.85	0.73	0.00	0.89	0.89	0.77	0.68	0.39
	3Y	1.07	1.07	1.01	1.41	1.17	0.95	0.84	1.00	1.00	1.23	1.00	1.00	1.41	1.14	1.14	0.79	0.79	0.79
CVaR	1Y	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.37	0.41	0.41	0.29	0.16	0.00	1.00	0.50	0.53	0.38	0.00
	2Y	0.00	0.95	1.34	1.34	0.99	0.73	0.73	1.00	0.82	1.23	1.16	1.15	0.71	1.00	0.75	0.62	0.75	0.25
	3Y	0.00	1.00	1.41	1.41	1.18	0.89	0.89	1.00	0.72	1.11	0.85	1.00	1.41	1.12	1.07	0.53	1.00	1.41
MVaR	1Y	0.72	0.74	0.70	0.36	0.27	0.07	0.10	0.84	0.67	0.28	0.58	0.50	0.17	0.44	0.50	0.41	0.48	0.51
	2Y	0.76	0.83	0.68	0.50	0.49	0.62	0.73	0.98	0.96	0.93	0.87	0.82	0.97	0.88	0.95	0.74	0.61	0.90
	3Y	0.98	0.96	0.92	0.64	0.63	0.64	0.85	0.93	0.73	0.45	0.91	0.88	1.24	0.88	1.23	1.06	0.75	1.00
Omega	1Y	0.00	0.00	1.00	0.00	1.00	1.03	1.27	1.00	1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.38	0.38
	2Y	0.71	1.21	1.00	1.41	1.41	1.41	1.41	1.33	1.00	1.41	1.00	1.00	0.71	0.50	0.50	0.00	0.00	0.00
	3Y	1.41	1.41	1.00	1.41	1.24	1.03	1.03	1.00	1.00	0.00	1.00	1.00	0.00	0.38	0.38	0.00	0.38	0.38

Note: The table presents the median distance between current and optimal portfolio performance considering a 1 to 3 year time horizon. The distance measure is computed using formulas 15a, 15b and 15c.

Source: Cushman and Wakefield data processed by the author.

Table 8.6 Performance difference between ex-ante and ex-post optimal portfolio by country (1 year lag)

	Sharpe	ROPS	ROAS	Sortino	Kappa (n = 3)	Kappa (n = 4)	Calmar	Sterling	Burke	VaR	CVaR	MVaR	Omega
AT	Mean	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-0.08%	0.00%	-0.60%	0.00%
	N° pos	4	7	4	5	6	5	4	5	2	5	3	4
BE	Mean	-0.44%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-0.19%	0.00%	0.00%	0.00%
	N° pos	2	7	4	5	5	6	4	5	3	4	4	5
DK	Mean	-0.02%	0.52%	-0.03%	-0.60%	0.00%	0.09%	0.00%	0.00%	0.00%	0.00%	-0.02%	0.00%
	N° pos	3	6	3	3	5	5	6	5	4	4	3	4
FI	Mean	-0.28%	0.95%	0.00%	0.00%	0.00%	0.01%	-0.19%	0.00%	0.00%	-0.19%	-0.11%	0.00%
	N° pos	3	6	5	4	6	5	3	3	4	3	3	7
FR	Mean	-0.84%	0.00%	-2.73%	-1.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-2.11%	0.00%
	N° pos	3	7	3	3	4	7	5	6	6	5	2	6
DE	Mean	0.00%	0.00%	0.00%	0.00%	0.00%	0.21%	0.00%	0.00%	0.00%	0.52%	0.00%	0.00%
	N° pos	4	5	6	4	6	4	6	5	5	6	4	6
GR	Mean	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-1.15%	0.00%
	N° pos	5	7	4	6	4	6	5	5	5	6	3	6
IE	Mean	0.00%	0.00%	0.35%	0.00%	0.00%	0.00%	0.00%	0.00%	-0.24%	0.00%	0.00%	8.21%
	N° pos	4	6	5	5	4	5	5	5	3	5	4	6
IT	Mean	-1.89%	2.34%	0.00%	-0.93%	0.00%	0.00%	-1.74%	-1.76%	-1.41%	0.00%	-0.86%	2.68%
	N° pos	3	6	5	2	5	4	2	2	1	4	2	6

proxy for constructing optimal ex-ante portfolios and the countries that are more or less exposed to a risk of resource misallocation (Tables 8.7 and 8.8).

Excluding Austria, portfolios identified on the basis of the Sharpe Ratio never show abnormal performance higher with respect to all other RAPs, and frequently the performance gap after two years is negative. Independently with respect to the RAP selected, the countries for which the ex-ante allocation outperforms more frequently the ex-post optimal portfolios are Spain, the Netherlands and Portugal.

Excluding Austria and Portugal, the Kappa corrected for the kurtosis allows to always beat the optimization process based on the mean-variance framework (Sharpe), and the results achieved by this proxy are frequently the highest gaps registered for almost all the countries.

As expected with a 3 year lag, the probability to obtain positive extra-performance from an ex-ante portfolio optimization decreases significantly and countries that show, independently with respect to the RAP considered, the higher number of years with positive extra-returns are the United Kingdom, Sweden and Italy.

The mean-variance framework identified by the Sharpe index allows to obtain positive extra-returns only in six countries (Austria, Germany, Italy, Portugal, Sweden and the United Kingdom) while for all other countries the ex-ante performance is lower than the ex-post one. The best selection criteria for maximizing the gap between ex-ante and ex-post returns are the Kappa corrected for the kurtosis and the Omega ratio.

8.5 Results for international diversified portfolios

Optimal portfolio investment strategy considering all European countries is almost never focused only on one country by the role of the main country, and the number of countries considered is different on the basis of the risk proxy considered (Table 8.9).

On average, the mean-variance framework (identified by Sharpe Ratio) constructs an optimal portfolio with 45% invested in a reference country and more than ten countries included in the portfolio while the ROPs allows to optimize the risk-return trade-off investing only in one country.

The opportunity to invest internationally has an effect on the effectiveness of different proxies for identifying the optimal investment strategy for different time horizons reducing the number of portfolio rebalancing necessary every year (Table 8.10).

Table 8.7 Performance difference between ex-ante and ex-post optimal portfolio by country (2 year lag)

	Sharpe	ROPS	ROAS	Sortino	Kappa		Calmar	Sterling	Burke	VaR	CVaR	MVar	Omega
					(n = 3)	(n = 4)							
AT	Mean	0.58%	-0.01%	0.00%	0.00%	0.00%	0.00%	-0.01%	-0.02%	-0.41%	0.00%	0.62%	-0.01%
	N° pos	3	3	4	5	5	4	3	3	2	4	4	3
BE	Mean	-1.25%	-3.33%	-2.39%	-1.22%	0.00%	-2.48%	-0.87%	-0.56%	-2.65%	-2.48%	-0.87%	-1.31%
	N° pos	2	1	3	3	3	1	2	2	0	1	2	3
DK	Mean	-0.48%	-0.52%	-1.08%	-0.07%	0.74%	-0.53%	0.00%	0.00%	-0.06%	-0.53%	-0.50%	0.90%
	N° pos	2	2	3	3	6	2	5	4	2	2	2	4
FI	Mean	-1.61%	-0.43%	-0.61%	0.00%	-0.09%	-3.28%	0.00%	-0.67%	-4.07%	-3.28%	-2.94%	1.55%
	N° pos	1	3	3	4	3	1	3	2	2	1	1	6
FR	Mean	-7.76%	-4.42%	-1.46%	-8.07%	0.98%	0.00%	0.00%	0.00%	0.00%	0.00%	-3.94%	0.00%
	N° pos	1	1	1	1	5	4	4	4	4	4	1	5
DE	Mean	-0.01%	0.00%	0.01%	0.00%	1.14%	0.26%	-0.32%	-0.80%	0.26%	0.26%	0.00%	0.00%
	N° pos	3	5	3	4	5	5	3	3	5	5	4	5
GR	Mean	-0.08%	-1.42%	0.00%	-2.99%	0.58%	0.00%	-0.16%	-0.14%	-0.17%	0.00%	-3.00%	0.00%
	N° pos	3	2	4	2	5	4	3	3	3	4	2	4
IE	Mean	-3.39%	-0.01%	-7.18%	-8.16%	1.43%	-6.50%	-7.18%	-7.18%	-9.19%	-6.50%	-2.47%	0.00%
	N° pos	2	3	2	2	5	1	2	2	1	1	2	4
IT	Mean	-2.47%	-0.21%	-2.34%	0.00%	0.00%	-4.51%	-0.99%	-3.29%	-3.02%	-4.51%	-1.59%	1.75%
	N° pos	1	3	2	4	6	0	2	1	2	0	2	4
LU	Mean	-0.12%	-0.24%	-0.20%	0.00%	-0.03%	3.67%	3.26%	2.89%	4.03%	3.67%	-0.20%	0.97%
	N° pos	2	5	3	3	3	5	4	4	4	5	2	4

Continued

Table 8.7 Continued

	Sharpe	ROPS	ROAS	Sortino	Kappa (n = 3)	Kappa (n = 4)	Calmar	Sterling	Burke	VaR	CVaR	MVaR	Omega
NL	Mean	-0.58%	-0.12%	0.00%	0.00%	0.50%	0.00%	-0.71%	0.00%	0.00%	0.00%	-0.10%	-0.07%
	N° pos	3	3	5	5	6	4	3	4	4	4	3	3
NO	Mean	-0.16%	-4.31%	-1.97%	-1.58%	0.80%	0.99%	2.81%	2.33%	0.76%	0.99%	0.88%	-0.89%
	N° pos	3	2	2	3	6	5	5	5	4	5	4	3
PT	Mean	-0.03%	-0.53%	-0.28%	-0.28%	-0.01%	-0.85%	-0.25%	-0.51%	-0.36%	-0.85%	-0.37%	-0.70%
	N° pos	2	2	3	3	3	1	3	1	2	1	3	3
ES	Mean	0.00%	0.00%	-0.07%	0.00%	-2.65%	0.00%	0.46%	0.45%	0.38%	0.00%	0.00%	2.44%
	N° pos	4	6	3	6	1	4	5	5	5	4	4	5
SE	Mean	-0.45%	-0.35%	-0.35%	0.00%	0.35%	-2.43%	-0.74%	-2.43%	-0.24%	-2.43%	-1.15%	0.00%
	N° pos	2	3	3	4	4	2	2	1	3	2	2	4
CH	Mean	-1.43%	-1.65%	0.03%	0.00%	-1.03%	0.07%	0.28%	-0.41%	-0.10%	0.07%	-1.25%	-1.65%
	N° pos	0	3	5	4	2	4	5	2	3	4	0	3
TR	Mean	-2.28%	-2.40%	-6.46%	-4.29%	1.82%	0.00%	0.00%	0.00%	0.00%	0.00%	-2.13%	-10.39%
	N° pos	3	3	3	3	4	4	4	4	4	4	3	1
UK	Mean	2.08%	0.22%	0.19%	-0.67%	1.73%	0.21%	0.22%	0.11%	2.28%	0.21%	0.04%	-4.34%
	N° pos	6	3	6	3	3	5	4	4	5	5	3	2

Note: The table presents country by country the median difference of returns and the number of years with positive differences obtained on the overall time horizon for optimal ex-ante and ex-post portfolios constructed using different RAP measures.

Source: Cushman and Wakefield data processed by the author.

Table 8.8 Performance difference between ex-ante and ex-post optimal portfolio by country (3 year lag)

		Sharpe	ROPS	ROAS	Sortino	Kappa		Calmar	Sterling	Burke	VaR	CVaR	MVaR	Omega
						(n = 3)	(n = 4)							
AT	Mean	0.00%	0.00%	0.00%	0.00%	0.20%	0.00%	0.00%	0.21%	0.11%	-1.56%	0.00%	0.29%	0.00%
	N° pos	2	5	2	3	4	5	3	3	3	0	3	3	2
BE	Mean	-1.02%	3.93%	-4.78%	-4.78%	-4.78%	-0.52%	-4.78%	-3.25%	-3.35%	-2.62%	-4.78%	-1.62%	0.12%
	N° pos	0	5	1	2	2	2	1	1	1	1	1	1	3
DK	Mean	-2.19%	1.74%	-0.62%	-0.09%	-0.15%	2.37%	-0.91%	0.00%	0.00%	-2.84%	-0.91%	-2.23%	0.00%
	N° pos	1	4	1	2	2	5	1	4	3	1	1	1	4
FI	Mean	-4.16%	2.72%	-5.76%	-1.22%	0.00%	-0.69%	-3.98%	0.00%	-2.03%	0.00%	-3.98%	-5.31%	0.00%
	N° pos	1	3	2	2	3	2	1	3	2	3	1	1	5
FR	Mean	-5.01%	6.50%	-2.73%	-1.06%	-6.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-4.68%	0.00%
	N° pos	2	4	2	1	2	3	2	3	3	3	2	2	4
DE	Mean	0.25%	-2.79%	0.00%	-0.07%	0.00%	-0.15%	0.00%	-0.08%	-1.05%	0.00%	0.00%	0.40%	0.00%
	N° pos	4	2	5	1	4	1	4	2	2	3	4	4	5
GR	Mean	-4.22%	0.81%	-4.16%	-4.89%	-4.89%	2.05%	-4.89%	-1.48%	-2.40%	-1.96%	-4.89%	-3.96%	0.00%
	N° pos	2	4	0	2	1	5	2	2	2	2	2	1	3
IE	Mean	-5.87%	-2.11%	3.06%	-8.49%	-8.49%	1.83%	-8.49%	-8.49%	-8.49%	-8.49%	-8.49%	-5.87%	0.00%
	N° pos	1	2	4	1	2	5	0	1	1	1	0	1	3
IT	Mean	0.20%	0.27%	0.00%	0.00%	0.00%	-0.13%	-0.13%	2.10%	2.10%	1.86%	-0.13%	0.02%	0.13%
	N° pos	4	3	4	3	4	5	2	3	3	3	2	3	3
LU	Mean	-0.26%	0.00%	-0.47%	-0.85%	-0.47%	-0.05%	4.58%	6.52%	4.59%	5.33%	4.58%	-0.56%	1.96%
	N° pos	1	4	2	1	2	1	4	3	3	4	4	1	4

Continued

Table 8.8 Continued

	Sharpe	ROPS	ROAS	Sortino	Kappa (n = 3)	Kappa (n = 4)	Calmar	Sterling	Burke	VaR	CVaR	MVaR	Omega
NL	Mean	-0.11%	1.53%	-0.52%	0.00%	0.16%	0.00%	-0.46%	0.00%	0.00%	0.00%	-0.19%	0.00%
	N° pos	2	4	2	4	4	3	2	3	3	3	2	3
NO	Mean	-3.08%	1.75%	-3.08%	0.00%	2.67%	1.48%	-1.10%	-0.26%	1.52%	1.48%	3.28%	0.00%
	N° pos	2	5	2	3	5	3	2	2	3	3	3	3
PT	Mean	0.30%	0.00%	-0.99%	0.00%	-0.05%	0.38%	0.96%	-0.71%	0.00%	0.38%	1.06%	0.00%
	N° pos	3	4	2	2	2	3	3	2	3	3	3	3
ES	Mean	-0.30%	0.00%	0.00%	-0.35%	2.39%	-0.23%	0.00%	0.00%	0.00%	-0.23%	-0.08%	6.63%
	N° pos	2	3	5	2	5	2	3	3	3	2	2	5
SE	Mean	1.04%	0.00%	1.46%	0.00%	0.00%	0.53%	0.53%	0.53%	0.53%	0.53%	0.00%	0.00%
	N° pos	3	5	4	4	3	3	3	3	3	3	3	3
CH	Mean	-1.93%	0.00%	-3.38%	0.32%	-0.90%	-3.23%	0.40%	-3.27%	-3.65%	-3.23%	-0.46%	-3.38%
	N° pos	-	3	2	4	1	2	4	2	2	2	1	2
TR	Mean	-8.53%	12.93%	-4.80%	-10.19%	2.41%	-12.70%	0.00%	-12.93%	-12.70%	-12.70%	-7.36%	0.00%
	N° pos	1	4	2	2	3	2	2	2	2	2	1	1
UK	Mean	6.74%	-0.39%	0.16%	0.00%	0.00%	1.57%	0.39%	0.00%	4.12%	1.57%	0.20%	-3.90%
	N° pos	4	2	4	4	3	5	3	3	5	5	4	2

Note: The table presents country by country the median difference of returns and the number of years with positive differences obtained on the overall time horizon for optimal ex-ante and ex-post portfolios constructed using different RAP measures.

Source: Cushman and Wakefield data processed by the author.

Table 8.9 Portfolio allocation for internationally diversified portfolios

		Kappa												
		Sharpe	ROPS	ROAS	Sortino	(n = 3)	(n = 4)	Calmar	Sterling	Burke	VaR	CVaR	MVaR	Omega
2006	MRC	27%	100%	100%	100%	100%	56%	94%	65%	17%	34%	94%	38%	100%
	NC	15	1	1	1	18	7	18	18	18	18	7	9	1
2007	MRC	19%	100%	100%	100%	100%	100%	100%	73%	44%	88%	100%	58%	85%
	NC	18	1	1	1	1	1	18	18	18	18	1	18	3
2008	MRC	20%	100%	100%	100%	100%	100%	100%	82%	43%	49%	100%	41%	56%
	NC	18	1	1	1	1	1	18	18	18	18	1	18	10
2009	MRC	55%	100%	100%	100%	100%	100%	100%	82%	78%	72%	100%	48%	99%
	NC	9	1	1	1	1	1	18	18	14	18	1	18	6
2010	MRC	51%	100%	89%	21%	99%	61%	100%	72%	53%	96%	100%	71%	100%
	NC	5	1	2	9	2	2	1	6	13	8	1	8	1
2011	MRC	75%	100%	92%	46%	99%	41%	100%	98%	89%	95%	100%	62%	100%
	NC	2	1	2	13	9	18	1	6	13	17	1	5	1
2012	MRC	80%	100%	92%	47%	78%	51%	100%	93%	75%	85%	100%	83%	100%
	NC	2	1	4	13	18	18	1	13	11	17	1	5	1
2013	MRC	30%	100%	100%	100%	100%	56%	100%	76%	21%	60%	100%	31%	100%
	NC	14	1	1	1	1	18	1	17	18	18	1	14	1
Overall	MRC	45%	100%	97%	77%	97%	71%	99%	80%	53%	72%	99%	54%	92%
	NC	10.38	1.00	1.88	5.25	4.50	9.75	2.63	14.25	15.38	16.50	2.63	11.88	3.13

Note: The table presents year by year the percentage of investment in the main reference country (MRC) and the number of countries (NC) in the portfolio. Source: Cushman and Wakefield data processed by the author.

Table 8.10 Performance difference between ex-ante and ex-post optimal international portfolios by country

	2007						2008						2009						2010						2011						2012						2013					
	R		D		R		D		R		D		R		D		R		D		R		D		R		D		R		D		R		D							
Sharpe	1Y	-4%	0.33	-12%	0.63	15%	0.81	5%	0.35	5%	0.99	19%	0.55	12%	0.42																											
	2Y	-	-	-29%	0.63	9%	0.66	16%	0.94	8%	0.98	4%	0.76	17%	0.87																											
	3Y	-	-	-	-	-18%	0.66	-18%	0.79	-13%	1.02	-3%	0.68	-5%	0.78																											
ROPS	1Y	0%	0.00	-16%	0.62	76%	0.36	22%	1.26	6%	0.00	8%	0.00	0%	0.00																											
	2Y	-	-	-28%	0.62	72%	0.98	50%	1.23	73%	1.26	67%	0.00	60%	0.00																											
	3Y	-	-	-	-	6%	0.98	-44%	1.41	-40%	1.23	-40%	1.26	-37%	0.00																											
ROAS	1Y	0%	0.00	-16%	0.62	52%	1.11	18%	0.04	18%	0.06	4%	1.36	0%	0.00																											
	2Y	-	-	-28%	0.62	48%	1.35	71%	1.14	36%	0.09	21%	1.36	8%	1.36																											
	3Y	-	-	-	-	-18%	1.35	-22%	1.36	-26%	1.15	-17%	1.35	-23%	1.36																											
Sortino	1Y	0%	0.00	-16%	0.62	65%	0.73	11%	0.54	4%	0.01	-6%	1.11	0%	0.00																											
	2Y	-	-	-28%	0.62	60%	1.08	70%	0.85	10%	0.54	-8%	1.11	-15%	1.11																											
	3Y	-	-	-	-	-6%	1.08	-24%	1.12	-28%	0.86	-29%	1.08	-28%	1.11																											
Kappa (n = 3)	1Y	0%	0.00	-16%	0.62	70%	0.61	57%	0.00	53%	0.24	31%	1.28	0%	0.00																											
	2Y	-	-	-28%	0.62	66%	0.01	74%	0.61	41%	0.25	31%	1.41	11%	1.28																											
	3Y	-	-	-	-	0%	0.01	-20%	0.01	-27%	0.51	-35%	1.41	-42%	1.41																											
Kappa (n = 4)	1Y	0%	0.00	-16%	0.62	76%	0.70	42%	0.62	15%	0.10	18%	0.15	7%	0.19																											
	2Y	-	-	-28%	0.62	71%	1.23	86%	0.81	76%	0.62	8%	0.21	-1%	0.13																											
	3Y	-	-	-	0.00	5%	1.23	-8%	1.07	-16%	0.86	-16%	0.64	-21%	0.19																											

Calmar	1Y	0%	0.00	-59%	0.00	38%	0.00	-2%	0.00	6%	0.00	8%	0.00	22%	1.37
	2Y	-	-	0%	0.00	97%	0.00	58%	0.00	65%	0.00	67%	0.00	81%	1.37
	3Y	-	-	-	0.00	0%	0.00	-39%	0.00	-32%	0.00	-30%	0.00	-16%	1.37
Sterling	1Y	6%	1.00	-2%	1.00	2%	0.96	15%	0.45	15%	0.05	20%	0.19	11%	0.99
	2Y	-	-	-5%	1.00	4%	0.98	2%	1.19	15%	0.42	31%	0.23	23%	1.13
	3Y	-	-	-	-	-21%	0.98	-15%	1.20	-16%	1.16	2%	0.31	-4%	1.16
Burke	1Y	2%	0.48	1%	0.69	12%	0.81	17%	0.61	15%	0.21	22%	0.66	4%	0.33
	2Y	-	-	-5%	0.69	3%	0.82	3%	1.02	3%	0.41	29%	0.81	14%	0.81
	3Y	-	-	-	-	-15%	0.82	-15%	0.83	-17%	0.91	3%	0.51	-4%	0.90
VaR	1Y	2%	0.70	-4%	0.19	11%	1.19	17%	0.01	15%	0.13	19%	0.26	10%	0.57
	2Y	-	-	-12%	0.19	-3%	1.30	10%	1.18	25%	0.14	29%	0.36	21%	0.78
	3Y	-	-	-	-	-25%	1.30	-23%	1.13	-26%	1.11	3%	0.37	-3%	0.87
CVaR	1Y	0%	0.00	-59%	0.00	38%	0.00	-2%	0.00	6%	0.00	8%	0.00	22%	1.37
	2Y	-	-	0%	0.00	97%	0.00	58%	0.00	65%	0.00	67%	0.00	81%	1.37
	3Y	-	-	-	-	0%	0.00	-39%	0.00	-32%	0.00	-30%	0.00	-16%	1.37
MVAR	1Y	-4%	0.22	-8%	0.69	13%	0.30	9%	0.66	17%	0.81	13%	0.65	5%	0.37
	2Y	-	-	-24%	0.69	-6%	0.94	0%	0.64	19%	0.16	8%	0.50	9%	0.93
	3Y	-	-	-	-	-15%	0.94	-23%	0.75	-11%	0.38	-5%	0.54	-17%	0.73
Omega	1Y	-4%	0.33	-12%	0.63	15%	0.81	5%	0.35	5%	0.99	19%	0.55	12%	0.42
	2Y	-	-	-29%	0.63	9%	0.66	16%	0.94	8%	0.98	4%	0.76	17%	0.87
	3Y	-	-	-	-	-18%	0.66	-18%	0.79	-13%	1.02	-3%	0.68	-5%	0.78

Note: The table presents country by country the median difference of returns (R) and the distance (D) between optimal ex-ante and ex-post portfolios constructed using different RAP measures.

Source: Cushman and Wakefield data processed by the author.

Results show that the mean-variance scenario does not allow to maximize the return gap and the persistence of the portfolio composition over time independently with respect to the length of the time horizon analysed (from 1 to 3 year). The choice to consider also international diversification opportunities does not allow to identify only one RAP measure that outperform with respect to all the others for the full time horizon, but the RAP that allow to maximize the positive return gap and minimize the portfolio turnover change over time.

8.6 Conclusion

The lack of normality of real estate return does not justify the use of the standard mean-variance framework for constructing the optimal portfolio allocation. In order to remove the assumption of normality, alternative RAP measures can be used for identifying the optimal ex-ante portfolio allocation. Empirical evidence presented in the chapter demonstrates that the choice of the RAP measure affects significantly the asset allocation among real estate sector and the coherence between ex-ante and ex-post optimal strategy. Effects are not limited to the portfolio turnover over time but also to the yearly performance achieved and the probability to obtain unexpected positive or negative extra-returns from the investment. Considering the opportunity to invest internationally, the mean-variance framework identified by the Sharpe Ratio underperforms frequently with respect to other RAP selection criteria, but it is less easy to identify a risk-return measure that allows always to maximize the return and minimize the portfolio turnover.

Empirical evidence provided demonstrates the usefulness of alternative RAP measures for identifying the optimal portfolio allocation and raise the question if real estate investment managers construct portfolios that are coherent or not with the optimization process proposed. An empirical investigation of the strategy adopted by European real estate asset managers could provide insights in order to interpret their strategy and evaluate the implication of results obtained for an investment strategy purpose.

Notes

1. The kappa measure could be constructed by also considering higher orders but, for the purpose of the analysis, we set an upper limit of four for the order.
2. On the basis of the literature, only the five highest losses are normally considered (Eling and Schuhmacher, 2007).

3. On the basis of the literature, only the five highest losses are normally considered (Eling and Schuhmacher, 2007).
4. All measures constructed based on the VaR consider the minimum threshold of 95% normally used in the evaluation of hedge funds (Guizot, 2007).

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9

Asset Allocation Strategy and Market Return for Real Estate Institutional Investors

Gianluca Mattarocci

9.1 Introduction

Portfolio investment choices can have a direct impact on the performance of any type of real estate investment vehicles (hereinafter REIV), and the effect could be even more important than other financial ratios of the instrument (like leverage, efficiency, etc.) (Redman and Manakyan, 1995). Literature focuses the attention on the role of different asset classes in REIV's portfolio and provides evidence that portfolio construction choices and the role of different sectors can affect the market risk of the investment strategy (Newell and Peng, 2006). In the standard mean-variance scenario assumed in the Sharpe Ratio, the choice to focus prevalently on one sector with respect to another one can affect significantly the optimal portfolio choice (Newell and Fischer, 2009).

The analysis of the differences between a theoretical optimal and a real asset allocation for REIVs is still limited to the standard mean-variance framework, and there are some evidences that support the existence of a persistent misalignment among them due to the high transaction cost related to a real estate portfolio rebalance (i.e., Mattarocci and Siligardos, 2013). Empirical studies demonstrate that the assumption of normality is not reasonable for real estate investment for both real estate underlying assets (e.g., Cheng and Liang, 2009) and the REIVs performance (e.g., Giannotti and Mattarocci, 2013).

No studies compare the portfolio misspecification for REIVs considering different RAP measures that are not assuming the normality of returns in order to evaluate if the misalignment persist independently with respect to the risk measure choice. Moreover, there is still

no evidence on the market capability to penalize the existence of gaps between real and optimal allocation and the economic advantage/loss for the REIV's manager related to defining an optimal asset allocation on the basis of a specific risk measure.

The chapter summarizes the main findings available in literature on the comparison between real and optimal investment strategies for REIV (Section 9.2) and provides an empirical analysis on a sample on European REIV for the time period 2006–2013 (Section 9.3). The analysis proposed compares the optimization procedure based on the mean-variance scenario with alternative approaches that remove the assumption of normality of returns (Section 9.4) and shows the difference in the portfolio misalignment proxies related to the choice of the risk proxy and evaluates the difference in the return achieved (Section 9.5). Results obtained confirm that the risk proxy choice significantly affects the results and, even if the mean-variance approach describes better the current portfolio manager's choices, the choice to remove the assumption of return's normality could allow to identify portfolio composition strategies that allow to maximize the return.

9.2 Real vs optimal asset allocation for indirect real estate investment

The diversification within assets in the real estate market aims to recognize distinct groups of sub-asset classifications for maximizing the homogeneity within groups and maximizing the heterogeneity between groups. The greater the intra-asset diversification of a portfolio, the greater the reduction in overall unsystematic risk, and the more likely the portfolio will reach an optimal performance risk trade-off (Seiler et al., 1999).

Empirical evidence demonstrates that even in the same geographical area, the diversification strategy allows a reduction in the unsystematic risk (e.g., Grissom and Walther, 1987), and real estate investment vehicles investing in different types of real estate assets frequently achieve better risk-return trade-off for the shareholders (Miles and McCue, 1982). The advantages related to a property type diversification strategy could be affected by the details about the asset classes available because some asset types (e.g., industrial sector) are more standardized with respect to others (e.g., retail) (Cullen, 1993).

Lee and Byrne (1998) discussed the role of sector with respect to the geographical area in constructing the optimal portfolio investment strategy and found that advantages related to a geographic diversification strategy are higher when countries are not neighbouring and

economic market features of each market are quite different. Due to the high costs related to managing an international diversified real estate portfolio, larger funds are more likely to be diversified internationally to reduce the market risk (MacCowan, 2008). A recent study performed by Heydenreich (2010) pointed out that economic strategies based on economic diversification show superior risk-adjusted returns than those of the traditional, strictly geographical segmentation. The analysis of the international diversification strategy of REITs demonstrates that (excluding European ones) all their portfolios are significantly home biased, and only a few real estate investment vehicles are exposed internationally (Gibilario and Mattarocci, 2015).

Literature shows that the frequency of real estate rebalancing for the institutional investor is lower with respect to other areas of the asset management industry mainly due to the high transaction costs that characterize the real estate transactions, and markets featured by higher transaction costs are those in which institutional investors rebalance less often (Seiler et al., 1999). The existence and the amount of the transaction costs implies a longer average holding period in real estate vehicles (MacCowan, 2008), but the existence of new and unexpected investment opportunities can encourage fund managers to increase their portfolio rebalancing activity. Empirical evidence on the comparison between optimal and real asset allocation of real estate investment vehicles is still limited, but there is evidence that portfolio managers' investment strategy is not driven by market trends even if the optimal theoretical portfolios outperform real ones in the standard mean-variance Markowitz framework (Mattarocci and Siligardos, 2013).

9.3 Sample and summary statistics

The analysis of the portfolio investment choices of indirect real estate vehicles considers a sample of REITs and non-REITs listed in the EPRA database that are operating in Europe in the time period 2006–2013 (Table 9.1).

The overall sample includes 119 real estate investment vehicles of which around the 70% do not have the REIT status. The country most represented is the United Kingdom while the less represented ones are Denmark, Greece, Norway and Spain.

For each of the REITs, portfolio geo-sectoral diversification data, year-by-year, are collected through annual reports published on the company's website in order to evaluate differences in the asset allocation strategy. Summary statistics on the portfolio allocation are presented in the Table 9.2.

Table 9.1 Sample description

Country	Country code	All	REIT	Non-REIT
Austria	AU	4	0	4
Belgium	BE	7	7	0
Denmark	DK	1	0	1
Finland	FI	3	0	3
France	FR	10	9	1
Germany	GE	16	3	13
Greece	GR	2	1	1
Italy	IT	4	2	2
Netherlands	NL	8	8	0
Norway	NO	2	0	2
Spain	SP	2	0	2
Sweden	SW	8	0	8
Switzerland	CH	5	0	5
United Kingdom	UK	47	14	33
Overall	–	119	44	75

Source: EPRA data processed by the author.

Table 9.2 Asset allocation for European real estate investment vehicles

	Office	Retail	Industrial and logistic	Residential	Other	Home country REIV%	Mean number of countries for diversified REIV*
2006	32.07%	29.61%	16.00%	13.21%	9.10%	86.33%	5.13
2007	30.09%	30.09%	15.59%	13.75%	10.48%	86.20%	5.55
2008	31.55%	30.44%	15.04%	13.42%	9.54%	85.46%	4.83
2009	32.42%	30.10%	15.09%	13.16%	9.23%	84.95%	4.75
2010	32.52%	30.65%	14.46%	12.76%	9.61%	84.60%	4.68
2011	32.03%	29.85%	15.52%	12.97%	9.64%	84.09%	4.69
2012	31.75%	30.35%	15.00%	12.68%	10.22%	83.84%	4.88
2013	31.91%	30.62%	14.78%	12.96%	9.72%	83.99%	4.71
Overall	32.65%	28.91%	15.19%	13.19%	10.06%	84.91%	4.88

Notes: *The mean number of countries considers only the real estate investment vehicles that are not investing only in the home country.

Source: Annual report data processed by the author.

Real estate investment vehicles are normally more exposed on the office and retail sector with respect to others, but there are some portfolios specialized (on average, 10%) in other asset classes (other) with respect to the standard four type of assets.

As demonstrated by the literature (Gibilaro and Mattarocci, 2015), real estate portfolios are prevalently home biased, and on average for the overall time period, around the 85% invests only in the home country. Geographically diversified real estate funds invest, on average, in around five different markets, and the number has not changed significantly over time.

9.4 Methodology

The analysis is focused on the difference between the current real estate allocation adopted by real estate investment vehicles and the optimal strategy identified on the basis of the maximization of alternative RAP measures. The focus will be on the distance between real and optimal strategy and on the impact of the portfolio misalignment on the yearly performance for the shareholder. The yearly performance is computed on the basis of the following formula:

$$R_{it} = \ln \left(\frac{P_{it} + D_{it}}{P_{it-1}} \right) \tag{9.1}$$

where the yearly return (R_{it}) is computed as the natural logarithm of the ratio between the current price of the real estate investment vehicle's share at time t (P_{it}) plus dividends and refunds (D_{it}) divided for the price at the end of the year before (P_{it-1}).

In order to identify the optimal investment strategy for different REIVs operating in different countries, the analysis considers the standard Sharpe Ratio and a set of alternative RAPs constructed on the excess return with respect to the risk free rate. In formulas:

$${}_t \text{Sharpe}_{t_2} = \frac{{}_t R_{t_2} - {}_t R_{t_2}^{Rf}}{\sigma(R_t)} \tag{9.2}$$

$${}_t ROPS_{t_2} = \frac{{}_t R_{t_2} - {}_t R_{t_2}^{Rf}}{\frac{1}{t_2 - t_1} \sum_{t=t_1}^{t_2} \max |R_t^{Rf} - R_t, 0|^0} \tag{9.3}$$

$${}_t ROAS_{t_2} = \frac{{}_t R_{t_2} - {}_t R_{t_2}^{Rf}}{\frac{1}{t_2 - t_1} \sum_{t=t_1}^{t_2} \max (R_t^{Rf} - R_t, 0)^1} \tag{9.4}$$

$${}_t Sortino_{t_2} = \frac{{}_t R_{t_2} - {}_t R_{t_2}^{Rf}}{\sqrt[2]{\frac{1}{t_2 - t_1} \sum_{t=t_1}^{t_2} \max (R_t^{Rf} - R_t, 0)^2}} \tag{9.5}$$

$${}_t Kappa_{t_2}^{n=3} = \frac{{}_t R_{t_2} - {}_t R_{t_2}^{Rf}}{\sqrt[3]{\frac{1}{t_2 - t_1} \sum_{t=t_1}^{t_2} \max (R_t^{Rf} - R_t, 0)^3}} \tag{9.6}$$

$${}_t Kappa_{t_2}^{n=4} = \frac{{}_t R_{t_2} - {}_t R_{t_2}^{Rf}}{\sqrt[4]{\frac{1}{t_2 - t_1} \sum_{t=t_1}^{t_2} \max (R_t^{Rf} - R_t, 0)^4}} \tag{9.7}$$

$${}_t Calmar_{t_2} = \frac{{}_t R_{t_2} - {}_t R_{t_2}^{Rf}}{|{}_t MDD_{t_2}|} \tag{9.8}$$

$${}_t Sterling_{t_2} = \frac{{}_t R_{t_2} - {}_t R_{t_2}^{Rf}}{\sum_{i=1}^n \frac{1}{n} |{}_t MDD_{t_2}^i|} \tag{9.9}$$

$${}_t Burke_{t_2} = \frac{{}_t R_{t_2} - {}_t R_{t_2}^{Rf}}{\sqrt{\sum_{i=1}^n \frac{1}{n} ({}_t MDD_{t_2}^i)^2}} \tag{9.10}$$

$${}_t VaR Ratio_{t_2} = \frac{R_t - R_{rf}}{{}_t VaR_{t_2}} \tag{9.11}$$

$${}_t CVaR Ratio_{t_2} = \frac{{}_t R_{t_2} - {}_t R_{t_2}^{Rf}}{{}_t CVaR_{t_2}} \tag{9.12}$$

$${}_{t_1}MVaR\ Ratio_{t_2} = \frac{{}_{t_1}R_{t_2} - {}_{t_1}R_{t_2}^{Rf}}{{}_{t_1}MVaR_{t_2}} \tag{9.13}$$

$${}_{t_1}Sharpe\ Omega_{t_2} = \frac{{}_{t_1}R_{t_2} - {}_{t_1}R_{t_2}^{Rf}}{e^{-rf} {}_{t_1}E\left[\max({}_{t_1}R_{t_2} - {}_{t_1}R_{t_2}^{Rf}, 0)\right]_{t_2}} \tag{9.14}$$

For further details about the formula construction, see explanations provided in the methodology section of the Chapter 8.

REIVs are classified on the basis of degree of coherence between the theoretical investment strategy identified using different RAP measures measured by the distance measure. The distance measure is computed year-by-year on the basis of the following formula:

$$d(National)_t^{k,m} = \sqrt{\sum_{i=1}^n \left(w_{it}^{k,m} - w(National)_{it}^{k,m,*}\right)^2} \tag{9.15a}$$

$$d(International)_t^{k,m} = \sqrt{\sum_{i=1}^n \left(w_{it}^{k,m} - w(International)_{it}^{k,m,*}\right)^2} \tag{9.15b}$$

where for each of the K-RAP measures the theoretical asset allocation is defined in order to maximize the RAP value on the basis of the index trend on the national ($w(National)_{it}^{k,m,*}$) and the international context ($w(International)_{it}^{k,m,*}$) and the distance measure is an Euclidean distance proxy (e.g., Mattarocci and Siligardos, 2013).¹

On the basis of the distance measure, real estate investment vehicles are classified in quartiles from the more coherent (first quartile) to the less coherent (fourth quartile), and the paper provides some summary statistics on the difference in the median performance achieved for each year and for each country. Using a Mann-Whitney test, the paper presents a comparison between REIVs with more or less coherent portfolio allocations that have comparable return distribution and the comparison between REIVs that modified their strategy in order to reduce portfolio misalignment and those that do not.

9.5 Results

The comparison of the real asset allocation with the theoretical optimal investment strategy does not show a clear time trend during the time horizon considered (Table 9.3).

Table 9.3 Distance proxy for home biased and internationally diversified benchmarks by year

		2006	2007	2008	2009	2010	2011	2012	2013
Sharpe	HB	0.91	0.76	0.97	1.00	1.07	1.13	1.10	1.02
	INT	0.68	0.63	0.61	0.57	0.69	0.89	0.64	0.63
ROPS	HB	1.17	1.12	1.12	1.13	1.03	0.94	1.17	1.23
	INT	1.22	1.22	0.74	0.76	1.00	1.05	1.02	1.02
ROAS	HB	1.00	1.00	1.05	0.92	1.03	1.15	0.96	1.05
	INT	1.22	1.22	0.74	0.91	0.92	0.98	1.02	1.02
Sortino	HB	1.00	1.08	1.02	1.03	1.12	1.08	0.96	1.05
	INT	1.22	1.22	0.74	0.77	0.63	0.67	1.02	1.02
Kappa (n = 3)	HB	1.09	1.08	1.03	1.17	1.07	0.99	0.97	1.02
	INT	1.22	1.22	0.74	1.22	1.21	1.15	1.02	1.02
Kappa (n = 4)	HB	0.97	1.08	1.10	1.07	1.01	1.04	0.82	1.13
	INT	1.22	1.22	0.74	0.59	0.60	0.68	0.72	0.63
Calmar	HB	0.91	1.00	0.99	1.07	1.00	1.18	1.00	0.96
	INT	1.04	1.04	1.03	1.05	1.00	1.05	1.02	1.00
Sterling	HB	1.03	1.04	1.00	1.10	1.07	1.15	1.00	0.96
	INT	0.80	0.78	0.78	0.73	1.00	1.02	0.89	0.99
Burke	HB	1.03	1.04	1.00	1.10	1.07	1.15	1.00	0.96
	INT	0.80	0.78	0.78	0.73	1.00	1.02	0.89	0.99
VaR	HB	1.03	1.03	0.99	1.00	0.98	1.17	1.00	0.99
	INT	0.97	0.66	0.82	1.01	0.98	0.99	0.82	0.68
CVaR	HB	0.91	1.00	0.99	1.07	1.00	1.18	1.00	0.96
	INT	1.04	1.04	1.03	1.05	1.00	1.05	1.02	1.00
MVar	HB	0.80	0.67	0.99	1.11	1.07	1.11	0.92	0.88
	INT	0.72	0.72	0.73	0.88	0.87	0.93	0.58	0.61
Omega	HB	1.00	0.84	1.10	1.13	1.03	1.18	0.95	1.02
	INT	0.77	0.69	0.72	1.00	0.92	0.93	1.02	1.02

Note: The table presents the median annual Euclidean distance of the real asset allocation with respect to the optimal one identified using alternative RAP measures and considered a pure home biased benchmark (HB) and international diversified one (INT).

Source: Annual report and Cushman and Wakefield data processed by the author.

The distance between real and optimal allocation is at the maximum on average in 2011 for both home biased and diversified benchmark portfolios, but there are significant differences among different RAP measures. The average misalignment between the two portfolios is at the maximum if only domestic investments are considered for all the RAP measures; the mean-variance approach identified by the Sharpe Ratio seems to be the criterion more considered for constructing real estate investment vehicles portfolios for international diversified portfolios and among the best criteria (with VaR, CVaR and MVar) for

home biased investment strategies. Considering the median distance year-by-year, ROPS and Kappa corrected for the kurtosis identifying theoretical portfolios that are less coherent with the real asset allocation for, respectively, home biased and international diversified investment strategies.

A separate analysis of country-by-country data (Table 9.4) provides coherent results with the previous analysis identifying the Sharpe Ratio as the more coherent optimization criterion for the majority of countries, and the less coherent approach is the one based on the ROPS for home biased portfolios; Kappa corrected for the kurtosis in the scenario of the international diversification strategy.

The analysis of the performance achieved does not show a clear advantage for managers to align to the optimal investment strategy because frequently investment strategies that are more coherent with the theoretical strategy provide median performance lower than those strategies not aligned (Table 9.5).

In almost all scenarios and for all RAPs considered, the median difference among returns obtained by most (Q1) and least (Q4) aligned strategies show a premium assigned by the market to real estate investment vehicles that invest following an optimization process. The ROPS and the Kappa corrected for the kurtosis are the only RAPs for which the difference of the median returns is lower than zero (median return for REIV in the first quarter is lower than in the fourth quarter), and so the market is not assigning any return premium for a lower level of misalignment.

The last type of analysis considers if the market reacts to a change in the portfolio allocation strategy that increases or reduces the distance with respect to the optimal asset allocation (Table 9.6).

The analysis of median difference of return for increasing and decreasing distance investment strategies for home biased portfolios demonstrate that REIVs that move to a more coherent mean-variance optimal portfolio identified obtain a premium, but it is lower (and less significant on the basis of the Mann-Whitney test) with respect to the results reachable using a set of alternative RAP (ROPS, CVaR, MVaR and Omega).

Considering international diversification opportunities, REIVs can obtain higher performance moving toward the asset allocation defined by the Calmar Ratio, VaR, CVaR, MVaR and Omega while the choice to align the strategy to the optimal mean-variance framework is normally more penalizing with respect to the alternative solution.

Table 9.4 Distance proxy for home biased and internationally diversified benchmarks by country

	BMK	AU	BE	DK	FI	FR	GE	GR	IT	NL	NO	SP	SW	CH	UK
Sharpe	HB	1.00	0.77	1.07	0.55	0.85	1.23	0.72	0.96	1.78	1.00	1.17	0.94	0.99	1.01
	INT	0.52	0.68	0.75	0.61	0.53	1.01	0.60	0.62	0.76	0.67	0.62	0.51	0.45	0.68
ROPS	HB	1.07	1.24	1.41	1.04	0.96	1.32	1.03	1.10	1.27	1.20	1.15	0.96	1.00	1.11
	INT	0.97	1.18	0.61	1.02	1.02	1.26	0.87	1.01	1.03	0.88	1.21	1.00	0.95	0.98
ROAS	HB	0.88	1.23	0.58	0.75	0.97	1.40	0.83	1.01	1.07	0.98	0.67	0.84	0.77	1.04
	INT	0.99	1.16	0.13	1.00	1.02	1.31	0.84	1.01	0.97	0.97	1.17	1.00	0.94	0.96
Sortino	HB	0.88	1.23	-	0.95	1.00	1.35	0.76	1.01	1.08	1.00	0.67	0.90	0.86	1.06
	INT	0.86	0.91	1.15	1.00	0.89	1.19	0.81	0.94	1.05	0.91	1.04	0.84	0.81	0.89
Kappa (n = 3)	HB	0.86	1.23	-	0.97	1.04	1.41	0.87	1.06	1.17	1.00	0.89	0.86	0.77	1.03
	INT	1.09	1.20	1.38	1.29	1.15	1.35	0.98	1.13	1.24	1.12	1.22	1.02	1.03	1.06
Kappa (n = 4)	HB	0.94	1.12	1.32	1.12	0.88	1.23	1.00	1.13	1.08	1.00	1.04	0.86	0.87	1.00
	INT	0.77	0.88	0.70	0.83	0.77	1.11	0.48	0.74	0.86	0.69	0.88	0.73	0.70	0.79
Calmar	HB	0.85	1.23	0.07	0.90	0.88	1.24	1.00	1.12	1.25	1.00	0.65	0.78	0.72	1.03
	INT	0.98	1.24	0.00	1.00	1.00	1.40	0.74	0.96	0.45	1.00	1.23	1.03	1.00	0.99
Sterling	HB	0.97	1.04	1.41	0.73	1.00	1.32	0.91	1.01	1.29	1.20	1.18	0.94	0.96	1.05
	INT	0.87	1.01	0.36	0.81	0.81	1.22	0.74	0.85	1.00	0.83	1.03	0.85	0.78	0.86
Burke	HB	0.97	1.04	1.41	0.73	1.00	1.32	0.91	1.01	1.29	1.20	1.18	0.94	0.96	1.05
	INT	0.87	1.01	0.36	0.81	0.81	1.22	0.74	0.85	1.00	0.83	1.03	0.85	0.78	0.86
VaR	HB	0.86	0.84	1.24	0.99	1.01	1.33	0.91	1.11	1.29	1.00	0.74	0.79	0.74	1.02
	INT	0.84	1.07	0.17	0.82	0.79	1.21	0.56	0.69	0.53	0.88	1.10	0.85	0.80	0.82
CVaR	HB	0.85	1.23	0.07	0.90	0.88	1.24	1.00	1.12	1.25	1.00	0.65	0.78	0.72	1.03
	INT	0.98	1.24	0.00	1.00	1.00	1.40	0.74	0.96	0.45	1.00	1.23	1.03	1.00	0.99
MVaR	HB	0.88	0.81	1.17	0.59	0.85	1.24	0.78	1.00	1.13	1.00	0.94	0.81	0.75	0.95
	INT	0.75	0.94	0.39	0.78	0.72	1.11	0.45	0.68	0.58	0.86	0.92	0.72	0.66	0.72
Omega	HB	0.89	1.23	0.71	1.06	0.97	1.39	0.89	1.09	0.84	1.00	1.06	0.88	0.77	1.05
	INT	0.76	0.81	1.22	0.63	0.67	1.21	0.80	0.82	0.95	0.86	0.63	0.73	0.72	0.90

Note: The table presents the median Euclidean distance by country of the real asset allocation with respect to the optimal one identified using alternative RAP measures, considering a pure home biased benchmark (HB) and international diversified one (INT).

Source: Annual report and Cushman and Wakefield data processed by the author.

Table 9.5 Performance of real estate investment vehicles classified on the basis of the portfolio misalignment

	Home biased benchmark				International diversified benchmark				M-W (Hyp 1Q = 4Q)	
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q		
Sharpe	0.00%	5.59%	0.00%	0.00%	0.00	5.12%	0.95%	5.45%	-1.48%	1.43
ROPS	0.00%	3.12%	6.96%	0.00%	99.97%	0.46%	4.98%	5.54%	-0.12%	15.14%
ROAS	2.07%	0.75%	4.94%	-0.06%	68.00%	0.63	4.37%	5.76%	-0.12%	58.16%
Sortino	4.33%	0.46%	5.52%	-0.12%	52.95%	1.08	0.04%	7.64%	-1.35%	64.85%
Kappa (n = 3)	0.58%	0.46%	6.63%	-0.12%	27.96%	0.65	2.02%	5.54%	0.00%	11.74%
Kappa (n = 4)	0.79%	5.04%	0.00%	0.74%	51.56%	-0.15	4.91%	6.23%	-2.50%	38.30%
Calmar	5.56%	0.59%	0.00%	0.83%	88.48%	0.54	4.58%	4.29%	-0.06%	-1.18
Sterling	1.74%	2.85%	0.91%	0.56%	59.13%	2.07%	4.58%	6.91%	0.00%	23.83%
Burke	1.74%	2.85%	0.91%	0.56%	90.62%	5.18%	0.41%	6.91%	0.00%	0.94
VaR	4.31%	0.75%	0.90%	0.72%	60.62%	5.18%	0.41%	6.91%	0.00%	0.94
CVaR	5.56%	0.59%	0.00%	0.83%	84.41%	4.96%	4.97%	0.00%	0.00%	34.58%
MVaR	4.33%	0.99%	5.33%	-0.05%	59.13%	2.07%	4.58%	4.29%	-0.06%	61.64%
Omega	1.90%	0.45%	0.79%	0.63%	23.82%	2.30%	5.22%	4.75%	-0.80%	39.75%
					42.07%	0.46%	4.91%	2.19%	0.00%	23.10%
										0.14
										88.86%

Note: The table presents the median yearly return for real estate investment vehicles classified on the basis of the distance between the real portfolio and the optimal investment strategy defined by different RAPs. The distance measure is used in order to classify REIV in four quarters (Q1 are those that adopt the more coherent investment strategies while Q4 are the less coherent investment strategies). The Mann-Whitney test (M-W) compares the median values for the first and the fourth quartile, and the table presents both the z-value and the probability of Z (in italics).

Source: Annual report and Cushman and Wakefield data processed by the author.

Table 9.6 Performance of real estate investment vehicles classified on the basis of the increasing or decreasing distance with respect to optimal asset allocation

	Home biased benchmark				Internationally diversified benchmark			
	DD	ID	M-W		DD	ID	M-W	
			(Hyp DD = ID)	(Hyp DD = ID)			(Hyp DD = ID)	(Hyp DD = ID)
Sharpe	0.00%	0.00%	0.98	<i>32.71%</i>	-4.03%	0.72%	-2.75	<i>0.59%</i>
ROPS	1.49%	-1.35%	2.29	<i>2.58%</i>	-10.12%	4.04%	-4.98	<i>0.00%</i>
ROAS	-3.12%	0.55%	-2.40	<i>1.65%</i>	-9.93%	0.19%	-3.22	<i>0.13%</i>
Sortino	-3.78%	0.71%	-2.43	<i>1.50%</i>	-9.16%	3.85%	-4.69	<i>0.00%</i>
Kappa (n = 3)	0.00%	0.00%	0.61	<i>54.48%</i>	-1.05%	0.00%	-0.15	<i>87.94%</i>
Kappa (n = 4)	-3.12%	0.00%	-1.73	<i>8.46%</i>	-2.51%	0.00%	-1.74	<i>8.27%</i>
Calmar	-0.74%	0.00%	-1.15	<i>25.15%</i>	2.85%	-3.21%	2.69	<i>0.72%</i>
Sterling	-5.38%	0.39%	-2.38	<i>1.72%</i>	-4.93%	6.84%	-4.49	<i>0.00%</i>
Burke	-5.38%	0.39%	-2.38	<i>1.72%</i>	-4.93%	6.84%	-4.49	<i>0.00%</i>
VaR	0.00%	0.00%	-0.02	<i>98.16%</i>	4.29%	-14.46%	6.14	<i>0.00%</i>
CvaR	-0.74%	0.00%	1.15	<i>25.15%</i>	2.85%	-3.21%	2.69	<i>0.72%</i>
MvaR	0.00%	-2.59%	2.51	<i>1.22%</i>	0.95%	-3.09%	3.69	<i>0.02%</i>
Omega	4.23%	-5.62%	4.13	<i>0.00%</i>	11.76%	-10.12%	8.22	<i>0.00%</i>

Note: The table presents the median yearly return for real estate investment vehicles classified on the basis of the distance between the real portfolio and the optimal investment strategy defined by different RAPs. The Mann-Whitney test (M-W) compares the median values for decreasing (DD) and increasing (ID) distance REIV strategies, and the table presents both the z-value and the probability of Z (in italics).

Source: Annual report and Cushman and Wakefield data processed by the author.

9.6 Conclusion

The portfolio construction adopted by REIV's manager can be approximately described on the basis of the mean-variance optimization process, and the gap between the real the theoretical asset allocation is the lowest for all the years analysed and all the countries considered. For almost all the RAP measures considered in the analysis, the choice to reduce, at the minimum, the gap between real and theoretical is rewarded by the market with a higher performance with respect to REIVs for which the gap is at the maximum. Considering the effect of an increase or a decrease of portfolio misalignment, the market normally recognizes a premium (related to an increase of the price of the share of quota traded in the market), especially if the target portfolio is identified on the basis

of ROPS (only for home biased portfolios), VaR (only for international diversified strategies) CVaR, MVaR and Omega.

Results obtained demonstrate that the current strategy adopted by portfolio management is quite far from the theoretical optimal asset allocation, and even if literature demonstrates that real estate returns are not normal, the portfolio allocation that best describes the real strategy adopted by managers is still the mean-variance framework. There are a lot of potential areas of improvement in the asset allocation strategies adopted by real estate managers that can allow to better evaluate the risk assumed in their investment strategy and maximize the positive market reaction to a reduction of the portfolio allocation misalignment.

Note

1. For each of the real estate investment vehicles, the national context is the optimal investment strategy defined for full home biased strategy vehicle; the international context assumes the possibility of investing in all Western European countries. For each country, sector indexes are provided by Cushman and Wakefield.

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Conclusion

Gianluca Mattarocci and Dilek Pekdemir

Real estate is a heterogeneous market in Europe that displays significant differences among countries, cities and sectors. The analysis of the market data, for all types of assets, shows that the demand and the supply are different, at least on the basis of the population characteristics, the role of core assets/areas, and the lending opportunities and the standard characteristics identified for leading European markets (i.e., UK) cannot be generalized to all other markets.

Institutional investors are interested in a diversification strategy which can reduce the overall portfolio risk exposure investing in European asset classes that seems to be less correlated (i.e., Lee, 2003). The performance analysis of European countries indexes shows that the correlation is not stable over time and that there is huge differences in the performance correlations among countries before and after the crisis. The analysis of the asset types indicates a high correlation among returns for the office and the retail sectors and a lower correlation with the industrial sector. The optimal theoretical investment strategy is significantly affected by the choice of the risk proxy used for the optimization process and more complex RAP optimization procedures that allow for identifying an investment strategy characterized by a lower yearly turnover. The comparison between the real and optimal strategy adopted by real estate investment vehicles shows that the strategy adopted by the managers is not coherent with a pure optimization process, but the market normally rewards (with an increasing price of the shares or quotas) the choice to reduce the misalignment.

In the light of the archived results, real estate investment vehicles' managers can benefit from a higher level of diversification of their portfolio, especially, the abroad investment opportunities, and they have to take into account the unique characteristics of the real estate

performance. The choice to remove the assumption of normality of returns in their risk evaluation can allow for the increase in the performance on a multiple year time horizon and can allow a rationalization of overall costs by reducing the yearly turnover of the portfolio.

Literature shows that real estate market reaction to the financial crisis among European countries is affected by the characteristics of the financial system and the role of real estate in household wealth (Duca et al., 2010). A further investigation of the performance drivers, is necessary in order to evaluate if results achieved by the analysis are affected by the choice of the time horizon (that includes the financial crisis); in fact, the current crisis is characterized by events that are expected to not repeat over time, and moreover, the future will be characterized by new paradigms that are still in progress.

An interesting development of the research could consider the specific characteristics of each country law and market (like transparency, property tax, currency, etc.) that may affect the performance of an investment strategy in that country by a foreign investor (Hoesli and Lekander, 2005) in order to evaluate the lack of correlation of returns among some countries that could be ascribed or not to the existence of such barriers that limit the international flow of capitals in the real estate sector.

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Index

- asset allocation
 - home biased portfolios, 162–72
 - internationally diversified portfolios, 172–80
 - Modern Portfolio theory and Real Estate, 154–6
 - portfolio misalignment, 161–2, 189
 - real vs optimal, 184–98
- capital asset pricing model, 126–7, 133
- CAPM, *see* capital asset pricing model
- commercial real estate
 - market Size, 86–90
 - overview, 84–5
 - performance, 91–6
 - performance differences with other sectors, 13–29
 - retail market, 85–6
- F&F, *see* Fama and Franch model
- Fama and French model, 127–8, 133–4
- global cities
 - definition, 44
 - in Europe, 53–63
 - features, 44–6
 - ranking criteria, 46–52
- hedonic price models, 11–13
- industrial sector
 - definition, 102–3
 - market size, 103–5
 - performance, 105–11
 - performance differences with other sectors, 13–29
- logistic sector
 - definition, 111–14
 - market Size, 114–15
 - performance, 115–18
- performance differences with other sectors, 13–29
- principal component analysis
 - Barlett's Sphericity Test, 144–5
 - factor loading analysis, 145–51
 - geographical features, 145–6
 - methodology, 143–4
 - type of asset, 146–51
- RAP or RAPM, *see* risk adjusted performance measures
- real estate funds
 - asset allocation, 136–9
 - definition, 128–30
 - main European markets, 130–1
 - performance, 131–4
- real estate market performance
 - cities vs rest of the market, 29–34
 - downtown vs suburbs, 34–9
 - overview, 25–8
- real estate trends
 - Eastern Europe, 20–3
 - financial crisis, 7–9
 - Northern Europe, 14–17
 - overview, 5–7
 - Southern Europe, 23–5
 - Western Europe, 17–20
- REITs
 - asset Allocation, 134–6
 - definition, 122–3
 - main European markets, 123–4
 - performance, 124–8
- residential market
 - clustering criteria, 68–72
 - multi-family house, 76–9
 - performance differences with other sectors, 13–29
 - single family house, 72–6
- risk adjusted performance measures
 - Burke, 159–60
 - Calmar, 159–60

risk adjusted performance measures –
continued

CVaR, 159–60

Kappa, 158–60

MVaR, 159–60

Omega, 159–61

ROAS, 158–60

ROPS, 157–60

Sharpe, 157–9

Sortino, 158–60

Sterling, 159–60

VaR, 159–60