City attractiveness in retail real estate investments

Fleur Mank
July 2012

City attractiveness in retail real estate investments

I dedicate this master thesis to my new best friends: The Triple A's

Fleur Mank (3299279)
University of Utrecht
Department Economic Geography

Table of Content

Appendices I, II, III, IV, V

Preface

The first acquaintance with the real estate industry took place about a year ago during the period I was a member of the FRESH board. FRESH (Foundation for Real Estate Student Holland) is an initiative for academic students from a large number of universities in the Netherlands with a specific interest in real estate. Together with companies and professors they organise career based activities in the Netherlands and abroad. As a member of the board I was responsible for the Company Relations and had the opportunity to develop a broad network with people and companies in the real estate market. In this last year of my bachelor I met Corio; a listed retail real estate company with a big portfolio of shopping centres in Europe. The retail branch, the size & culture of the company and the people inspired me from the first moment. I am happy to say that Corio became a partner of FRESH since 2011.

When I started my master Economic Geography I knew I wanted to do an internship at a commercial real estate company, preferably combined with writing a master thesis. After a few health obstacles I began to define some future plans. In October 2011 I send Corio some potential research topics for my master thesis and after a few conversations with Oedsen and Jantine my new ‘job’ was arranged. I say ‘job’ because my colleagues treated me a full Corio member and I felt really appreciated for my activities during my internship. I’m very thankful for this opportunity that Corio gave me.

Before you dive into the world of city benchmarking and retail real estate I would like to thank a few people who helped me in writing this thesis either with respect to the content and the process. At first I would like to thank Jantine Schrader who was not only my supervisor inside Corio, but also my motivator, my teacher and colleague in doing this research. Even when there were some frustrating moments (referring to Eviews, SPSS, Excel and other computer issues) she kept me motivated and positive. We had a great time together in London and Paris but I also enjoyed the evenings at the office when we had to meet a deadline. Besides Jantine I’d like to thank all the other Corio employees inside and outside the Netherlands and of course the Expert Panel. From the University of Utrecht I’d like to thank Frank van Oort as supervisor for this master thesis, for his useful comments and enthusiasm during the process. I also have to thank Roderik Ponds, DTZ France, Experian and Oxford Economics for sharing their opinion and data with us.

Doing research and writing a thesis is not just about spending 5 days a week in the office, but it will have an impact on your whole life and even your future. I can imagine that during this period of 6 months my social environment got not too much attention. Therefore I am very thankful for the support, patience and trust that my parents and little sister gave me. It was a hectic period of doing research, writing a thesis, passing exams, becoming a wine expert, having several jobs and even getting a boyfriend (thank you Sjors for accepting me the way I am!).

The last ‘thank you’ I’d like to give to my new best friends in becoming a real statistical scientist. The triple A’s: **A**lphons de Vocht (Basishandboek SPSS 19), **A**ndy Field (Discovering Statistics Using SPSS) and **A**ndré Silva (YouTube: Factor analysis in SPSS). These experts helped me through the statistical jungle of analysis, rotations and clusters. If I knew the methodological approach of this research in advance I’d never accepted the challenge but for this reason I can even be more proud at myself in succeeding this challenge.

Fleur Mank

1 Introduction and research goal

This study aims to solve or clarify an existing corporate and social problem about investing in cities. For this reason the issue has to be translated into a practical research question. Because the study is executed and commissioned by Corio, the research problem has to be scientifically justified and also correspond with the strategy policy of Corio in ranking investment potential. The study has to contribute to Corio's present business operations. Therefore the intention is to make use of existing models and data owned by Corio and add new insights from this research. The innovative focus has to be placed on city specific and soft locational factors. There is an increasing attention for cities acting like a substantive entity. A city is a research area in itself and cannot be approached as part of a bigger area anymore. Berlin is not Germany, Amsterdam is not the Netherlands and Istanbul is not Turkey. One of the reasons for this specific city focus is to filter attractive cities from unattractive countries. Some countries do not perform very well on itself, but own a few exceptional successful cities in terms of potential investment. Of course the same mechanism is possible the other way around, a country as a whole can be a real outperformer but the underlying cities don't have to be that much interesting (IPD, 2012). The results from this study can be useful in qualifying cities as investment potential for retail real estate. Therefore it is important to approach cities by evaluating city-specific characteristics but also national indicators that cannot be measured on city level. These characteristics or location factors can be separated in both 'hard' and 'soft' locational indicators. Hard indicators describe for example an economic-, demographic- and business status, while soft indicators focus on information about criminality, tourism and health. The hard indicators are often easier to obtain and also more consistently collected by (national) statistical bureaus. Soft indicators are more difficult to operationalize and the specification of the indicators among countries or regions may differ. The importance of cultural-, tourism- and 'quality of life' aspects gets increasingly attention (European Commission, 1997), but is yet less investigated in the retail real estate sector. As Joseph et al. (1999) mentioned, quality of life indicators play an important role in locational behaviour and decisions of employees and firms. Because of the expected regional growth by attracting firms and employees, this may be very important information for governments to use. Glaeser et al. (2001) concludes more specific that the attractiveness of a city depends on the liveability of the city. A variety of services, cultural aspects and education are important indicators. In other words, a successful city is an attractive city to live in for consumers. If we translate this into the retail market, one can imagine that attractive cities for consumers are attractive for retailers and investors as well whereas the retailer needs the consumer to be profitable.

Before a business decides to invest in a country, region or city, one prefers to have as much as information as possible. 'To what extent is an investment in this area valuable?' 'What is the economic status of the region?' and 'what are the risks?' are reasonable questions. According to Kurzroch et al. (2009) it is important to have knowledge about performance factors of objects and locations to make investment decisions. There are a lot of indicators/pillars that represent successes or risks of investments in specific areas. Those indicators can appear on national, regional and city-level. Looking at the retail market it may be clear that the location of the shop or shopping centre can be very significant for the success of such retail real estate. Data about demography, economy, and the consumer

market can be helpful in composing forecasts about the successes of future investments. However there are some difficulties in collecting consistent European data on city level that will be discussed later on.

Corio N.V. is a listed real estate investment company that owns and manages shopping centres in the Netherlands (27%), France (27%), Italy (20%), Spain/Portugal (10%), Germany (8%) and Turkey (8%) (Corio, 2012). Corio already set up comparable asset allocation researches, which resulted in recommendations for strategy purposes. The aim of this research is to reconsider Corio's former research methods, add new data and indicators but above all: create a study with city-focus. This means a lot of high quality data on city-level is needed, which may be a challenging target. There is tried to create a tool for valuing city's as a retail real estate investment by analysing the data sources. As we know from earlier economic theories a perfect 'economic man', who is fully informed about the opportunities and threats of the market does not exist (Atzema et al., 2002). For that reason it is attempted to collect a lot of relevant literature and data that is available. This information, together with some new resources (both qualitative and quantitative) will contribute in solving the following research questions that represent the reality as accurate as possible. The structure of the questions consists of one general research problem, that can be answered by the conclusions of the other three sub questions.

1.1 Relevance to society

The subject of this study relates to several scientific and social fields, the economy, (retail) real estate, geography and maybe even more. All the disciplines can be placed in a specific time perspective that is affected by recent developments such as the economic crisis, the increasing influence of Internet and regional disparities. Together these disciplines form a (social) framework in which the subject of the research takes place. If we look for example at the retail market, the subject is very socially because everybody has to do something with shopping. Everybody shops, though it is for daily products. All consumers have specific opinions and preferences for shops and shopping centres which may differ by gender, culture, age and many more aspects. Because we have to deal with a heterogeneous society, it is difficult to decide what is exactly important for the attractiveness for retail. For this reason it is very useful to know at least what measurable indicators will affect city attractiveness for retail real estate in general. To make some basic thoughts measurable this will be a step forward in unravel the complexity of the retail market. In this way, the study in itself can contribute to the society as well. The conclusions of the research can provide insights in social, economic and geographical problems and maybe assist in developing solutions. This study can also be used for policy purposes for governments. Think of all the huge city marketing campaigns to attract business, tourists and even sport events. It would be very helpful for governments to know the explanatory indicators of a city's success. The more we know about the attractiveness of cities or regions, the more this information can be used for policy purposes.

1.2 Relevance to science

Besides the social relevance there is a specific relevance to science as well. The fact that the study is conducted in cooperation with a commercial real estate company ensures that the outcomes are implementable in practice and that it is valuable for science at the same time. With respect to the content, the European city-focus in the retail real estate market together with the new approach on soft locational factors is innovative. Variables on city level have

never been tested statistically on this scale and in this market. Two complete new extensive databases have been used to test existing theories and describe recent developments. The conclusions and new insights resulting from the conclusions may be implementable in other disciplines as well. Models that define attractiveness of cities can be valuable for geography, sociology, economy and maybe even psychology.

The quality of a study is strongly affected by the theoretical framework of scientific literature. The framework aims to create a broader context of the subject and describes historical ideas and thoughts concerning the subject. In this study existing theories, for example the Central Place Theory of Christaller, provides us to conduct hypotheses about influencing factors of city attractiveness. The theoretical insights together with our own expectation will form the basis for the hypotheses and can therefore be useful in answering the research questions. Eventually the results can partly accept or reject existing theories about the subject. A structured reproduction of the existing theory enables to further clarify the relevance of the research. Especially the recommendations for further research are interesting to use. Building a theoretical framework can also be supporting in the decision-making- process of the study (e.g. selecting variables and defining the correct weight to the indicators).

Together those topics cover the majority of the research context with a lot of high quality resources, but one has always take into account that there is much more literature available. However, it is impossible to absorb all the existing literature about the subject in this study and therefore there is strived to give a representative overview of most relevant knowledge.

1.3 Research problem:

To what extent can city performance factors be used to value 'The City as Investment' in the Retail Real Estate market in Europe?

Sub questions:

What 'hard' locational factors (e.g. population growth and GDP per capita) are important in benchmarking city's concerning the Retail Real Estate Investment market?

What 'soft' locational factors (e.g. quality of life and tourism) are important in benchmarking city's concerning the Retail Real Estate Investment market?

How can various influencing factors on city performance be used in valuing cities as investment potential for retail real estate?

Answering the research question will provide us a detailed model to qualify the performance of European cities to define which cities are attractive to invest in on the retail real estate market. The study contains both hard as soft locational factors. From a scientific point of view it is innovative to compare different research methods and add more soft, city specific factors in the field of retail. It will provide other scientists to build further on the outcomes and amplify the reliability of the theory that is created. It will be a reasonable substation for investment- and disinvestment strategies for Corio in particular European cities.

1.4 Cooperation

It is good to know that this research is executed in cooperation with my supervisor within Corio: Jantine Schrader – van Meel. At the same time she was graduating on the Amsterdam School of Real Estate (MSRE, Investment). We worked together in collecting the data, doing statistical testing and discussing the results. The topic of her thesis is more about explaining real estate performance and the contribution of city-benchmark models. In the study in front of you there is a stronger focus on economic geographical elements and soft locational factors. Some of the findings in the two studies will overlap, but more importantly they will contribute to a broader view in retail real estate and city attractiveness. Although some of the same data sources have been used, the approaches of the studies are completely different. If you are interested you can also read 'City factors explaining retail real estate market rents in Europe' from Drs. Jantine Schrader- van Meel (Jantine.schrader@gmail.com).

1.5 Outline

This thesis contains five chapters in total with different paragraphs. The first chapter was about the introduction and the research goal to introduce the subject and the purposes of the study. To underline the importance of the study, the relevance to science and society have been explained. The master thesis as a whole will answer the main research question that has been formulated in chapter one. The second chapter will provide a theoretical framework on which the conceptual model is based. It introduces some basic theories and models about retail real estate and (economic) geography. In the end of the chapter the conceptual model and the resulting hypotheses have been elaborated. The hypotheses have been grouped by subject and are linked with the theory. The third chapter is called 'Methodology & Data'. Here we explain the research strategy, research methods and the data collection. The databases that have been used are described in general but a more detailed version can be found in Appendix V. It is tried to substantiate the choices that have been made to set up the statistical testing. One has to bear in mind that a lot of the selection criteria have been based on the availability of data. The fourth chapter is all about the statistical results from the analysis. Here all the hypotheses have been tested and can therefore be accepted or rejected. The first part describes the single regressions and the second part treats the multiple regressions and the factor analysis. Because there are a lot of hypotheses formulated they are grouped together by subject as in chapter 2. In chapter 5 the results can be aggregate to the Conclusions and recommendations and some final answers to the research questions can be given. After the conclusions some remarks and recommendations for further research are amplified. In the end of this thesis you can find all the appendices which include information about the variables, statistical outputs, the members of the Expert Panel and data descriptions. I hope you will enjoy the read!

2 Theoretical framework

Cities are the key building blocks of life in the 21st century; they are the junction boxes between the developed and developing world (Greg Clark)

This theoretical framework can be divided into two parts: the recent development in the relevant disciplines and the historical and general main theories. The first part of chapter one gives some background about the recent developments in the retail industry, some basic real estate mechanisms and the growing importance of cities. The second part dives into the big classical economic theories, the location theories and competition theories. Talking about competition will bring us to the growing interest in benchmarking that will be discussed in paragraph 2.5. All these theoretical findings come together in the conceptual model and the hypotheses that have been formulated in paragraph 2.7.

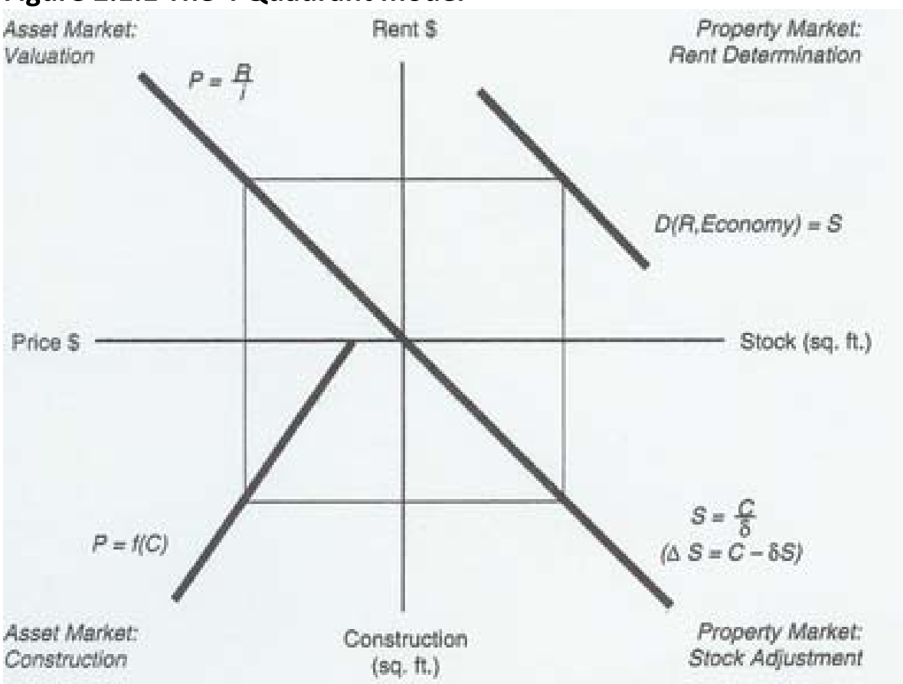
2.1.1 Recent developments in the retail market

If we want to know what factors are important for the attractiveness of cities for retail investments it is important to understand the retail market and the recent developments. The economic crisis, a widening dispersal of shopping facilities in the urban zone and the consumers' changing purchasing behaviour (i.e. internet) affects the international retail market. However the shopkeepers do not anticipate enough on these effects yet (Het Financiële Dagblad, 2011). There needs to be more attention for different ways of shopping and combinations. Technical applications, services and accessibility of shopping centres outside the city centre should get a more central position in the location choice of a shopping centre. The question is however: how can retailers adapt the 'internet age' in their business or indeed: Does geography still matter? Weltevreden (2006) suggests that there are of course different effects for distinctive type of shops and organisations. While controlling for these effects, the results of his research show some different outcomes in Internet adoptions for city centres in big and small cities en shopping centres. Shopping centres and big city centres are more able to adopt Internet shopping than small city centres. This supports the conclusion that geography still matters in the Internet age. Effects of urbanisation and infrastructure played an important role in answering this question (Weltevreden, 2006). The growing importance of internet shopping becomes a real threat for existing shops and shopping centres. If people can order their products more easily or cheaper through internet, the physical shops lose their income. This means that retailers and investors have to introduce new ways of shopping. To offer consumers more than just a shop to buy your products, the shopping activity gets a new dimension. The 'experience' of a shopping centre is becoming more popular (Pine et al., 1999). Besides the growing opportunities in shopping, the consumer himself is also changing. We live in a century in which the consumer is highly critical and changeable in behaviour. This results in fading of branches and prise wars. There is an increasing interest in fun shopping on locations outside the city which may be a threat for city centres. Another recent development is the disappearance of the independent (small) stores. The share of chain companies in a shopping centre is increasing and this has a negative effect on the diversity of the centres (Van Gool et al., 2007). All these recent developments in the retail market ask for precaution by current retail questions.

2.1.2 Retail Real Estate

Before we discuss the retail real estate market in detail, we will explain something about the interactions in the real estate market in general using the 4 quadrant model. DiPasquale & Wheaton (1996) explain the interaction between two markets; the asset market and the space market (figure 2.1.1). They split the real estate market into the market for the user and the market for the investor. The model explains that the rents are dependent on the supply and demand and if the market is scare, the rents will be higher. The left side of the model explains the market of the investor and the right side of the model shows the side of the user market. The northeast quadrant shows the relationship between rents and supply and demand. The position of the curve tells us something about the economic situation. If the demand is high, which indicates a flourishing economy, the curve has a higher position and if the demand is low the curve will have a lower position. If the curve is steep, the fluctuations in the rents have little effect on the demand and if the curve is more flat the fluctuations in rents will have more effect on the demand. The southeast quadrant explains the replacement rate. This rate tells to what extent the built volume adapt the existing stock. The steeper the curve the more real estate will be taking back from the market and the higher the building volume. The market is stable when the new volume adapt the demand and the curve will be more flat if the supply is greater than the demand. If we look at the left side of the model we see the mechanisms concerning the investor. The northwest quadrant of the model shows the relationship between rents and the purchase price. If the curve is more steep, the required yield will be higher. The southwest quadrant is about the replacement value of the real estate. A steeper curve illustrates a higher replacement value. One has to bear in mind that we are discussing a theoretical model and the outcomes in the real world will be different. Nevertheless the models shows clearly that there are different aspects of the real estate market that are very related to each other (DiPasquale & Wheaton, 1996).

Figure 2.1.1 The 4 Quadrant model

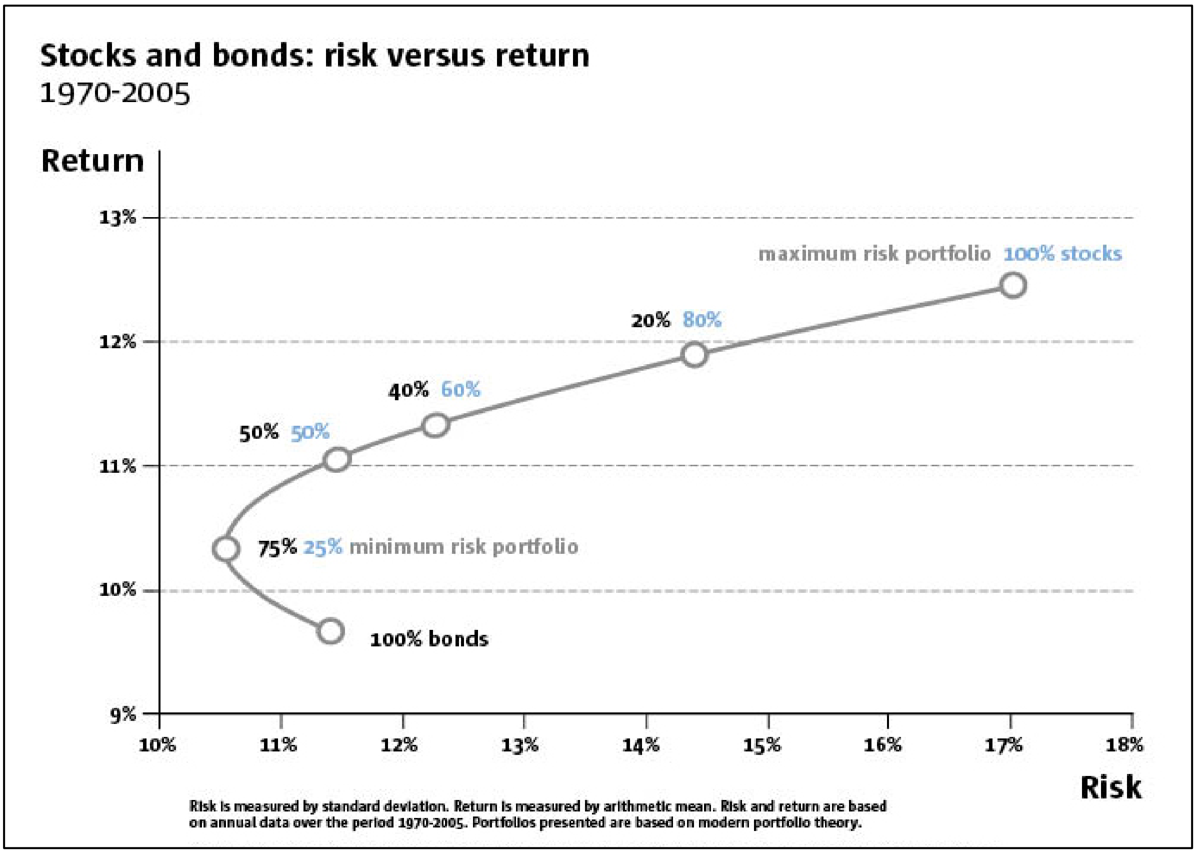


Source: DiPasquale & Wheaton, 1996

Except from economic effects on the retail branch there are some real estate specific characteristics. The aim of investing in real estate is to conduct future income from exploitation and sale of real estate objects. There are several types of real estate to invest in, resulting of course in different effects and risks. The investment can be direct such as in real objects (offices, houses, shops) or indirect in stocks. The first investment form is divided in several submarkets; there is not just one direct real estate market. The transaction costs are high, the real estate is illiquid and the duration of the investment is often for a long time. Those and many more characteristics explain why direct real estate investment can only be done by high net worth individuals or companies. The advantages of direct real estate investments are relative high rents and low risks and the cash flows are pretty stable. For investments in indirect real estate there is not much local expertise needed, the investments amounts are lower, the liquidity is higher and there can be economies of scale. On the other hand the investor is dependent of the market, the risk of debt capital is higher and the rents are more volatile. National and international real estate funds collect all these kinds of information and many more to create optimal risk/return profiles (Van Gool et al., 2007). Statistical speaking the risk is the standard deviation of the expected yield on realistic basis. Practical the risk is the chance of a negative yield and therefore an investor will only accept a higher risk if this results in a higher yield. We can say there is a positive linear connection between risk and return. In the fifties Harry M. Markowitz (1927) developed a financial modern portfolio theory in which the return of the portfolio could be maximized by diversification of in investments (figure 2.1). The idea is that there is a minimal correlation between the investment objects; the risks are spread (Marquard, 2009). The investment funds are whether or not focussed on one or more sectors such as offices, houses or shops/shopping centres. Investments in the retail branch are more complex than in the office market. There is a strong focus on the demand side of both shops and offices, but the retail market is strongly influenced by the changing demands and preferences of the consumers. Therefore retailers, shop owners and investors have to anticipate as quickly as possible to remain profitable. In this case value can be added trough active management on retail real estate. The location of the shop or shopping centre is more important than for other real estate objects and therefore knowledge of the market and catchment area is important. In general we can say that a large reach of consumers is essential for the location choice. Brounen and Eichenholtz (2004) note that developments in demography are the most important indicators in clarifying changes in demand for properties. Besides the size of the population and the population growth, the (age) structure is also very important because different age groups have different spending patterns. For example people above 74 have the lowest spending pattern of all the groups. If information about the population in a city is available, it can easily be connected to the success or potential success of retailers. Oosterveld (2010) describes that the success factors in shopping centre performance are dependent on both exogenous an endogenous factors. There are macro-economic factors and shopping centre specific factors that explain performance. For the above reasons and definitely many more, it is important for an investor to analyse the type of investment and look at the specific characters before making some very risky decisions (Van Gool et al., 2007). Another remark has to be made on the specific time perspective in which the real estate markets have to be placed. The real estate market that is general strongly affected by economic and financial volatility, is even more sensitive to the global crisis. This is mainly due to the interdependency of real estate firms on bank loans. If the banks reduce the

lending activities of the companies, it is harder to meet the expected returns. Another difficulty is the depreciation of property values due to the economic crisis (Patterson, 2009).

Figure 2.1.2 The modern portfolio theory



Source: http://www.capitalatwork.com/index.php/investment_philosophy/260/

2.1.3 The importance of cities

The majority of the world's population live in urban areas and cities are becoming more and more important for the global economy. Especially for innovation and knowledge purposes, cities have an important contribution (Zelenev, 2003). Nevertheless it is hard to define what factors makes a city successful. The biggest shortcoming is the lack of data on city level whereas national data is collected worldwide (Clark, 2008). Concerning locations of shopping centres and shops, there are a lot of determining factors. Quantitative indicators such as purchasing power, GDP, accessibility and level of education of the region can attract and reject particular consumers and shopkeepers. Except from these quantifiable data, there is increasingly attention for soft factors like quality of life and other more cultural aspects that can characterize cities in particular (Florida & Harris, 2002; Pine & Gilmore, 1998). This specific city focus does not just come out of the blue, but there are a lot of studies and reports concerning this subject. People love benchmarks and lists. In 2011 Cushman & Wakefield created a European Cities Monitor in 2011. They investigated the attractiveness of European cities among 501 companies and how the perceptions changed over time. A few important components in ranking these cities are connectivity, access to markets, climate created by governments, quality of life and telecommunication. Cities that score very high on these indicators are London, Paris, Barcelona and Amsterdam, but this depends highly on

the selected variables and weights (F. McCarthy, 2011). Another benchmark report is written by Paola Annoni and Kornelia Kozovska (2010), it is called the EU Regional Competitiveness Index and is supported by the European Commission. Here there is a strong policy driven goal underneath. The idea of scoring competitiveness among regions will facilitate in identifying regional weaknesses and eventually in converging the disparities. But what exactly is competitiveness? Meyer- Stamer (2008) defines it as: ‘’We can define (systemic) competitiveness of a territory as the ability of a locality or region to generate high and rising incomes and improve livelihoods of the people living there’’. The operationalization of competitiveness is divided into three pillars: Basic factors (e.g. institutions, infrastructure and health), Efficiency pillars (e.g. education and market size) and Innovation (e.g. Innovation and Business Sophistication). The selection of these variables is based on experts’ opinions, literature review and data availability and the research scale is NUTS2 (Annoni & Kozovska 2010). Also in this benchmark there is tried to summarize the measured variables and rank the regions, but not specifically tested if there is an explained value. In other words it is not proved that the indicators actually measure competitiveness. The previous mentioned Greg Clark (2008) struggles with a similar difficulty in defining a successful city but even more in obtaining the sufficient data on city level. The senior Fellow of the ULI (Urban Land Institute) uses different benchmarks and reports to divide cities into five clusters: Global Economic Reach, Quality of Life, Image & Attractiveness, Investment & Fisical Health and Knowledge Base. The aim of this report is to analyse how cities perform and develop in an urbanising world (Clark, 2008).

2.2 Location Theories

To understand the location choice for a shop or shopping centre, one has to take note of some basic location theories. There are several economists and (economic) geographers who have been very important in the development of these theories. The aim of most theories is not to give a blueprint for the planning for a region or city, but to have some guidelines and basic mechanisms of urban planning. Nevertheless the existing literature can be helpful in selecting the right indicators for city attractiveness and providing a handheld in developing location strategies for Corio. Before discussing several location theories, a little background of the economic geography discipline is given. The economic geography became more important in the twenties and thirties of the twentieth century with the foundation of the nowadays prominent journal ‘Economic Geography’. Economic geography is also described as domain focused economy (Atzema et al., 2002). This is where economy meets geography. Martin (1999) formulates the concept economic geography as the application of insights from the economy, political science, sociology and psychology into locations. The network theory is one of the modern elaborations of this concept. Economic geographers study the demands of companies on their locations in countries, regions and cities. Spatial economic processes cover the work field of an economic geographer. Those processes are studied all over the world on different scales. Nowadays there is a lot of attention for regional inequalities. In Europe for example some scientists mention that the disparities are widened over the last two decades (Puga, 2002). To be more specific Baldwin & Wyplosz (2009) argue that convergence takes place between countries, but divergence is growing between regions within countries. Differentiation is visible in accessibility and economic characteristics such as income and unemployment. The question is whether governments are responsible for these movements and obligate to do something about it. Governments are not the only ones who are dealing with regional disparities. For a location choice a company wants to compare

the different profiles of the region. Depending on the kind of enterprise the company would like to make the best choice between several options.

2.2.1 Classical economic theory (Von Thünen /Weber)

The location theories are developed in a specific period of economic thinking that explains the focus of the theory. Knowledge of historical theories will also contribute in understanding future economic geographical thinking. The classical economic theory is strongly focussed on the availability of production factors, such as labour, capital and other resources, which are determining the success of a country or region. The supply creates its own demand so there are no problems on the sales market, but the production and transportation costs should be minimized. The spatial differentiation is expressed in differences in ground prices, labour costs and of course the transport costs for transporting the raw materials and the finished products. Therefore the entrepreneur will always look for the location with the lowest costs. The theory is strongly deductive, which means that logical thinking and reasoning will evaluate in natural laws. To make the theory applicable, classical economists make some basic assumptions such as an isotropic space and rational acting entrepreneurs (‘the economic man’). These assumptions result in some critical remarks and in view of these criticism new theories arise (Atzema et al., 2002). At the end, all location theories have their roots in the classical economic theories that include the minimum cost approach. Both Weber (industry) and Von Thünen (agriculture) are economists of the classical school and argue that the most profit can be gained when the production- and transport cost are as low as possible. In accordance with the theory of economist David Ricardo emphasizes Johann Heinrich von Thünen (1783-1850) on the differences in ground lease prices according to the quality of the ground. Apparently a higher yield can be acquired for more fruitful land, this discrepancy is called economic rent according to Ricardo. Nevertheless Von Thünen’s theory, which is focussed on an optimal balance or maximization of profits between the difference in market price (VM) and the sum of production costs (P) and transportation costs (T), takes into account for several assumptions. A linear development of transport costs in respect to distance, just one market outlet and an isotropic space are some of these presumptions (Atzema et al., 2002). Alfred Weber (1868-1956), brother of the famous sociologist Max Weber, published his theory in times of the industrialization of Germany and concentrated on other location factors than Von Thünen. The theory assumes that raw materials are not equally distributed and plants are often situated close to natural resources to save transport costs. These costs are affected by both weight and distance and the final products will be offered on one market place, the city. Another new assumption is the inflexibility of labour; labour is not equally dispersed and available. Weber also takes into account for the so-called agglomeration economies. This means that if the decrease in costs compensate for the extra transport costs, another location may be more profitable than close to the raw materials. Agglomeration economies will appear when several companies locate close to each other and can for example share operational costs. This form of agglomeration economies is called localization advantages. A more broad view is called urbanization advantages (Atzema et al., 2002).

2.2.2 Neo-classical economic theory

As mentioned before, the ‘new’ neo-classical theory is developed as critical reaction on the classical theories. The lack of space and location theories are fundamental in the discipline. This can be accomplished when the firm is located close to the market and the raw

materials. The minimization of distance, translated into transport costs are determining factors in both classical and neo-classical theories. However the presumed linear relationship between distance and transport costs is not as perfect as the economists thought. There are aspects such as variable costs, value and weight of the products have their influence on the transport costs. The neo-classical theory differs from the classical theory on five points. First of all the neo-classical theory takes into account for the free market system in which a few market leaders can be responsible for a big part of the market value. Another point is that economists as Weber and Von Thünen do not take up the effects of competition, which is logically unrealistic. Thirdly and fourthly, an entrepreneur or economist should not only focus on minimizing costs but also on maximizing revenues and take into account for economies of scale. The last point mentions the factor substitution which is an important subject in the neo-classical theories (especially Leon Moses demonstrates this mechanism in his theory). Factor substitution means that not just one single production function is used, a combination of production factors such as for example human labour and automation can be more profitable (Atzema et al., 2002). There are a lot of neo-classical economists and geographers who developed theories, but it is not possible to discuss them all so a selection has been made for those theories that may be relevant for evaluating the city attractiveness in the retail real estate market.

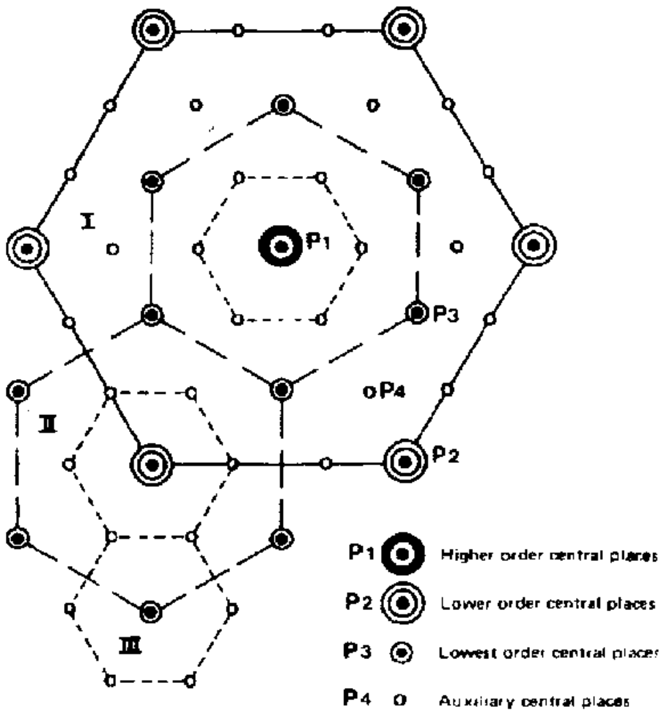
2.2.3 Christaller central place theory

One of the best know neo-classical theories is the central place theory developed by the German geographer Walter Christaller (1883-1969) on which he promoted in 1933. This theory is innovative because he includes the service sector and the consumers demand instead of only industry and agriculture. The general philosophy behind the causal deterministic theory is that the demand of a product or service decreases evenly with the increasing distance between consumer and supplier. The maximum distance a consumer is willing to travel to buy a good or service is called the ‘range’. Comprehensibly there is a different range for different kind of goods, people are likely to travel less to buy a bread than a bench. Another assumption on which Christaller pays attention is the ‘threshold’. This concept explains that each supplier needs a minimum number of clients to be economic viable depending on the kind of store or service. Those two definitions together result in a systematic structure of central places in different hierarchy: a hexagon shape figure (figure 2.3). The bigger places dominate the smaller ones but also complete each other. Goods higher in the hierarchy have a higher range and also a higher threshold (Bolt, 1995). Just like the previous theories, Christaller makes some presumptions for his location theory to make it balanced. First of all an isotropic space is assumed, this means that movements in any direction are equally easy. Secondly, there is a linear relationship between transportation costs and distance. Thirdly, the population is evenly spread and has the same income and consumption preferences. The supplier act as a economic man and is perfectly informed, there is no competition. At last, there is no question of agglomeration advantages (Atzema et al., 2002). The criticism of these mostly unrealistic assumptions result in the development of alternative theories and adaptations of the original concept. In this view Berry and Garrison (1958) redefine the ideas of threshold and range in a more realistic setting. According to Atzema et al. (2002) the theory of Christaller cannot be used for detailed empirical analyses because the assumptions are not realistic.

To translate this location theory to the retail branch an important remark has to be made. Christaller argues from one single shop or service point of view. This means that the

willingness to travel to one point is measured instead of a combination of shopping activities. Nevertheless a hierarchical classification of shopping centres and shopping streets in a city can be made because they occur in different orders: the main centre, regional centre, district centre and street centre have different functions and lay-outs (Bolt, 1995). Small shopping centres aim to provide for daily shopping activities for local inhabitants. People buy here daily well known products they consume often such as grocery shopping. For this reason one does not want to spend too much time on buying these products and therefore most consumers want to travel a maximum of 1 kilometre. Bigger shopping centres have a broad supply of shops and also an recreational function. People are prepared to travel a bit longer (25 to 30 kilometres) to these centres and they are often also accessible by public transport. Examples of this type of shopping centres are outlet stores, residential boulevards or thematic centres (Bolt, 2003). Eventually the hierarchy of shopping centres depends on *location behaviour* of suppliers (supply) and *consumer behaviour* (demand). The location behaviour depends on the minimum standard consumers (threshold) and the existing supply and competition. The consumer behaviour depends on the inhabitants and the willingness to travel (Bolt, 2003).

Figure 2.3 The central place theory



Source: Google, 2012

2.3 Competition theories

One of the assumptions of the central place theory is that there is no competition, there is only one market. Harald Hotelling (1895-1973) has a duopolistic point of view in which the location behaviour is dependent on competitors. The theory describes the development of two suppliers who desire to have to best market location and eventually are situated very close to each other. The basic principle of this theory is the more competition the more similar the products or services are becoming. In other words: the strive for profit maximization from the producer and the cost minimization from the consumer will result in

uniformity of goods and services (Atzema et al., 2002). The big difference with the central place theory is that Christaller approaches an efficient market with an even distribution of sales points, while Hotelling believes in a competitive market with clustering (Evers, 2004).

Another scientist who paid attention on competition as motivation for location choice is Nelson. According to Bolt (2003) the theory of Nelson explains the clustering of similar companies and shops by the desire of consumers to compare products. Nelson cites to human thoughts and mental processes to buy products. During the shopping process consumers will compare products on their quality, lay-out, colour and prices to minimize the risk of the purchase. Distinction can be made in the type of product; some products are more personal and so-called identifying goods than others such as grocery shopping. Comparative shopping is thus important in specific types of shops such as clothes, shoes and furniture in which women have a explicit position. Comprehensible consumers appreciate shopping areas in which they can compare similar products. This effect of *cumulative attraction* clarifies the spatial spread of shops. Indeed, clustering of similar stores is an important condition for the success of a shopping centre, more than accessibility of the centre (Bolt, 2003). On one hand clustering of shops will lead to competition, on the other hand it will bring more shopping consumers which is favourable for the city.

The concentration of shops is a result of de needs and desires of the consumers according to Nelson. Myrdal on the contrary aims that the clustering is a result of the need of the retail industry. This cumulative causation effect where shops like to locate close to each other is based on economies of scale. An import example of this is advertisement. Big department stores can generate a lot of customers or 'footfall' in that specific area of which other shops can profit. By this resulting traffic, suppliers can anticipate on the extra customers even if they had no plans to visit the shop. As one can imagine there are physical boundaries in city centres that limit expansion. For this reason different places of quality will arise. The difference in A, B and C sectors expresses in a specific yield where A scores the best (cloths, shoes, department stores) and C (mainly situated at the edges of the city centre) scores worst (Bolt, 2003). Alonso build further on this concept and argues that clustering of shops will result in higher rents and a lower density in lower rents. The regulation of rents determines by out backing between candidates. The number of footfall is crucial in this mechanism. Von Thünen already noticed a relation between central functions in (big) cities and economic rent. Alonso developed this thought as the ' bid rent theory' (Atzema et al., 2002).

Reilly's interaction theory also pays attention for size and proximity of a city or shopping centre as parameter for attractiveness. The consumers decision for a shopping centre will depend on the size and the distance of the centre. The retailers will anticipate on this mechanism by expanding their assortment and this will increase the purchasing power in the catchment area. The appreciation of shopping centres will depend on the consumers degree of use, the bond of purchasing power (Bolt, 2003). The theory of Reilly emphasizes the importance of knowledge about the catchment area. From the retailers point of view, it is important to know how many and what kind of consumers live in their range.

2.4 Benchmarking

When conducting comparative research, a number of well-known 'benchmarks' (e.g. European Cities Monitor, 2011 and EU Regional Competitiveness Index 2010) can function as basic indicators. These benchmarks compare countries and regions on several weighed hard and soft location indicators. The analysis results in a ranking of countries, regions and/or

cities and can be used for policy purposes. A critical stand needs to be taken towards the used methodology in the analysis. Results can be dissimilar if different data is used, the weighting is different or other indicators are used for specific (location) factors. The operationalization of indicators and location factors has to be clearly supported by arguments. Moreover, scientists are frequently critical about the use of benchmarks and the reliability of benchmarks. Reliability is substantially connected to the interest and engagement of the sponsor. The question is however, in which content benchmarking is decisive for a location choice. I argue that location choice is often not rational defined. From another point of view, the question is what a benchmark really says. It gives an idea on how specific countries or regions score, but it cannot clarify or forecast the reason why it performs very well or bad. The question why regions perform as they do is important for developing and implementing new policies. Bristow (2005) wants to argue that policymakers must not focus too much just on the outcomes of the benchmark (Bristow, 2005). A fair and pure way of doing scientifically research is creating an explanatory model for performance data to test any data a researcher wants to. The aim is a statistical model and not just the resulting benchmark.

2.5 Conceptual model

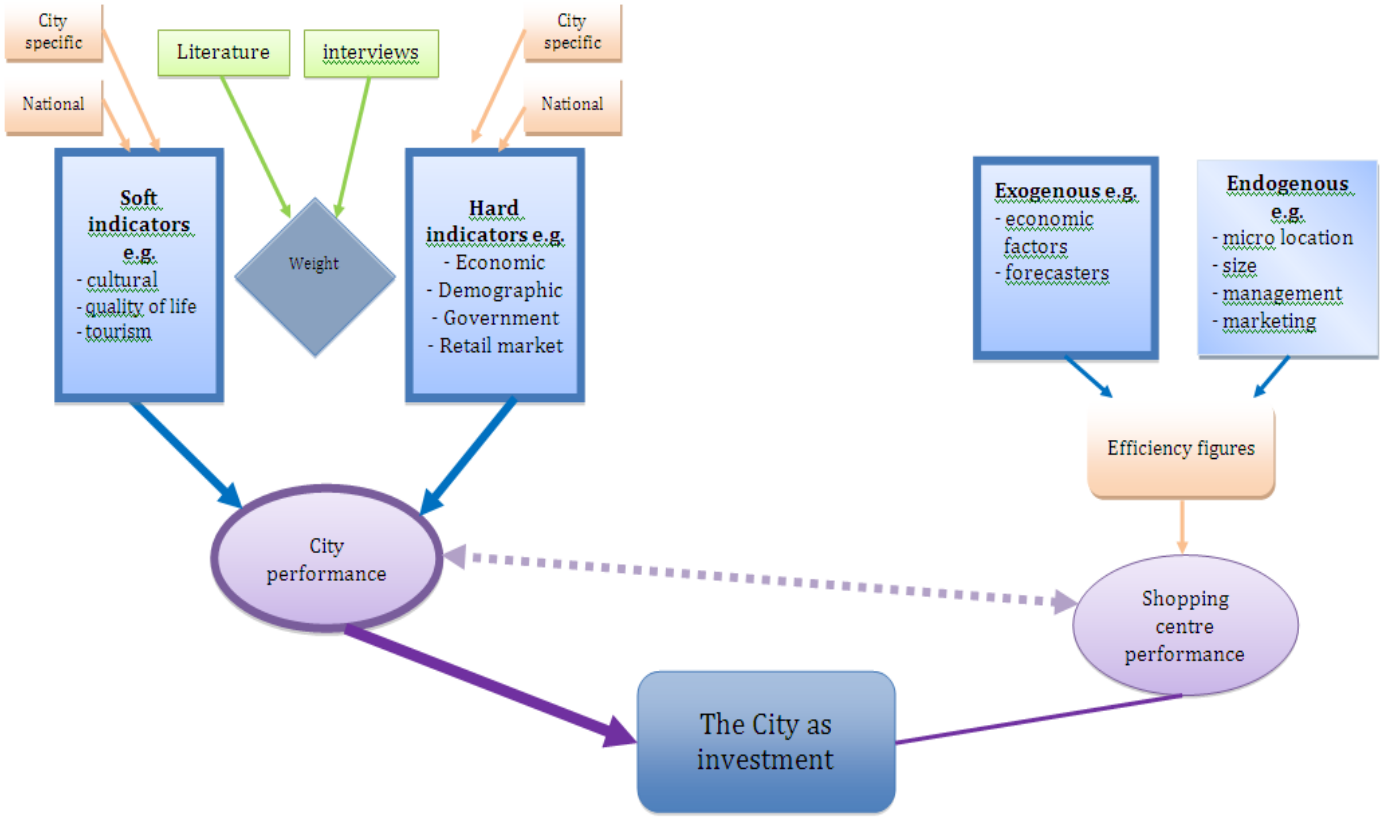
To visualize the implementation of the literature and the goal of the research a conceptual model is conducted and visualised in figure 2.6. One has to bear in mind that the total content of all the available information about the subject in simplified to fit in an accessible model. A conceptual model has been created to structure both insights from literature and some personal thoughts (developed by interviewing the expert panel). This conceptual model puts 'The City as Investment' in the middle. As mentioned by Clark (2008) and Zelenev (2011) the importance of cities for the global economy is increasing. Especially for the retail market, the characteristics of a city play a specific role in attractiveness. In this study the investment refers to retail real estate. The attractiveness of the city as investment is connected to city performance and shopping centre performance, the two purple circles. One could translate this into 'potential' and 'existing value'. Because we expect that the shopping centre performance will not influence the investment potential of the city that much, a thin purple line have been signed. There is not much literature available about the effects of shopping centre performance on city attractiveness or the other way around so no direction to the line is given. It is more plausible that there is a relationship between city performance and shopping centre performance. It may be likely that well performing cities contain well performing shopping centres and the other way around. Because we talk about an expected relationship and this relationship will not further be discussed in this study, the line is dashed.

To invest in retail real estate in a specific city, it is important to know something about the supply-side in the retail branch in the city. The performance of existing shopping centres is reflected in several efficiency figures which are clarified by both exogenous and endogenous factors. Oosterveld (2010) describes that the performance of a shopping centre is for 50% dependent on exogenous factors and for the other 50% dependent on endogenous indicators. The exogenous factors reflect macroeconomic figures such as GDP, unemployment and retail sales and endogenous factors are micro-location based such as size of the shopping centre, management and marketing. Only the exogenous factors are relevant for this study because the city is the research subject and not the shopping centre. Besides that, it is very hard to find data and compare a sufficient number of shopping

centres. The shopping centre performance can be used to test whether the chosen indicators from the left side of the model (the city performance indicators) do really affect the shopping centre performance and are therefore important as attractive city performance indicators.

We expect that there is a strong dependent relationship between city performance and city attractiveness. A high performing city will be more attractive. This effect can be substantiated by the effect of different indicators that can be divided into two pillars. City performance can be measured by several hard and soft locational factors. Using hard factors such as productivity, unemployment, population size and structure are used very often to compare countries or regions by competition (Claryse & Muldur, 2001). The size of the population for example and of course population growth, is also important whereas Reilly argues that the proximity is very important for the attractiveness of retail (Bolt, 2003). A high population density reflects a big consumer market. Besides the hard indicators, the soft indicators are getting more and more attention (Florida & Harris, 2002; Pine & Gilmore, 1998). These indicators reflect the attractiveness for people to live in a specific city or region. Quality of life factors, tourism and education are possible variables for this indicator. Both factors can be city specific or national of nature. It is evident that some factors such as 'ease of doing business' and other risk rates are national defined. Other factors such as population size, disposable income and consumer spending can be very depending on the city. Before valuing these factors, the indicators must be weighted on the basis of statistical testing, literature and interviews with specialists. Despite of a critical literature study, some choices have to be made on common sense, which can be discussed with a sounding board. As a conclusion we can say that in this study we will discuss and investigate mainly the left side of the model which exemplifies the city performance indicators by hard and soft locational factors. The effects of the city performance indicators can be checked by data about the shopping centre performance (the rents). The used data and research methods are elaborated in chapter 3.

Figure 2.6 Conceptual model



Source: Fleur Mank, 2012

2.6 Hypotheses

As a result from the theoretical framework, the conceptual model and real life issues the hypotheses can be formulated. These predictions about the subject can be represented into a null hypothesis (H_0) or an alternative hypothesis (H_1). Using a null hypothesis means that there is no significant effect of the independent variable on the dependent variable. In this case we formulate the alternative hypothesis to show the expected effect. Statistical tests can be one-tailed or two-tailed. If a one-tailed statistical test is used, the direction of the relationship is already expected and with a two-tailed test both positive and negative results can be expected (Vocht, de, 2011). In case of our hypotheses we expect a specific direction of the relationship, but after all we will use two-tailed tests to be sure the hypotheses will not be accepted or rejected falsely.

Because the outcome of the study is an application tool for valuing cities and a lot of indicators can be used, it is hard to define one single hypothesis. Nevertheless the starting-point and the occasion of the study is the increasing importance of cities in (location) investments (Clark, 2008). For this reason it is presumed that there are city-specific factors that will influence the attractiveness of a city as a retail investment. It is expected that both hard and soft indicators have a particular impact. To consider to what extent specific indicators will influence the attractiveness of a city as a retail real estate investment some literature and data are used and a sounding board is set up to discuss the possible options. A broad list of pillars and indicators is conducted and showed in Appendix I. A snapshot of the

indicator score list is given in figure 2.6 and gives an idea of who the expert panel had to weigh the indicators. The descriptions of the used variables can be found in Appendix IV. It may be clear that this is a very extensive list that has to be narrowed down. All indicators can be tested statistically on their effects by adding a dependent variable. For this research we selected 2 ways of using the dependent variable. In the first stage we use the rental levels to test against the independent variables and in the second stage we take the rental growth to look at the cyclical effects. For this reason the hypotheses are divided into 2 parts respectively tested with regression and panel analyses (more about the statistical testing can be read in chapter 3). To make a distinction between hard and soft effects, the hypotheses are coloured in red (hard) and in green (soft). The used methods are described in chapter 3 and chapter 4 treat each hypothesis in more detail. Finally, after statistical testing the hypothesise can be accepted or rejected.

Figure 2.6 Example of indicator score list

	Please distribute 100 points between the yellow cells, per overall category		Please distribute 100 points between the yellow cells, per sub-category	Make sure the pink cells each add up to 100	If you find an indicator not important at all you can choose to weigh it as zero
				Data	**Operationalised**
Demography	80	**Population Size**		Population size year 1	number of people
			20	Population size year 5	number of people
			50	Population growth year 1-5	% growth
			30	Migration balance	% of total population
			100		
	20	**Population Structure**		Share Working Age (w.a.) Population year 1	% of total population
			30	Share Working Age (w.a.) Population year 5	% of total population
			40	Development Share year 1-5	% growth
				Green pressure year 1	% of w.a. population, high % is good
				Grey Pressure year 1	% of w.a. population, high % is bad
				Green pressure year 5	% of w.a. population, high % is good
				Grey pressure year 5	% of w.a. population, high % is bad
				Number of households	absolute number
			30	Student population	% of total population
	100		100		

Source: F. Mank and J. Schrader-van Meel, 2012

2.6.1 Hypotheses on rental levels

Population

The population of a city can be seen as the total consumer market and is therefore very important for the retail industry. As DiPasquale and Wheaton (1996) described, the level of the rents are strongly dependant on the supply and demand. This means that if we have a large population (big cities), the consumer market is great and the demand will be high. This will have a positive effect on the rents. Not only the rental levels but also the level of growth can be important. If we look at the real estate systems, there is always a forward looking mechanism. This means that future changes in population will have an effect on decisions in for example prise making (DiPasquale & Wheaton, 1996). The central place theory corresponds with these thoughts. Christaller explains that a supplier needs a minimum number of clients to be economic viable and therefore the ‘ threshold’ is important (Bolt, 1995). This means that if the supplier or retailer is situated in a city with a large population, the minimum threshold will be easier to catch than in small cities. Besides the population size Brounen and Eichenholtz (2004) argue that the population structure plays also a specific role. Different age groups have different spending patterns and this results in different effects on the demand. The expectation is that a young population structure will have positive effects on the rents because their spending pattern will be greater that old people.

These mechanisms that have been elaborated in the literature result in the following hypotheses about the population.

- The total population size will determine the level of the rents: the larger the population the higher the rental levels.
- A high level of population growth will positively influence the rental level; the higher the expected growth, the higher the rents.
- A young population structure will have a positive effect on rental levels, if there is a high green pressure, rents will be higher.
- An old population structure will have a negative effect on rental levels, if there is a high grey pressure, rents will be lower.

Economy

The size of the economy, measured in total GDP, reflects just like the population size the total consumer market. It may be clear that a city with a big population, will also have a high GDP, these are both variables of size. More interesting would be the GDP per capita, because we correct here for the total population size. If we talk about the GDP, we can say something about the wealth of a specific city and this have a positive influence on the attractiveness of a city for retailers. Another important and current economic indicator is unemployment. The level of unemployment is very important in comparing competition among regions (Annoni & Kozovska, 2010). If there is a high unemployment rate this affects the competitiveness negatively and this will go through on consumer base as well. Because the unemployment is an important economic indicator that have been used in a lot of scientific studies, it will have large effects on the retail market as well. Retailers will look at the economic features of a city or country before they decide where to locate or invest in a specific region (Brounen & Eichenholtz, 2004). Gardiner et al. (2004) is also interested in regional competitiveness and underlines the importance of productivity. This indicator measures the efficiency of production and is definite in distinguishing core and periphery. The level of the productivity tells us something about the economic stage of a region or city. More about grouping countries by stage of maturity can be read in chapter 3. Besides the size and 'levels' of economic indicators, the structure of the economy can also be important. The structure can be explained by the distribution of sectors. The idea is that if there is a well-developed economy in the city, this gives a lot of opportunities to retailers. To translate this into economic sectors we expect that high shares of financial and business sectors will have a positive effect on the economy of a city. Finally it may be self-evident that high levels of disposable income per capita and high consumer spending is very important for (potential) retailers in a city. If the population of a city is great, but people have not much to spend, this may not an interesting investment area. On the other hand, if we look at small cities with high spending power an investment can be very profitable for a specific retail investment.

- A high level of GDP growth will positively influence the rental levels; the higher the expected growth, the higher the rental levels.
- The level of GDP per capita, will determine the level of rents. If the GDP per capita is higher, the rental levels will also be higher.

- A high unemployment level (vis-a-vis the national average) will result in lower rental levels.
- A high level of productivity will have a positive effect on rental levels.
- The economic structure will have an influence on the level of rents. A high share of the business service sector, transport and communication and education sector will result in higher rental levels.
- A high household disposable income per capita will result in higher rental levels.
- A high level of consumer spending per capita will result in higher rental levels.

The retail market

We just discussed the importance of consumer spending and disposable income, but if we want to know the effect of high levels of disposable income and consumer spending on retail attractiveness in cities we have to look at these indicators in more detail. Therefore we can look at the retail sales per capita to evaluate what people exactly spend on retail goods. It may be clear that high levels of consumer spending will only be interesting for retailers if the consumer spends his money in the right goods; retail goods. If this proportion is high in a specific city, this may attract (more) retailers because this illustrates a great consumer market. The other side of the market is the presence of existing retailers. According to Myrdal and Nelson there are some agglomeration advantages for retailers. If clusters will arise, retailers are prepared to pay higher rents for locations that offer agglomeration advantages (Bolt, 2005). On the other hand, a lot of competition from other cities can have negative effects as well. It the supply is greater than the demand through for example other big cities in the same region, this may be a treating aspect for a specific city. Another measurement of the existing retail market is the centrality index. This index indicates that if there is a large proportion of retail jobs, a higher concentration of retail businesses in the city is expected (DiPasquale & Wheaton, 1996).

- A high level of retail sales per capita will result in higher rental levels.
- A high presence of international retailers will result in higher rental levels.
- The higher the centrality index (approached through % of retail employment, the higher the rental levels.
- The presence of other large cities nearby will negatively influence rental levels.

Quality of life

To discuss the expected effect of soft locational factors, we merged them together under the definition quality of life. The importance of knowledge about these indicators gets more and more attention (European Commission, 1997). According to Joseph et al. (1999) quality of life indicators play an important role in location choices of firms and employees. Because for this research we have to deal with a limited availability of data, we selected as much as available indicators as possible about which we have some expectations. If we look at the innovative climate of a city, this can be highly important in competition with other cities and the level of success of a city (McCarthy, 2011). We can measure this innovation by looking at the number of patents per inhabitant, number of new business start-ups per inhabitant and the level of high educated people. A good developed health care sector, the safety of the city and the number of tourists are also quality of life indicators. It is expected that these indicators have a positive effect on the attractiveness. The central thought is that when the

city is attractive to live in or to visit, it is also attractive to invest in. Moreover more visitors or commuters will lead to more activity in the city and this can be favourable for retailers.

- A large amount of students in upper education will result in a higher rental levels.
- A good accessibility both through public transport as well as by road will result in higher rental levels.
- The innovative climate of a city will have a positive effect on the rental levels. A lot of patent requests, many new business start-ups and a high educated population will result in higher rental levels.
- A large number of tourist nights spent will result in high rental levels.
- The perceived safety in the city will have a positive influence on the level of rents.
- If a city attracts a lot of commuters this will have a positive effect on the level of rents.
- A good developed health care sector will result in high rental levels.

2.6.2 Hypotheses on rental growth

For the rental growth pretty much the same indicators have been used. If we look at those explaining variables we can make a distinction between structural and cyclical indicators. It is expected that the structural indicators such as levels of GDP, unemployment and education have an effect on rental levels and cyclical indicators such as population growth and unemployment growth will have an effect on rental growth. For this type of hypotheses we need longitudinal data instead of single point data. More about the statistical testing will be discussed in chapter 3.

- If the populations growth is high, rental growth will be higher.
- GDP growth and GDP per capita growth will determine rental growth, higher GDP growth will result in higher rental growth. As rents are negotiated in advance there will probably be a delay in GDP growth trickling through rental growth, so therefore a delay of 1 year is assumed.
- A rise in unemployment will have a negative effect on the rents, a high growth in unemployment will result in lower rental growth, or even rental decreases. On the flip side, a decrease in unemployment will positively affect rental growth. Also here a delay of 1 year is taken into account.
- A rise in productivity will result in an increase in rental growth.

Maturity hypotheses

Grouping countries by the stage of maturity is useful in comparing effects for different types of countries. For example Gardiner et al. (2004) shows some differences between core and periphery countries. Also the expert panel perceives different developments between countries on the retail market. This will occur through different structures of legislation in rents, ease of doing business and fiscal regimes. These are mainly national based indicators whereas this hypothesis is focussed on country level.

- The degree of market maturity will have an influence on to what extent the demand side variables will determine rental levels and rental growth.

3 Methodology & Data

Not everything that can be counted counts and not everything that counts can be counted (Albert Einstein)

3.1 Research strategy

The research question is a result from different kind of literature views and theories about city attractiveness, retail real estate and location theories. The aim of this study is to test the literature and assumptions resulting from the theory. From this point of view a strongly quantitative research strategy is maintenance and there is a deductive approach. In this type of research the concepts, on which the theory is based, have to be translated and defined into measurable units. Once the right units or variables have been selected, the collection of data can be started. Attention must be paid on the reliability and validity of the collected data. Reliable data has to be stable over time, homogeneity of variables has to be maintained and consistency between scientists about the conclusions must be guaranteed. Validity tells something about the right unit of measurement, if the accurate variables have been selected to test the theory. Valid measurements can be reliable, but reliable measurements don't have to be valid (Bryman, 2008). Accept from a pure deductive method in which a theory has been tested by using data, there can also be an inductive intention. This means that a new theory can be founded as a result from new collections of data or a specific approach. Quantitative research can be characterized by static, hard, structured and reliable data in which the researcher's point of view is definitive. In this case the concepts of city attractiveness are translated or operationalized in a number of comparable variables collected from different resources and therefore qualitative research is possible (appendix V). Caution has to be made when data is collected by different sources, because the reliability is not always easy to find out. Besides this quantitative research strategy the study can be strengthened by adding some qualitative information. Qualitative research constructs rich and deep data that is theory emerging and a strong participant's view is given. A combination of qualitative and quantitative methods or multi-strategy research can be very useful to support specific statements (Bryman, 2008). In this study a qualitative method; in this case interviews with the expert panel can be complementary if formulating hypotheses when theory is not clear about the subject. In other words, multi-strategy research can be used for 'filling up the gaps'.

3.2 Research methods

After choosing the right strategy, a research method has to be selected to apply the data. The available data for retail rents (a more detailed description about the data and data collection will be treated later on) are presented in time cycles from 4 till 27 years per city. This type of data is perfectly suitable a for longitudinal research method. A specific panel study using the ordinary least squares method (OLS) is used for data about one subject that is measured on several time periods. A characteristic of panel data or longitudinal data is that cross-sectional units are followed over a given time period. The advantage of this type of multiple observations is that you can control for specific unobserved effects or characteristics. Another advantage of panel data is that it is possible to investigate the importance of lags, because some events have a delayed effect. In this case all observations in the panel are logically not independently distributed over time. For this reason, specific

statistical methods are developed to remove the time-constant and filter the unobserved attributes. The scores on city rents can be affected by a lot of indicators; there may be an unobserved effect. The unobserved effect that is city specific remains the same in year 1 and year 5, the panel analysis will take into account for this by correcting these effects. The data also underwent a logarithmic transformation to show elasticity's in the data. The more time series, the more complex the formulas will be and therefore the use of a statistical program is very helpful (Wooldridge, 2009). If we have for example 60 cities and data for 10 years (each year 1 observation) we have 600 observations. A panel analyses can be done by the program 'Eviews', which is comparable with SPSS but requires more manual input and ordering.

For the single point data a multiple or single regression method can be used. The aim of a regression analysis is to predict values of the dependent variable from one or more independent variables. It can explain the variance that is responsible for a certain outcome and it can even be helpful in developing forecasting models (Field, 2009).

3.3 Data selection

Before we further elaborate about the statistical issues, it is important to know something more about the data and data collection. In order to answer the research question and confirm or reject the hypotheses, a data file with dependent and independent variables is needed. Nevertheless the collection of data is strongly influenced by the availability and quality of the data. Because the collection of data takes a lot of time and costs a lot of money, different sources have been used to create a data base that is as complete as possible.

To collect data about city attractiveness it has to be clear what kinds of variables are responsible for this attractiveness. In other words which performance indicators on city level are interesting for retail investments. To answer this question both literature and qualitative interviews have been used. A distinction is made between hard and soft indicators and can be available on national and/or on city level. Corio already conducted a model to measure attractiveness of a country to invest in and this is used as a starting point for the city study. Indeed some common sense is used in the first part of selecting independent indicators. Some of them are broadly evaluated in scientific articles or books, but some of them have not been investigated that much. For those last indicators a expert panel is set up, that consists of employees in and outside Corio (Appendix II) to create intersubjectivity. During a few unstructured brainstorm and interview sessions, the first version of the indicator score list was conducted. The aim of the indicator score list was to get a fair view of the opinions of the expert panel. The indicator score list (Appendix I) contains an elaborated list with open cells to fill in scores and possible remarks. Each member of the expert panel had to fill in the complete list and score the indicators by importance. These scores, together with the literature outcomes have been used by selecting the final list of variables. The results of this score list, that is partly filled in by Corio employees, contains confidential information and is therefore not included in this master thesis. For an example see also figure 2.6.

As mentioned from the conceptual model there are both exogenous specific factors (macro- economic) and endogenous specific factors (property specific) that explain shopping centre performance. Because the availability and consistency of property performance data was not satisfactory, this effect is not included in the study. To choose a right indicator for exogenous performance data there are a few options: retail rents, yields and capital values. The yields values are unfortunately not very consistent between the brokers and therefore a

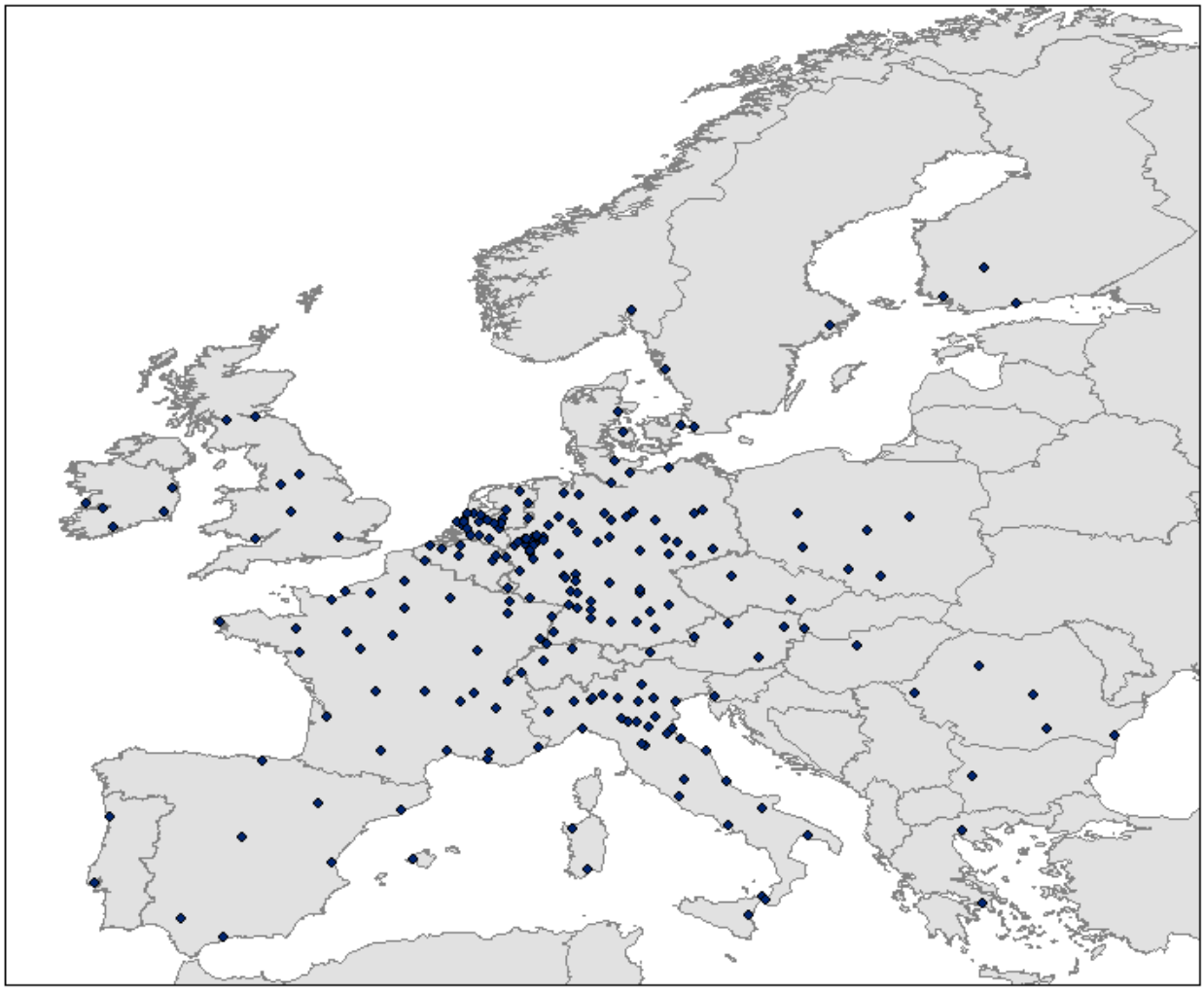
composed data base with different sources would not be reliable. It may be understandable that different sources have to be used in order to create a file that is sufficiently large. Another disadvantages is that both yields and capital values are not available on city level. For the above reasons the prime rents per m^2 in euro's are used as the performance indicator for shopping centres. The data reflect the rents of prime locations in a city and therefore the highest rent per m^2.

3.4 Data collection

One of the most time-consuming parts of doing research is the collection of data. Once it is clear what data is needed, it is a real challenge to really get access to the data. To be sure or at least try to be as precise as possible, data sources are comparable and reliable, a data source of good quality has to be used. Keeping the availability in mind the use of Eurostat and national statistic agencies are the best options. A lot of data in these data sources is available on different NUTS (Nomenclature of territorial units for statistics) levels, which is a hierarchical system for dividing up economic territories in the European Union. NUTS 1 is the major socio-economic region, NUTS 2 are basic regions for the application of regional policies and NUTS 3 regions are small regions for specific diagnoses (eurostat, 2012). The difficulty with the NUTS levels is however that the boundaries of these levels differ in several countries. For example in the Netherlands a NUTS 3 region contains several cities, but the boundaries of a NUTS 3 level in Germany are equal to the city boundaries. Luckily there is for some countries data available on municipality level. For other cities NUTS 3 data has been used by proportioning based on populations. If the population proportion of a city was 70 % of the total population of the NUTS region, the other data was also proportioned by 70 %. In total 44 cities of the 223 were proportioned with this method, 82 cities matched directly with the NUTS region and for another 97 cities NUTS 3 data was used that matched directly with the city. Figure 3.4 shows the map of all the cities included in the study. The selection of the cities is based on the availability of data. In this case the primary sources are the brokers who collected all the rent data of the cities. This means that we selected all cities of which we have rent data. Selection bias is associated to the specific brokers. The brokers may collect the data for cities on basis of specific size or number of rent transactions. The data that has been used for the independent variables was mainly collected and modelled by Experian and covers mainly the pillars demography, economy & business environment and Consumer Market. The soft indicators are not that easy to obtain; data collection is not periodic in each city, definitions are not clear and there may be less consistency of qualitative indicators between countries. A good alternative source with a lot of demographic, social, economic, environmental, transport and leisure indicators (almost 300) on city level is Urban Audit. Urban Audit is an initiative of the Directorate-General for Regional Policy at the European Commision. It provides statistics for 258 cities across 27 European countries. Unfortunately there is not an exact match between the Urban Audit cities and the list of cities with rent data. This means there are some missing values for those cities, but because it is the only resource for now so we have to deal with it. Another constraint in using Urban Audit data is that the city boundaries that have been used do not correspond exactly with the other city boundaries in the data set. Urban Audit uses mainly political boundaries which make sense for the national statistic agencies, but for some cities the boundaries do not correspond to the general perception of that city. In Dublin for example, the political boundary is narrower than the general perception of that city (Urban Audit, 2012).

The last pillar contains information about risk in doing business, political, financial and economic risks. Those factors are mostly based on national resources and not available on lower geographical levels. This information can be used in specifying countries in particular groups and measure country specific effects on the rents.

Figure 3.4 Cities included in the study



Source: F Mank and J. Schrader-van Meel, navteq, 2012

Talking about the rents it is good to keep in mind that multiple sources have been used. For each city the source with the longest time series was chosen. For some cities the rent values had to be converted into Euros and a single exchange rate for the whole time period has been used. To use just one year for the exchange rate (2001) the currency effects over time have been covered. The time series per city are not evenly distributed and for some cities there was just one year of rents (2011) available, so they could not be used in the panel analyses. In total there are 223 cities with a rental level value and 190 cities with a rental time serier for at least 4 years (1836 observations in total). The complete list of data resources and time series can be found in Appendix V.

3.5 Statistical testing

As described in the research method, some different kinds of test have been used in this study. The statistical testing and discussing the hypotheses can be divided into two different part; effects on rental levels and effects on rental growth. The different hypotheses can be tested using two different databases. One database contains rents on city level in time series and the other database contains just the single point data about rents and the other variables that have been selected before. The first part of this statistical review will focus on the single point rental data and the second part on the panel analysis with the time series.

3.5.1 Rental levels and city attractiveness: Factor analysis

To get some more information about the data set some simple descriptive outputs and a correlation matrix have been made. The indicators that have been used may have similar effects and that may be an indication for multicollinearity. It occurs when there is too much coherence between independent variables due to underlying factors. A correlation value above .8 is not accepted and is defined as multicollineair. If some indicators in de dataset are multicollinearity a reliable regression analysis can not be done. To control for the effect of multicollinearity a factor analysis can be done. The most important reason for the factor analysis is reducing the number of variables. This factor analysis merges several correlating variables into one factor and you can name it as a new variable. The Kaiser-Meyer-Olkin (KMO) statistics tells us how reliable the factors are. ''The KMO represents the ratio of the squared correlation between variables to the squared partial correlation between variables (Field, 2009)''. The closer the value to 1, the more reliable are the factors and the correlations are more compact. Values below .5 are not acceptable and values between 0.5 and 0.7 are mediocre. An import assumption to create a strong model is to have enough cases. As mentioned before, the soft variables obtained from Urban Audit are not available for every city and this means there are a lot of missing cases. The option 'replace missing values by mean' in SPSS provides us to expand the number of cases instead of exclude all of them. Looking at the KMO the value rises from 0.622 to 0.672 if we use all the 223 cases instead of 82. The method that is been used for the factor analysis is the principle component analysis.

To decide how many factors should be selected, we first have a look at the eigenvalues. Eigenvalues illustrate how evenly the variances of the matrix are distributed, so how much of the variation is explained by the factor. All eigenvalues greater than one are acceptable according to Field (2009). In this case 9 components can be selected with a total variance explained of almost 70%. Nevertheless it is hard to define 9 different factors and group the indicators together into 1 variable. It is useful to have a look at the screeplot. This graph shows the relative importance of each factor. The point of inflexion (where the slope becomes horizontal) can be seen as the cut-off point for selecting factors. If we look at the point where the slope changes from direction, 6 factors can be selected (Appendix IV). Now we have chosen the number of factors we can start with factor rotation. An orthogonal rotation method exclude all the correlations between the factors and it makes the factors easier to interpret. The varimax-method attempts to maximize the distribution of loadings within the factors. The resulting Rotated Component Matrix (Appendix IV) shows the matrix of factor loadings for each variable into a specific factor. Factor loadings below .3 are not displayed in the matrix but it could also be .4 if we wanted to. What we basically did was putting all correlating variables into 1 component or denominator and interpret them

together as a whole (factor). To test if there is a significant effect of the factors on the rental levels a regression analysis can be done. Both single regressions for each factor separated and a multiple regression for all factors together can be tested. However some critical notes have to be made by the interpretation of those regression analyses. It is difficult to interpret different kind of variables within one factor. This means that there are several variables that measure different kind of things and have different units of measurements (people, euro's or percentages) but are forced in 1 factor. In this case it is better to just look at the variance explained but do not try to compose a regression equation. For the difficulties above we provided both single and multiple regressions for the factors, but also for each variable by itself.

3.5.2 Regression

Before conducting a regression analyses we have to take into account for a few presumptions. First of all the variables, both dependent and independent have to be coded on an interval or ratio scale. Secondly there is a linear causal relationship between Y and X. At last the population and residuals have to be normally distributed (Vocht, de, 2011). These assumptions can be checked easily by conducting plots and look at the distributions. Homoscedasticity means that there is homogeneity of variance: for each value of X the variance of residual error is constant (Field, 2009). The aspect of multicollinearity is explained in the subject about factor analysis, but is also relevant for regression. If we put highly correlating variables in the model at the same time, you are simple measuring the same predictors and influence the reliability negatively. It can be identified by looking at the correlation matrix as already done before. Another way of detecting multicollinearity is looking at the Variance Inflation Factor (VIF). This standard points out whether a variable has a strong linear relationship with other variables or predictors (Field, 2009). If the values of VIF are above 3, there is reason to worry for multicollinearity. The last issue we have to check are the outliers. An observation that is very different from most others can bias statistical outcomes, but on the other hand these outliers are real observations and give a fair reflexion of the population. We therefore decided not to exclude the outliers in this research.

When we look at the outcomes of the regression analysis we have to check if the model is significant. When this is confirmed it is interesting to have a look at the R Square which shows how much variability in the outcome is accounted for the variable(s). The adjusted R Square says something about how well the model can be generalized. The F-test is important in proving significance but it also says something about the change in significance by adding more predictors (Field, 2009). There are a lot more statistics that can be discussed, but these are the most important ones. Although the hypotheses indicate a direction in the expectations there is chosen to use a two-tailed test with a significance interval of 95%.

The essence of multiple regressions is the same as for single regression; only multiple independent variables can be added. These variables can be added in two broad methods: at the same time or stepwise. The first method: the Enter method (the standard SPSS method) will force all the indicators in the model, also the non-significance indicators. The R Square shows the total variance explained by the model in which all indicators are included (Vocht, de, 2011). This means that one cannot see which variable is responsible for the highest variance and the hierarchal order is not specified because all the indicators are added at the same time. It is possible to add variables in a specific order or in different blocks. To make

choices for a right order one can look at the literature or the outcomes of the single regressions. This means that a variable can be insignificant in the single regression, but have a significant attribution to the multiple regression. The stepwise method on the other hand includes independent indicators step by step in order of the highest F-values and lowest significance. In this model only the significant variables are taken into the model (Vocht, de, 2011). The model is created by SPSS and there is no theoretical basis or influence of the researcher. Because both models have their advantages and disadvantages it is likely to use the two models separately. While analysing the models it is important to bear in mind the way the predictors are selected and added into the model, the interpretation is different.

3.5.3 Rental growth and city attractiveness

Panel analysis

The hypotheses about rental growth can be investigated by using panel analysis with the program Eviews. In our case we don't have the same time series for each city, so we use an unbalanced panel analysis. To make sure the range of variables is not effected by outlying observations, log-transformations can be used (Wooldridge, 2009). Using logs will also take into account for homoscedasticity (Field, 2009). Another assumption about fixed and random effects is already discussed in the paragraph about the method.

Clustering

The different cities that have been selected are spread over a number of countries that differ in characteristics. If we want to control for these specific characteristics and we want to compare them, the countries can be divided into different groups. A way to group the countries that is often used in the literature is to divide them into three different stages of maturity: the mature market, Growth market and emerging markets (Clarysse & Muldur, 2001). Gardiner et al. (2004) describes productivity as the most important source for the dispersion between core and periphery. The selection criteria that have been used are risk and business environment circumstances. A cluster analysis is a function of SPSS to identify groups of objects that are similar. The criterion is that each group can be interpreted in a meaningful way. There are 2 ways of conducting clusters: Hierachical and K-means. We use the last method because the number of clusters is already known and we have a moderately size of data. The method starts from the cluster centres and assigns cases to the closest centres after that SPSS re-compute the cluster centres and this process is repeated until the centres do not change anymore. The result is that the deviation between the cases and the cluster centres is minimal and the distance between the cluster centres is maximal (YouTube, 2012). It is good to be aware of the fact that the selection of countries into clusters is influenced by the fixed number of clusters that have been assigned to SPSS. Nevertheless this is just a substantial part of the study and because the method is just used to compare different markets it is easy to divide the countries into 3 groups. It may be interesting for further research to make some other distinctions between groups and number of groups.

Because we expect 3 stages of maturity we would like to create 3 different clusters. The variance between the countries in the same county have to be as low as possible and between the countries in other clusters as high as possible. The clusters are created on base of risk data (long term economic and political risks, business environment rankings, corruption perception, real estate transparency, government bond yields, economic

volatility and inflation rates). Markets in different stages of maturity are expected to have different characteristics of risk. After grouping the countries in different stages of maturity using the risk data, the groups can be used in answering the hypothesis about the effect on demand indicators.

4 City attractiveness and performance indicators

If you cannot measure it, you cannot improve it (Lord Kelvin)

In this chapter all hypothesis will be testes with a specific method as have been discussed in chapter 3. The variable that has been used will be introduced in six groups and a the results from SPSS and Eviews will be presented. In the first part of this chapter we will dive into the rental levels, starting with the single regressions on the variables and factors followed by the multiple regressions (both the single variables and factors). The second part gives answers on the hypotheses about the rental growth. After all we will take a look the cluster analysis that has been used for grouping the countries on risk basis.

4.1 Single regressions on hard locational factors In appendix III some of the SPSS outputs are added. Because there are a lot, a selection of the most important (significant) ones has been made. The outputs in the appendix correspond with the numbers of the hypotheses. Before analysing the regression outputs, the assumptions for doing the analysis have been checked.

Population
In a single regression analysis population size is significant in determining the rental level. There is a simple correlation between total population size and rental levels of .666. The R Square tells us that the population size can account for 44,4% of the variation in rental levels. Because there is just one predictor (population size) used in the model, 55.6% of the variation in rental levels have to be explained by other variables. In the ANOVA matrix we find a F-ratio of 176.6 which is significant at $p < .001$. This means there is less than 0.1% chance that an F-ratio this large would occur if the null hypothesis were true. The population growth also shows a significant effect on the rental level. The population grwth is responsible for 5.9% of the variation in rental levels with a significant F-ratio of 13.9. Nevertheless a specific high or young population structure does not have any positive or negative effect on rental levels. The variable green pressure reflects the population between 0 and 15 year old divided by the working age population, which is 16-64 years. For grey pressure the population aged 65 and over divided by the working age population have been used. Both results show a low F-ratio, respectively 0.1 and 1.5 and they are not significant. The hypotheses are rejected.

1: The total population size will determine the level of the rents: the larger the population the higher the rental levels.
2: A high level of population growth will positively influence the rental level; the higher the expected growth, the higher the rents.
3a: A young population structure will have a positive effect on rental level, if there is a high green pressure, rents will be higher.
3B: An old population structure will have a negative effect on rental levels, if there is a high grey pressure, rents will be lower.

Economy

As a conclusion from the single regression analysis we can say that there is no significant effect of GDP growth on rental levels and the hypothesis can be rejected. On the other hand the effect of GDP per capita on rental levels is significant with an F-ratio of 33.2 at p <.001. The explained variation and the correlation of GDP per capita on rental levels is not so high: 13.1% and .362. A significant causal relationship has been proven, but the strength (illustrated by the Beta) is not very high. Besides the variable about GDP per capita, we also tested the relationship between the total GDP size and rental levels. The output shows a positive significant result. Nevertheless there is a high correlation discovered between Population size, GDP size, Total Retail Sales and Total Consumer Spending. It will be clear that all the variables will have a positive effect on the rental levels. More about this effect of multicollinearity will be discussed later on.

Another important economic variable is unemployment. The hypothesis about unemployment represents the relationship between rental levels and the unemployment rate which is the number of unemployed people as a percentage of the labour force. The unemployment level of the city is taken as a percentage of the national average. It is expected to have a negative effect on rental levels. Nevertheless the output is not significant so the hypothesis can be rejected. Apart from that, the hypothesis is also tested for the unemployment level not controlled for the national average. No significant effect is showed here as well.

As a result from the regression analysis, it can be assumed that there is a positive relationship between productivity and rental levels. Productivity is a ratio of production output to what is required to produce it (inputs). Labour and capital are inputs and revenues are outputs. Summarized the definition of productivity is the ratio of GDP to total headcount employment (Experian, 2012). Productivity can account for 20.3 % of the variation in rental levels with a significant F-ratio of 56.2. For this reason the hypothesis can be accepted.

Apart from variables about the level of the economy we also expect some effect of the economic structure on rental levels. For this hypothesis we took the regression analyses of 3 different variables. The economic structure of the city is translated into employment sectors that are expected to have a positive influence on rental levels. First we look at the business service sector which includes the headcount employment of financial services, business & other services and public administration. The SPSS output shows a significant F-ratio of 51.0 and the R Square is 0.188. Secondly we take a look at the headcount employment of the transport and communication sector. There is a small significant F-ratio and it explains only 4.3% of the variation in the rental levels. Finally the employment headcount of the education sector is tested but this variable shows no significant results. There is also a multiple regression analysis done with the same variables. The same results are showed and the education sector is expelled out of the model.

At last we look at the household disposable income and the level of consumer spending. The household disposable income is defined as the amount of money that households have available for spending and saving after income taxes have been accounted for. In the database the disposable income is the net national disposable income as the sum of the net disposable incomes of the institutional sectors (Experian, 2012). There is a significant positive relationship between a high household disposable income per capita and rental levels. The hypothesis can be accepted with a R Square of 17.2 %. Consumer spending per capita tells us something about what people spend on goods and services and it

encompasses all domestic costs for individual needs (Experian, 2012). The explained variation in rental levels can only be explained by 2.0% of consumer spending per capita. There is also a low F-ratio of 4.5 at p <.05. As a conclusion we can say there is a little significant positive effect of consumer spending per capita on rental levels.

4: A high level of GDP growth will positively influence the rental levels; the higher the expected growth, the higher the rental levels.
5: The level of GDP per capita, will determine the level of rents. If the GDP per capita is higher, the rental levels will also be higher.
6: A high unemployment level (vis-a-vis the national average) will result in lower rental levels.
7: A high level of productivity will have a positive effect on rental levels.
8: The economic structure will have an influence on the level of rents. A high share of the business service sector, transport and communication and education sector will result in higher rental levels.
9: A high household disposable income per capita will result in higher rental levels.
10: A high level of consumer spending per capita will result in higher rental levels.

The retail market

For the retail market we expect that it is important to have a high level of retail sales per capita. The retail sales can be defined as the sales of retail goods over a stated time period based on data sampling that is extrapolated to model an entire country. They include in-store sales as well as catalogue and other out-of-store sales (Experian, 2012). The model summery of the single regression analysis shows a significant R-Square of .121 and an F-ratio of 30.3 at p <.001. This means that a high level of retail sales per capita have a positive effect on rental levels.

Besides the spending capacity of consumers, the presence of international retailers is expected to be important for the attractiveness. The presence of international retailers is measured by the report: 'How global is the business of retail' (CBRE, 2012). In this report each city is ranked by the number of international retailers that are present. The R Square tells us that the population size can account for 26.4% of the variation in rental levels. A significant high F-ratio of 79.2 confirms the hypothesis and there will be a positive effect of high presence of international retailers on rental levels.

Finally we have a look at the centrality index. The centrality index tells us something about the amount of retail activities in the city. More specific it is the ability of the city to draw additional spending power to the city than that of its own population. We have translated this predictor into the employment in the retail sector (DiPasquale & Wheaton, 1996). To create a relative measure unit the headcount employment of whole sale & retail trade have been divided by the total headcount employment of the city. When running this variable in the single regression a small R-Square is the result (.021) and the F-ratio 4.8 at p <.05. The hypothesis is accepted with a small predicted value.

11: A high level of retail sales per capita will result in higher rental levels.
12: A high presence of international retailers will result in higher rental levels.
13: The higher the centrality index (approached through % of retail employment), the higher the rental levels.

4.2 Single regressions on soft locational factors

Quality of life

There have been selected some indicators that represent the quality of life. All the indicators have been tested for the effect on rental levels. Despite all the expectations there is no significant effect found for the presence of other large cities nearby, a large amount of students in the upper education, a large number of tourist nights, a lot of commuters, the perceived safety and a good developed health sector (measured by the number of hospital beds available per 1000 inhabitants and the employment in the health sector divided by the total employment)..

As Baldwin & Wyplosz (2009) mentioned, accessibility of a region is very important in competing with other regions. This hypothesis is about accessibility through public transport and road. Only accessibility by road shows a very small significant R-Square of 4.4% at $p < .05$. So even there is a relationship between the dependent and independent variable, the relationship is very low.

To say something about the innovative climate of the city there are 3 variables selected. The first one is about the number of patent request per 1000 inhabitants (to create a more relative measure unit). The number of new business start-ups is also indicated per 1000 inhabitants. Finally it is expected that a lot of high educated people will result in higher rents. As all variables are tested with the single regression only the last one seems to have a little effect. Only 3.1 % of the variation in rental levels can be explained by a high educated population. The F-ratio is 5.1 at $p < .05$.

14: The presence of other large cities nearby will negatively influence rental levels.
15: A large amount of students in upper education will result in a higher rental level.
16: A good accessibility both through public transport as well as by road will result in higher rental levels.
17: The innovative climate of a city will have a positive effect on the rents. A lot of patent requests, many new business start-ups and a high educated population will result in higher rental levels.
18: If a city attracts a lot of commuters this will have a positive effect on the level of rents.
19: A large number of tourist nights spent will result in high rental levels.
20: The perceived safety in the city will have a positive influence on the level of rents.
21: A good developed health care sector will result in high rental levels.

4.3 Multiple regressions on single variables

To test what the effects will be if we put all the variables together in one model a multiple regression analysis can be done. As described in chapter 3 there are two method we can use, we will both use the enter and the stepwise method. Before we just add all the variables together in the model, we have to check for multicollinearity by looking at the correlation matrix and the VIF statistics (Appendix III). As a result we can conclude that Population, GDP, Consumer Spending and Retail Sales have very high correlations. This can be verified if we look at factor 1 (critical mass) in the next paragraph, which includes size related variables. From the literature we can say that the variables are interchangeably and we can use just one. For this reason only the variable population is used in the multiple regression analyses and GDP, CS and RS are eliminated.

Firstly we will use the enter method which forces all the indicators in the model regardless the significance of the single regression. The variables Population size, total GDP, Retail Sales and Consumer Spending have very high correlations and multicollinearity is a threat. For this reason we choose to just add population size. To control for the missing values we chose to replace missing values with means. The total explained variation of the model with all the variables is 70.0% with a significant F-ratio of 16.2.

Secondly we run the multiple regression analysis with the stepwise method in which SPSS selects the significant variables in order of the highest F-values and the lowest significance. As we did in the enter method as well, the variables GDP, Retail Sales and Consumer Spending have been taken out because of the multicollinearity. For the missing values we select ‘Replace with mean’ and this results in a total N of 223. If we want to know whether the model is successful in predicting rental levels, we can take a look at the model summery. We can see that 8 models have been produced by SPSS. In the first model only population size is responsible for a R-Square of .444. The last model includes population size, disposable income, international retailers, road access, cities within 30km, new business start-ups, young population structure and the number of reported crimes. The R indicates the multiple correlation coefficient between the predictors and the outcome, which is for the first model (only population size is included) equal in the single regression analysis. The R-Square tells us that in model 8, when the maximum number of variables is added, 66.3% of the variability in the outcome is accounted by these variables. In the R-Square change we can see how much the variability have been increased by adding a variable in each new model. According as more variables are added, the increase of explained variation gradually decreases. The change statistics also tell us that all changes in R-Square were significant at $p < .001$ or $p < .005$. To get a quick view of the relative importance of every single variable the beta-values are listed in appendix III.

4.4 The factor analysis

All the single variables have been tested in a single regression analysis in SPSS. To make it easier to interpret all these variables and to control for multicollinearity it is wise to do a factor analysis. When the variables have been divided over different factors, the factors can be put in a single regression as well. Before we run these single regressions we take a look at the factors that can be distilled from the list of variables.

4.4.1 The six factors

In chapter 3 we discussed the principle component analysis and the choices that lead to the 6 components or factors. One has to keep in mind that some variables were not assigned to any component and so this means they add no value to the model. On the other hand there are also some variables that are allocated to more than one component, the component with the highest loading for the variable has been used (Appendix III). The next stage in this factor analysis is to rename the new factors. The first factor: ‘Critical mass’ contains all the variables that indicate absolute size such as total population, GDP, Consumer Spending, Retail sales and the ranking for retailer presence. This factor really makes sense so it is not surprisingly that there are relatively high loadings. The second factor that can be distilled from the matrix is called ‘wealth’. All loadings for this factor are positive and have something to do with the high income class. The variables GDP per capita, disposable income and productivity can be seen as indicators for a city with high net worth individuals. A positive effect of employment in the health sector and the business service sector can also be a sign

for high incomes. Population growth can be explained by the attractiveness of migrants in this 'wealthy' city and the high loading for young people. The association with a lot of crime registration may be explained by the fact that the higher income groups got robbed more often. 'Entrepreneurial environment' is the label for the third factor. There are a lot of new business start ups and a lot of employment in the retail sector. This makes sense because a lot of new business star ups are in the retail branch. There is also a negative loading for young people which means that there are not so many children between 0 and 15 years old. In a entrepreneurial environment this is not surprisingly. Low loadings respectively positive and negative are found for GDP per capita and Retail sales per capita. We can say that the people are quite wealthy but they do not spend their money on retail. The fourth factor is labelled as 'Working commuters' with high positive loadings on GDP growth, commuter flows and employment in the telecom and transport sector. Not too many explanation is needed here. We are talking about a working population (especially in the telecom and transportation sector) with a increasing GDP. A negative loading is showed for old people (above 65), they are the opposite of the commuter population. Factor five is distinguished as: 'Disadvantages and learning population'. This factor loads positively on the employment in the education sector that could indicate there are a lot of educational institutions. This will match with the high positive loading on unemployment whereas students often have no job. A negative loading is found for Consumer Spending per capita, which makes sense for this kind of population. The last factor covers 'Service specialized cities with knowledge' and can be seen as a city that attracts a lot of tourists, there is a high share of student population and a lot of available hospital beds. The variables that have been deleted out of the model are relative green areas, public transport and the relative number of patents.

4.4.2 Single regressions on the factors

In figure 4.4 the outcomes of the single regressions with the factors are showed. As one can see the first two factors are significant at p <.001 and the third factor is significant at p <.1 which may be discussible. The first factor critical mass has explained variation of 49.7% which it quite a lot. The factor wealth and entrepreneurial environment are respectively responsible for 11.5% and 1.7% of the variation in rental levels. If you compare these results with the single regressions more variables together are responsible for a specific R-Square. This is not the same as simple summing up all the R-Squares of the single regressions together, because in the factors it has been controlled for shared variation of variables. If we look at the multiple regressions (using the stepwise method) with the factors later on it will be clear that only the first three factors are included in the model and the R Square is a sum of the first three R-Squares in figure 4.4. The complete outputs of the single regressions can be found in appendix III. One has to bear in mind a few comments about the factor analyses. If we look at the variable that have been forced into the factors, it can occur that variables that were not significant in the single regressions still be present in a significant factor. If we look for example at the employment in the healthcare sector, which had no effect on the rental levels in the single regression, gets a high loading in the factor wealth. On the other hand it is also possible that a significant factor on its own not occurs in a significant factor. This is the case with for example unemployment. The rotation function turns off the effect of multicollinearity and puts together the most similar variables regardless of single significance.

Figure 4.4 Factor analysis multiple regression

Factor	Significance	F-test	R^2
1.Critical Mass	.000	217.968	.497
2.Wealth	.000	28.681	.115
3.Entrepreneurial Environment	.052	3.805	.017
4.Working commuters	.708	.141	.001
5.Disadvantages	.399	.713	.003
6.Service specialized cities	*.652*	*.204*	*.001*

Source: F. Mank and J. Schrader- van Meel, 2012

4.4.3 The multiple regression on the factors

To put all the factors in one model we use a stepwise multiple regression analysis. SPSS will only use the significant variables (factors in this case) and include them in the model step by step in order of the highest F-ratios and the lowest significance. As we can see from the model summery only the first factors were put in the model. This strokes with the result from the single regressions. The total explained variation in the rental levels is 62.8% if the factors Critical Mass, Wealth and Entrepreneurial Environment were used in the model. The significance of model 3 remains at p <.001.

The effects on rental growth

To test the effect of the predictor variables on the dependent variable rental growth, we used a OLS regression analysis using panel data panel in Eviews as discussed in chapter 3. Logarithms were used to express elasticity's and growth rates instead of absolute values. The complete results can be found in appendix III.

Christaller with his central place theory paid attention on the range and threshold. For any service, shop or shopping centre in this case, a minimum number of consumers is needed in a specific range to be profitable. From this point of view one can imagine that a high population growth can be favourable for the city centres, shops and shopping centres. A high rental growth can be the consequence. Resulting from the panel analyses we can reject the hypotheses that expects a positive relationship between population growth and rental growth. A clarification for this outcome can be that the effect of population growth is a long term driver, which means that there are no sudden effects that predict rental growth. As a result of the single regression on population growth and rental levels there was a significant effect. This means that there is already an effect of population growth included in the rental levels.

Another aspect that says something about the consumer market is GDP. A high level of GDP (per capita) and a high GDP growth may insinuate a high level or a growing level of wealth. This statement may be a bit generalizable, but there are a lot of benchmark studies that pay attention on differentiations in GDP values. It may not be surprising that we expect that a (growth) levels of GDP will have a positive effect on the retail real estate. From this

point of view the variables have been tested on the rental growth values. In this analysis different lags have been tested to find out which lag structure is the most significant. A lag of one year appeared to be the best option. GDP growth one year in advance has an explained value of 33% in the variance at the t-value of 4.58 at p <.001. Similar results were found by testing Retail Sales and Consumer spending. This may be explained by the economic foundation of these variables. If we put the predictors together in a multiple regression, no significant results were found and there is a loss of explanatory power.

As expected from several studies and benchmarks an significant negative effect of unemployment is the result of the analysis (Baldwin & Wyplosz, 2009; Claryse & Muldur, 2001). With a t-statistic of 7.309 at p <.001 unemployment explains 35% of the variance in rental growth. In this case also an expected delay is tested but this seems not to be significant. Unemployment rates may absorbed very quickly in the rental growth levels.

Finally we tested for the effect of productivity. In the competitiveness benchmark from Annoni & Kozovska (2010) productivity plays an important role. If the productivity is rising, this means the position of competition is high or increasing. We expect that this will have understandable have positive effects on the rental growth as well. As a result from the analysis the hypothesis can be accepted with one year delay and a t-statistic of 5.01. 37% of the total variance in the rental growth is explained by the rise in productivity.

22: If the population growth is high, rental growth will be higher.
23: GDP growth and GDP per capita growth will determine rental growth, higher GDP growth will result in higher rental growth. As rents are negotiated in advance there will probably be a delay in GDP growth trickling through rental growth, so therefore a delay of 1 year is assumed.
24: A rise in unemployment will have a negative effect on the rents, a high growth in unemployment will result in lower rental growth, or even rental decreases. On the flip side, a decrease in unemployment will positively affect rental growth. Also here a delay of 1 year is taken into account.
25: A rise in productivity will result in an increase in rental growth.

4.5 The effect of grouping countries

The last hypothesis was about the effect of grouping countries into stages of maturity: the mature markets (3), growth markets (1) and emerging markets (2) (figure 4.5). To test the hypothesis below the different groups (divided by the K-means cluster analysis as described in chapter 3).

Figure 4.5 Cluster analysis

Growth markets	Emerging markets	Mature markets
Spain	Greece	Sweden
Portugal	Romania	Norway
Italy	Bulgaria	Finland
Poland		Denmark
Czech Republic		UK
Slovakia		Ireland
Hungary		Netherlands
		Belgium
		Luxembourg
		France
		Germany
		Austria
		Switzerland

Source: F. Mank and J. Schrader- van Meel, 2012

Before we make some multiple regressions we want to find out if the rental levels between mature markets and growth markets differ significantly. Because we have not enough cases for the emerging market we will not take them into account. We run an independent sample t-test and the result is that there is there is not a significant difference between the two country groups. This means that the rents are not affected by the level of maturity.

The growth markets

The first group contains 7 countries and 57 cities in total. The model summery of the regression analysis (stepwise method) shows us 4 models that includes the variables productivity, crimes, hospital beds and population size. The explained variance of these variables is 75,9% at $p < .001$. If we compare this model with the multiple regression in which all the countries are included we had a R-Square of 66.3%. There are less variables needed to get a higher R-Square. The higher explained variance can be explained by type of market. The mature market group contains countries with catching up economies and therefore often a rising productivity.

The mature markets

The biggest country group contains 13 countries and 158 cities in total. If we look at the 11th model that SPSS created, we see a lot of similar variables included as in the overall multiple regression analysis. The variables that explain 91% of the variance in the rental levels can be seen as basic predictors for a wealthy retail branch such as a high population size, disposable income and employment in the retail sector. The F-value of 63.6 is still significant at $p<.001$ at the last model. Therefore the hypothesis can be accepted.

26: The degree of market maturity will have an influence on to what extent the demand side variables will determine rental levels and rental growth

5 Conclusions and recommendations

To understand real estate, you need to understand cities. (DiPasquale & Wheaton, 1996)

This chapter can be divided into four parts. The first part discusses the first research question about hard locational factors affecting city attractiveness. The second part will focus on the soft locational factors and their influence. The third part references to the third sub question about valuing city attractiveness for retail real estate investments. After discussing the results some recommendations will be given in the last part. These remarks are important to put the study in perspective and to take notice of the limitations. The recommendations can be useful in conducting new studies or specifying specific parts of this study.

5.1 Attractiveness and hard locational factors

What 'hard' locational factors (e.g. population growth and GDP per capita) are important in benchmarking city's concerning the Retail Real Estate Investment market?

If we look back at the first research question that has been defined in the first chapter, we can answer this question by looking at the results of several statistical tests. To test the effect of the performance indicators or city attractiveness factors on the retail real estate market, a large number of high street rents (both the levels and growth rates have been used) were collected. The theoretical framework together with a lot of interviews and brainstorm sessions helped us in selecting the city performance indicators. If we look at some basic quantitative components we can determine that the size of the city is important in attractiveness of retailers, for that matter the rents are measured in m^2. This may look obvious because this reflects a high potential consumer market. These results correspond with the theory of Christaller in which the size of the market plays a determining role in the locational choice of the supplier (Bolt, 2005). Nevertheless the structure of this population is of less importance whereas Brounen and Eichenholtz (2004) argued that the population structure was important in attractiveness for retail. A specific young or old population structure does not result in higher rental levels. It may be the case that retailers can adapt a specific demand and are able to anticipate on the consumer's command. If we look at more economic indicators the level of GDP growth does not have any effect on the rental levels whereas the GDP per capita shows a positive relationship. For the size of GDP the same can be concluded as for the population size; the bigger the consumer market the more interesting it is for retail investments. More important for the attractiveness of retail investments in the city is productivity. A variable that often have been used in competitiveness studies (e.g. Gardiner et al., 2004) shows a high positive effect on rental levels. Another important factor from the literature is unemployment, in this case no effect have been proven. Despite the high expectations in the literature on competitiveness, it seems that specific employment levels have no affect for retail attractiveness in cities. Looking at the economic sector structure it is favourable to have a good developed business service sector which includes employment in financial services, business & other services and public administration. After all we took a close look at the consumer side. An important

issue in the attractiveness of cities are the incomes of the inhabitants. If we talk about income and expenditures, a high household disposable income is more important than a high level of consumer spending per capita. On the other hand the retail sales per capita result in a higher effect on rental levels. The market in which these retail sales are done have a quite high effect on the attractiveness. As a conclusion we can say that there are indeed some hard indicators that have an effect on city attractiveness for retail real estate, but we have to bear in mind that there are indicators that measure the same thing such as GDP size, population size, Consumer Spending and Retail Sales. These size indicators together, which have been clustered in the factor analysis, have a reasonable effect on the rental levels. The funny thing is that the concepts of the old central place theory are still applicable in this study. If we build a model to explain the variance in rental levels a number of 8 variables are selected. Population size, disposable income and the international ranking of retailers are the most important ones. Results are a slightly different if we use the rental growth instead of rental levels. Here is GDP growth from great importance whereas there is no effect for population growth. Also the unemployment rate will have an significant effect on rental levels. Rental growth is simply a complete different measure unit and describes more cyclical effects in city attractiveness.

5.2 Attractiveness and soft locational factors

What 'soft' locational factors (e.g. quality of life and tourism) are important in benchmarking city's concerning the Retail Real Estate Investment market?

Comparing cities on soft locational characteristics is not something new (Joseph et al., 2004, European Commission, 1997). However using these characteristics in predicting attractiveness of cities for retail investments is innovative. Although it is sometimes very hard to define these kind of 'soft indicators' and even more to find reliable data, it is tried to test some specific hypotheses with the data that was available. The aim was to create a sort of quality of life pillar with all the indicators together. Despite all the expectations and increasing attention for these kind of predictors the results show a lot of insignificant outcomes. Only the innovative climate and the accessibility by road have a little influence in the attractiveness. The rejecting results can be due to the reliability and availability of the data. Data about for example tourism, nature and leisure is scare and not always comparable between cities. If we put the soft indicators together with the hard indicators in one model, the effect of the soft indicators disappears. Another explanation of these low effects can be the geographical scale. When a retailer is looking for the right location he firstly scans the environment by competitors, consumers and the size. Characteristics about the culture, nature and quality of life may be important if there are comparable options. Nevertheless it is hard to use this information for policy making processes. It is almost impossible to manipulate soft locational indicators. The message of the results is not to reject the importance of attractiveness and soft indicators but to place it into a broader context and interpret them with care. Specific indicators can play an important role when other (soft locational indicators) are comparable.

5.3 Valuing city attractiveness according to retail real estate investments

How can various influencing factors on city performance be used in valuing cities as investment potential for retail real estate?

The indicators that have been selected for this study are mainly based on data availability. Especially for the soft indicators this is the case. Nevertheless, the indicators that are used are mostly covered by different theoretical studies. The data for the hard indicators are more robust because long timeseries have been used (for the rents) and the data is collected for several years by the same institutions. The outcomes shows us different effects for different markets in stages of maturity. This means that if we want to value a city for retail attractiveness we have to bear in mind the stage of maturity. The weight and importance for each indicator can be different for specific retailers. The question is however if we have selected different indicators, would the outcomes be substantial different. Especially for the hard indicators this is not expected. We took a broad theoretical framework to select the indicators and the data availability is great and up-to-date. The data collection for soft locational indicators is more difficult and less reliable. This is mainly caused by the unstructured and short term of collecting these data. Because of the complexity of the retail real estate market and all the influencing indicators it is not the aim to create a global benchmark for retail investment, but to show the different effects of the indicators. The number and influence of the variables that are added in the models are different. Another consideration that have to be made is whether or not to group the variables in factors whereas they control for multicollinearity. During the process it became clear that with datasets of this size the opportunities and choices are endless. It may be frustrating that keeping this in mind a research is never finished, but on the other hand it gives you numbers of creative ideas to build on new studies.

5.4 Recommendations

Reading this study it is important to keep in mind that some assumptions have been made in order to make the research practical. Because we have limited data availability some outcomes may be biased. The cities that have been used are for example based on the rent data that was available from the brokers. However because the list of cities and variables is very extensive, it is not expected that the outcomes will be very different if we add new cities. Another point that is important to keep in mind is that this study is all about the demand side of the retail branch in cities. This will have an important contribution to the attractiveness of a city, but there is also a supply side. The presence and level of presence may have a determining role for other retailers to choice a location. It is recommended to take into account for this effect in further research. The effects of this new information can be tested against high street rents but there can also be sought after other dependent variables such as yields, capital values or other forms of rents. Taking about data, considerable potential can also be gained in collecting more reliable quantitative data, openrationalize specific planning regimes of cities and city specific risks. If this study is repeated every year and we can add more and more cities (for example cities in Turkey) the research can be even more valuable.

Literature

Articles

Beaudry, C. & A. Schiffauerova (2009), Who's right, Marshal lor Jacobs? The localization versus urbanization debate. Research Policy 38, pp.318-337.

Bristow, G. (2005), Everyone's a 'winner': problematizing the discourse of regional competitiveness. Journal of Economic Geography 5, pp.285-304.

Brounen, D and P.M.A. Eichholtz (2004), Demographic contraction and European property markets, consequences for the demand for office, retail and residential space, European Public Real Estate Association (EPRA).

Cheshire, P. (1999), Cities in competition: articulating the gains from integration. Urban Studies 36, pp.843-864.

Claryse, B. & U. Muldur (2001), Regional cohesion in Europe? An analysis of how EU public RTD support influences the techno-economic regional landscape. Research Policy 30, pp.275-296.

Clarke, I., Mackaness, W., Ball, B. & M. Horita (2002), The devil is in the detail: visualising analogical thought in retail location decisionmaking. Environment and Planning B: Planning and Design 2003 30, pp.15-36.

Glaeser, E.L., Kolko, J. & A. Saiz (2001), Consumer city. Journal of Economic Geography 1, pp.27-50.

Gardiner, B., Martin, R. & P. Tyler (2004), Competitiveness, productivity and economic growth across the European regions. Regional Studies 38, pp.1045-1068.

Guy, C.M. (1998), Classifications of retail stores and shopping centres: some methodological issues. GeoJournal 45, pp.255-264.

Het Financiele Dagblad (2011), Stenen winkel moet hervormen. [online] http://www.cormolenaar.nl/stenen-winkel-moet-hervormen-fd-7-11-11 [03-05-2012]

Huang, A. & D. Levinson (2010), Why retailers cluster: an agent model of location choice on supply chains. Environment and Planning B: Planning and Design 2011 38, pp.82-94.

Huggins, R. (2010), Regional competitive intelligence: benchmarking and policy-making. Regional Studies 44, pp.639-658.

Karamychev, V. & P. van Reeven (2009), Retail sprawl and multi-store firms: An analysis of location choice by retail chains. Regional Science and Urban Economics 39, pp.277-286.

Kurzrock, B.M., Tottke, N.B. and D. Schiereck (2009), Factors that influence the performance of office properties. Journal of real estate portfolio management 2009, Vol.15.1.

Martin, R. (1999), The new 'geographical turn' in economics: some critical reflections. Cambridge

Journal of Economics 23, pp.65-91.

Meyer-Stamer, J. (2008), Systematic Competitiveness and Local Economic Development. [online] http://www.meyer-stamer.de/systemic.html [09-05-2012]

Miderlfart, K. & H. Overman (2002), Delocation and European integration: is structural spending justified? Economic Policy 17, pp.321-359.

Oosterveld, M.J.F. (2010), Success factors in shopping centre performance; to what extent is size explanatory? Masterthesis Real Estate Studies, University of Groningen.

Patterson, G. A. (2009), The Financial Crisis of 2008 and the Evolving Nature of International Real Estate Markets. Real Estate Review 38:2 2009, pp.9-14.

Puga, D. (2002), European regional policies in light of recent location theories. Journal of Economic Geography 2, pp.373-406.

Weltevreden, J.W.J., Atzema, O.A.L.C., Frenken, K., de Kruif, K. & F.G. van Oort (2008), The geography of Internet adoption by independent retailers in the Netherlands. Environment and Planning B: Planning and Design 2008 35, pp.443-460.

Zelenev, A. (2003), The city as an Entertainment Machine. Research in Urban Policy, Volume 9, pp.235-252.

Books

Atzema, O., Lambooy, J., van Rietbergen, T. & E. Wever (2002), Ruimtelijke Economische Dynamiek. Coutinho, Bussum.

Baldwin, R. & C. Wyplosz (2009), Economics of European Integration. Mc Graw Hill.

Bolt, E.J. (1995), Productvorming in de detailhandel, Handboek. WBN.

Bolt, E.J. (2003), Winkelvoorzieningen op waarde geschat, Theorie en praktijk. Merkelbeek.

Bryman, A. (2001), Socail Research Methods. Oxford University Press, New York.

DiPasquale, D. & W.C. Wheaton (1996), Urban Economics and Real Estate Markets. Prentice Hall, New Jersey.

Evers, D.V.H. (2004), Building for Consumption, An institutional analysis of Peripheral Shopping Center Development in Northwest Europe. Universiteit van Amsterdam.

Florida, R. & D. Harris (2002), The rise of the creative class. The perseus books Group.

Joseph, G., Matthew, K. & T. Joseph (1999), Handbook of Regional and Urban Economics 3.

Leeuwkring, van der, A. (2007), Stedelijkheid als rendement, privaat initiatief voor publieke ruimte. Trancity, Haarlem.

Marlet, G. & C. van Woerkens (2011), Atlas 2011 voor gemeenten. VOC uitgevers, Nijmegen.

Molenaar, C. (2011), Het einde van winkels? De strijd om de klant. Sdu Uitgevers, Den Haag.

Pine, B.J. & J.H. Gilmore (1999), De beleveniseconomie, Werk is theater en elke onderneming creëert zijn eigen podium. Academic Service, Schoonhoven.

Ruimtelijk Planbureau (2005), Winkelen in megaland. NAi Uitgevers, Rotterdam.

Van Gool, P., Brounen, D., Jager, P. & R.M. Weisz (2007), Onroerend goed als belegging. Wolters-Noordhoff, Houten.

Vocht, A. De (2011), Basishandboek SPSS 19, Bijleveld Press, Utrecht.

Weltevreden, J. (2006) City Centres in the Internet Age, Exploring the implications of b2c e-commerce for retailing at city centres in the Netherlands. Utrecht University.

Working papers

Annoni, P. & K. Kozovska (2010), EU Regional Competitiveness Index. European Commission Joint Research Centre, 289pp.

Barca, F. (2009), An agenda for a reformed cohesion policy. A place-based approach to meeting European Union challenges and expectations. Report for the EU, Brussels, pp.vii-xxiv.

IPD (2012), IPD global cities performance commentary, key analytical findings from the IPD global cities report of real estate performance data across 60 cities worldwide, IPD, London.

Marquard, A.R. (2009), Basissyllabus – Module 1, Inleiding Beleggingsanalyse, Opleiding Beleggingsanalyse. Amsterdam School of Real Estate.

McCann, P. & R. Ortega-Argiles (2011), Smart specialization, regional growth and applications to EU Cohesion Policy. Economic Geography working paper, University of Groningen, 26pp.

McCarthy, F. (2011), European Cities Monitor. Cushman & Wakefield, 36pp.

Clark, G. (2008), City Success: What do the global indices tell us? [online] http://www.thebusinessofcities.com/publicationsandmedia.html

Clark, G. & J. Huxley (2009), City and Metropolitan Business Leadership. A Review Note. [online] http://www.thebusinessofcities.com/businessleadership.html

European Commission (1997), The quality of life in the cities and regions of the European Union, Indicators – Proceedings of the Barcelona Seminar, 14 to 16 April 1997. Luxembourg.

Farole, T., Rodriguez-Pose, A. & M. Storper (2009), Cohesion policy in the European Union: growth, geography, institutions. London: LSE.

Internet and other sources

Eurostat (2012), Eurostat [online] http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/introduction [16-06-2012]

Experian (2012), European regional forecasting service, European city forecasts definitions, Experian, London.

Freemaptools (2012), Freemaptools [online]
www.freemaptools.com [09-07-2012]

Urban Audit (2012), Urban Audit [online]
http://www.urbanaudit.org/help.aspx [16-06-2012]

YouTube (2012), Cluster analysis [online]
http://www.youtube.com/watch?v=YYObOp8GJ8M [13-07-2012]

Appendix I

Instructions						Data	Operationalised	If you find an indicator not important at all you can choose to weigh it as zero	In this column you can put remarks if wanted
Please distribute 100 points between the yellow cells, based on importance per pillar		Please distribute 100 points between the yellow cells, per overall category		Please distribute 100 points between the yellow cells, per sub-category	Make sure the pink cells each add up to 100				
	Demography								
			Population Size			Population size year 1	number of people		
						Population size year 5	number of people		
						Population growth year 1-5	% growth		
						Migration balance	% of total population		
				0					
			Population Structure			Share Working Age (w.a.) Population year 1	% of total population		
						Share Working Age (w.a.) Population year 5	% of total population		
						Development Share year 1-5	% growth		
						Green pressure year 1	% of w.a. population, high % is good		
						Grey Pressure year 1	% of w.a. population, high % is bad		
						Green pressure year 5	% of w.a. population, high % is good		
						Grey pressure year 5	% of w.a. population, high % is bad		
						Number of households	absolute number		
						Student population	% of total population		
		0		0					
+									
	Economy & Business Environment								
			GDP			GDP Size year 1			
						GDP Size year 5			
						GDP Growth year 1-5			
						Per Capita year 1			
						Per Capita year 5			
						Growth Per Capita year 1-5			
				0					
			Employment			Employment rate year 1			
						Employment rate year 5			
						Employment growth year 1-5			
						Unemployment rate year 1			
						Unemployment rate year 5			
						Unemployment Growth year 1-5			
				0					
			Productivity			Productivity year 1			
						Productivity year 5			
						Productivity Growth year 1-5			
				0					
			Economic Structure			Financial services sector	as % of total employment (fte)		
						Transport & Communications	as % of total employment (fte)		
						Education	as % of total employment (fte)		
				0					
			Accessibility			Telecommunication	Number of mobile/internet connections?		
						Train stations	Number of train stations		
						Commuter Flows	number of commuters as % of population		
						Airports	Number of airports within x km/ number of flights		
						Low Cost Air Carrier	Number of (low cost) flights		
						Motorways	Number of connections to motorways		
				0					
			Innovation and education			Patents	Number of patents		
						Investment in R&D (public/private)	as % of total investments/ number in €?		
						New business start ups	number		
						Number of Higher Educational Institutions (U	number		
						% high educated population	as % of total population		
		0		0					
+									

Consumer Market
Disposable income
Disposable Income per Capita
Disposable Income growth
0
Consumer Spending
Consumer Spending year 1
Consumer Spending year 5
Growth year 1-5
Per Capita year 1
Per Capita year 5
Growth per Capita year 1-5
0
Retail Sales
Retail Sales year 1
Retail Sales year 5
Growth year 1-5
Per Capita year 1
Per Capita year 5
Growth per Capita year 1-5
0
0
+
Qualitative Attractiveness
Tourism
% retail/tourism sector
Number of Hotel Nights
Number of Day visitors
Number of Theatres
Unesco World Heritage sites n°
Number of Michelin Star Restaurants
Number of Festivals/Events
m2 of shopping centre space
0
Quality of Life
pollution/environment
criminality
Parks, green areas, water
Health sector as % of Economy
0
0
+
Risk
Business Risks
Ease of doing Business
Corruption Perception
Business Environment
Real Estate Transparency
0
Political Risk
Short term Political Risk
Long Term Political risk
Planning Regime
0
Financial and Economic risk
Short term Economic Risk
Long Term Economic Risk
Volatility
SandP Rating
Government Bond Yields
Inflation year 1
Inflation year 5
0
Diversification Potential
100
0
100
0
=
IP PC?
Number of registered criminality
Rank of World Bank score (national level)
Corruption Perception Index score (national level)
BMI Business Environment score (national level)
JLL Real Estate Transparency score (national level)
BMI Score (national level)
BMI Score (national level)
decide on how to operationalise
BMI Score (national level)
BMI Score (national level)
stand. Dev. Of econ. growth
Standard and Poors credit rating (national level)
Government bond yield (10yr)
correlation with regions in Corio portfolio
Attractive City to Invest in!
Please score 1,2 or 3, with 1 being your first pick
Measured by:
(Development of)
Ground Prices
Rents
Property Values

Appendix II: Expert panel & key persons

Corio

- Alvarez Meca, Ana; Asset Manager Corio Espana, interview and survey
- Bendijk, Karlijn; Senior CSR Analyst, Corio NV, interview and survey
- Bradley, Peter; Director Asset Management, Corio France, interview and survey
- Demir, Ozgur; Development Manager, Corio Türkiye
- Desage, Bertrand; Research Manager, Corio France, interview and survey
- Letteboer, Maria, Senior Investment Analyst, Corio NV, interview
- Ligtvoet, Gé; Senior Leasing Manager, Corio Nederland, interview
- Lopez Soto, Cristobal; Development Manager, Corio Espana, interview and survey
- Mouton, Christophe; CEO, Corio Espana, interview and survey
- Speetjens, Jan-Willem; Head of Market Analysis and Strategy, Corio Nederland, interview and survey
- Weissink, Jan Willem; CEO, Corio Nederland, interview and survey
- Yilmayan, Beste Guler; Senior Asset Manager, Corio Türkiye, interview
- Yllera Ceballos, Inigo, COO Corio Espana, interview and survey
- Zijlstra, Francine; COO, Corio NV, interview and survey

Experian

- Britton, Mark; Managing Economist, Experian, interview
- Dhillon, Sukhdeep; Economist, Experian, interview
- Joshi, Sunil; Managing Economist, Experian, interview
- Sherwood, Matthew; Senior Global Economic Advisor, Experian, interview
- Skelton, Ben; European Senior Economist, Experian, interview

Oxford Economics

- Light, Anthony; Senior Economist, Oxford Economics, interview

Universiteit Utrecht

- Oort, Frank van; Professor Urban Economics, Utrecht University, survey

DTZ

- Bouyge, Aurélie; Associate Director CEMEA Valuations, DTZ, interview and survey
- Marton, Magali; Head of CEMEA Research, DTZ, interview and survey

Atlas voor de Nederlandse Gemeenten

- Ponds, Roderik; Senior Researcher, Atlas voor de Nederlandse Gemeenten, interview and survey

Appendix III: Statistical outputs

Factor analysis

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,672
Bartlett's Test of Sphericity	Approx. Chi-Square	2060,624
	Df	496
	Sig.	,000

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5,426	16,957	16,957	5,426	16,957	16,957
2	3,820	11,938	28,895	3,820	11,938	28,895
3	2,909	9,091	37,986	2,909	9,091	37,986
4	2,883	9,011	46,997	2,883	9,011	46,997
5	1,938	6,055	53,052	1,938	6,055	53,052
6	1,478	4,617	57,670	1,478	4,617	57,670
7	1,376	4,300	61,970	1,376	4,300	61,970
8	1,209	3,779	65,748	1,209	3,779	65,748
9	1,097	3,428	69,176	1,097	3,428	69,176
10	,979	3,060	72,236			
11	,956	2,989	75,225			
12	,900	2,813	78,038			
13	,830	2,593	80,631			
14	,780	2,437	83,069			
15	,718	2,245	85,313			
16	,604	1,886	87,200			
17	,539	1,685	88,885			
18	,485	1,515	90,399			
19	,474	1,481	91,880			
20	,439	1,372	93,253			
21	,394	1,230	94,483			
22	,371	1,160	95,642			
23	,326	1,018	96,660			
24	,266	,831	97,491			
25	,200	,625	98,116			
26	,178	,556	98,672			
27	,138	,430	99,102			
28	,126	,395	99,497			
29	,104	,325	99,822			
30	,034	,107	99,928			

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,672
	Approx. Chi-Square	2060,624
	Df	496

31	,017	,052	99,980			
32	,006	,020	100,000			

Extraction Method: Principal Component Analysis.

The extracted 6 factors after rotation.

Rotated Component Matrix[a]

	Component					
	1	2	3	4	5	6
Population	,965					
RS	,954					
GDP	,941					
CS	,940					
intretrank	-,649			-,421		
DispInc		,822				
Product2011	,327	,774				
Rspercap		,640	-,406		-,358	
healthsector2011		,625			,330	
GDPpercapita		,564	,413	,351	-,355	
Crime		,534	,380			
popgrowthexp		,506				,328
Bussservsect	,385	,479	,319			-,316
Patents						
Newbus			,728			
Accessroad		,310	,599			
HeadcRetail			,582	,382		
young		,539	-,565			
Publtrans						
green						
gdpgrowthexp				,812		
old				-,772		
ComFlows		-,366		,481		
Telecom				,445		
UnemplvsNat					,746	
Unempl					,740	
Educsec					,537	
Cspercap					-,451	
higheducpop						,766

Hospital						,681
Tourist						,646
Citieskm			,336			-,370

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 8 iterations.

Total variance explained:

Total Variance Explained

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	4,724	14,762	14,762
2	3,912	12,225	26,987
3	2,829	8,840	35,827
4	2,462	7,694	43,521
5	2,421	7,566	51,087
6	2,106	6,582	57,670

Extraction Method: Principal Component Analysis.

Component Transformation Matrix:

Component Transformation Matrix

Component	1	2	3	4	5	6
1	,828	,461	-,005	,285	-,121	-,077
2	-,442	,723	,489	,030	-,203	-,029
3	-,217	,418	-,726	,135	,169	,451
4	,070	,289	-,097	-,530	,634	-,469
5	-,118	-,079	,225	,724	,632	-,076
6	,230	-,004	,417	-,309	,338	,751

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Regression analyses

1 Population size and rental levels

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,666[a]	,444	,442	754,9134700

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,666[a]	,444	,442	754,9134700

a. Predictors: (Constant), Population

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,006E8	1	1,006E8	176,602	,000[a]
	Residual	1,259E8	221	569894,347		
	Total	2,266E8	222			

a. Predictors: (Constant), Population

b. Dependent Variable: Rent

5 GDP per capita and rental levels

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	29643596,168	1	29643596,168	33,264	,000[a]
	Residual	1,969E8	221	891164,992		
	Total	2,266E8	222			

a. Predictors: (Constant), GDPpercapita

b. Dependent Variable: Rent

Model Summaryb

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,362[a]	,131	,127	944,0153559

a. Predictors: (Constant), GDPpercapita

b. Dependent Variable: Rent

7 Productivity and rental levels

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,450[a]	,203	,199	904,1858669

a. Predictors: (Constant), Product2011

b. Dependent Variable: Rent

ANOVAb

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,450[a]	,203	,199	904,1858669

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	45912049,342	1	45912049,342	56,158	,000[a]
	Residual	1,807E8	221	817552,082		
	Total	2,266E8	222			

a. Predictors: (Constant), Product2011

b. Dependent Variable: Rent

8 Economic structure and rental levels

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,433[a]	,188	,184	912,6992780

a. Predictors: (Constant), Bussservsect

b. Dependent Variable: Rent

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42493645,623	1	42493645,623	51,012	,000[a]
	Residual	1,841E8	221	833019,972		
	Total	2,266E8	222			

a. Predictors: (Constant), Bussservsect

b. Dependent Variable: Rent

Model Summaryb

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,208[a]	,043	,039	990,3699967

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42493645,623	1	42493645,623	51,012	,000[a]
	Residual	1,841E8	221	833019,972		
	Total	2,266E8	222			

a. Predictors: (Constant), Telecom

b. Dependent Variable: Rent

ANOVAb

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9827026,004	1	9827026,004	10,019	,002[a]
	Residual	2,168E8	221	980832,730		
	Total	2,266E8	222			

a. Predictors: (Constant), Telecom

b. Dependent Variable: Rent

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,433[a]	,188	,184	912,6992780
2	,451[b]	,203	,196	905,9332545

a. Predictors: (Constant), Bussservsect

b. Predictors: (Constant), Bussservsect, Telecom

c. Dependent Variable: Rent

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42493645,623	1	42493645,623	51,012	,000[a]
	Residual	1,841E8	221	833019,972		
	Total	2,266E8	222			

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42493645,623	1	42493645,623	51,012	,000[a]
	Residual	1,841E8	221	833019,972		
	Total	2,266E8	222			
2	Regression	46033745,895	2	23016872,948	28,045	,000[b]
	Residual	1,806E8	220	820715,062		
	Total	2,266E8	222			

a. Predictors: (Constant), Bussservsect

b. Predictors: (Constant), Bussservsect, Telecom

c. Dependent Variable: Rent

9 Household disposable income per capita and rental levels

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,415[a]	,172	,169	921,1311139

a. Predictors: (Constant), DispInc

b. Dependent Variable: Rent

ANOVAb

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	39076420,543	1	39076420,543	46,054	,000[a]
	Residual	1,875E8	221	848482,529		
	Total	2,266E8	222			

a. Predictors: (Constant), DispInc

b. Dependent Variable: Rent

10 Consuming spending per capita and rental levels

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,142[a]	,020	,016	1002,3236597

a. Predictors: (Constant), Cspercap

b. Dependent Variable: Rent

ANOVAb

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4562808,582	1	4562808,582	4,542	,034[a]
	Residual	2,220E8	221	1004652,719		
	Total	2,266E8	222			

a. Predictors: (Constant), Cspercap

b. Dependent Variable: Rent

11 Retail sales per capita and rental levels

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate

1	,347[a]	,121	,117	949,5910651

a. Predictors: (Constant), Rspercap

b. Dependent Variable: Rent

ANOVAb

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27310234,236	1	27310234,236	30,287	,000[a]
	Residual	1,993E8	221	901723,191		
	Total	2,266E8	222			

a. Predictors: (Constant), Rspercap

b. Dependent Variable: Rent

12 Presence of international retailers and rental levels

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,514[a]	,264	,260	868,8069939

a. Predictors: (Constant), intretrank

b. Dependent Variable: Rent

ANOVAb

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	59774603,446	1	59774603,446	79,190	,000[a]
	Residual	1,668E8	221	754825,593		
	Total	2,266E8	222			

a. Predictors: (Constant), intretrank

b. Dependent Variable: Rent

13 Headcount retail employment and rental levels

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,145[a]	,021	,017	1001,8189254

a. Predictors: (Constant), HeadcRetail

b. Dependent Variable: Rent

ANOVAb

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4786363,221	1	4786363,221	4,769	,030[a]
	Residual	2,218E8	221	1003641,159		
	Total	2,266E8	222			

a. Predictors: (Constant), HeadcRetail

b. Dependent Variable: Rent

16 Accessibility by road and rental levels

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,211[a]	,044	,037	1044,4308955

a. Predictors: (Constant), Accessroad

b. Dependent Variable: Rent

ANOVAb

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6853328,278	1	6853328,278	6,283	,013[a]
	Residual	1,473E8	135	1090835,895		
	Total	1,541E8	136			

a. Predictors: (Constant), Accessroad

b. Dependent Variable: Rent

17 Innovative climate and rental levels

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,177[a]	,031	,025	1104,1975164

a. Predictors: (Constant), higheducpop

b. Dependent Variable: Rent

ANOVAb

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6188030,039	1	6188030,039	5,075	,026[a]
	Residual	1,914E8	157	1219252,155		
	Total	1,976E8	158			

a. Predictors: (Constant), higheducpop

b. Dependent Variable: Rent

Single regression factor 1: *Critical Mass*

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	,705[a]	,497	,494	718,4639684	,497	217,968	1	221	,000

a. Predictors: (Constant), REGR factor score 1 for analysis 1

b. Dependent Variable: Rent

Single regression factor 2: *Wealth*

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	,339[a]	,115	,111	952,6399948	,115	28,681	1	221	,000

a. Predictors: (Constant), REGR factor score 2 for analysis 1

b. Dependent Variable: Rent

Single regression with Factor 3: *Entrepreneurial Environment*

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	,130[a]	,017	,012	1003,9643174	,017	3,805	1	221	,052

a. Predictors: (Constant), REGR factor score 3 for analysis 1

b. Dependent Variable: Rent

Single regression with factor 4: *Working commuters*

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	,025[a]	,001	-,004	1012,2473061	,001	,141	1	221	,708

a. Predictors: (Constant), REGR factor score 4 for analysis 1

b. Dependent Variable: Rent

Single regression with factor 5: *Disadvantages and learning population*

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	,057[a]	,003	-,001	1010,9400507	,003	,713	1	221	,399

a. Predictors: (Constant), REGR factor score 5 for analysis 1

b. Dependent Variable: Rent

Single regression with factor 6: *Service specialized cities with knowledge*

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	,030[a]	,001	-,004	1012,1035706	,001	,204	1	221	,652

a. Predictors: (Constant), REGR factor score 6 for analysis 1

b. Dependent Variable: Rent

Multiple regression with all factors, method: Stepwise

Model Summary[d]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	,705[a]	,497	,494	718,4639684	,497	217,968	1	221	,000
2	,782[b]	,611	,608	632,6337781	,115	65,035	1	220	,000
3	,793[c]	,628	,623	620,1128614	,017	9,974	1	219	,002

a. Predictors: (Constant), REGR factor score 1 for analysis 1

b. Predictors: (Constant), REGR factor score 1 for analysis 1, REGR factor score 2 for analysis 1

c. Predictors: (Constant), REGR factor score 1 for analysis 1, REGR factor score 2 for analysis 1, REGR factor score 3 for analysis 1

d. Dependent Variable: Rent

ANOVA[d]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,125E8	1	1,125E8	217,968	,000[a]
	Residual	1,141E8	221	516190,474		
	Total	2,266E8	222			
2	Regression	1,385E8	2	69270725,020	173,079	,000[b]
	Residual	88049609,394	220	400225,497		
	Total	2,266E8	222			
3	Regression	1,424E8	3	47458936,001	123,417	,000[c]
	Residual	84214251,431	219	384539,961		
	Total	2,266E8	222			

a. Predictors: (Constant), REGR factor score 1 for analysis 1

b. Predictors: (Constant), REGR factor score 1 for analysis 1, REGR factor score 2 for analysis 1

c. Predictors: (Constant), REGR factor score 1 for analysis 1, REGR factor score 2 for analysis 1, REGR factor score 3 for analysis 1

d. Dependent Variable: Rent

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	1388,845	48,112		28,867	,000					
	REGR factor score 1 for analysis 1	711,910	48,220	,705	14,764	,000	,705	,705	,705	1,000	1,000
2	(Constant)	1388,845	42,364		32,783	,000					
	REGR factor score 1 for analysis 1	711,910	42,460	,705	16,767	,000	,705	,749	,705	1,000	1,000
	REGR factor score 2 for analysis 1	342,411	42,460	,339	8,064	,000	,339	,478	,339	1,000	1,000
3	(Constant)	1388,845	41,526		33,445	,000					
	REGR factor score 1 for analysis 1	711,910	41,619	,705	17,105	,000	,705	,756	,705	1,000	1,000
	REGR factor score 2 for analysis 1	342,411	41,619	,339	8,227	,000	,339	,486	,339	1,000	1,000
	REGR factor score 3 for analysis 1	131,440	41,619	,130	3,158	,002	,130	,209	,130	1,000	1,000

a. Dependent Variable: Rent

Multiple regressions

Enter method

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	,837[a]	,700	,657	591,6760518	,700	16,188	28	194	,000

a. Predictors: (Constant), healthsector2011, Tourist, Telecom, Patents, green, Cspercap, Citieskm, Publtrans, Population, gdpgrowthexp, Hospital, Newbus, Educsec, UnemplvsNat, ComFlows, Crime, Product2011, Accessroad, popgrowthexp, higheducpop, young, intretrank, old, Bussservsect, GDPpercapita, Rspercap, Unempl, DisplInc

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,587E8	28	5666979,739	16,188	,000[a]
	Residual	67915626,753	194	350080,550		
	Total	2,266E8	222			

a. Predictors: (Constant), healthsector2011, Tourist, Telecom, Patents, green, Cspercap, Citieskm, Publtrans, Population, gdpgrowthexp, Hospital, Newbus, Educsec, UnemplvsNat, ComFlows, Crime, Product2011, Accessroad, popgrowthexp, higheducpop, young, intretrank, old, Bussservsect, GDPpercapita, Rspercap, Unempl, DispInc

b. Dependent Variable: Rent

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	1336,965	2537,012		,527	,599			
	Population	,603	,065	,509	9,309	,000	,666	,556	,366
	young	-3382,946	1611,616	-,138	-2,099	,037	,023	-,149	-,083
	old	-1447,886	1091,864	-,084	-1,326	,186	-,082	-,095	-,052
	popgrowthexp	30,811	23,558	,074	1,308	,192	,244	,093	,051
	GDPpercapita	,009	,006	,101	1,382	,168	,362	,099	,054
	gdpgrowthexp	-29,560	13,816	-,137	-2,139	,034	,040	-,152	-,084
	Product2011	-9,427	6,301	-,114	-1,496	,136	,450	-,107	-,059
	Unempl	-12,042	18,755	-,047	-,642	,522	,015	-,046	-,025
	UnemplvsNat	195,054	173,925	,077	1,121	,263	,019	,080	,044
	Bussservsect	581,933	899,631	,041	,647	,518	,433	,046	,025
	Educsec	1696,519	2134,182	,038	,795	,428	-,010	,057	,031
	Telecom	2887,559	3126,842	,046	,923	,357	,208	,066	,036
	DispInc	,077	,019	,326	3,953	,000	,415	,273	,155
	Publtrans	-40,824	24,419	-,078	-1,672	,096	-,061	-,119	-,066
	ComFlows	-,335	,248	-,069	-1,351	,178	-,037	-,097	-,053
	Accessroad	2,296	1,284	,106	1,789	,075	,174	,127	,070
	Patents	,133	,161	,035	,827	,409	,111	,059	,033
	Newbus	-11,402	5,117	-,132	-2,228	,027	-,039	-,158	-,088
	higheducpop	,809	2,300	,020	,352	,726	-,165	,025	,014
	Cspercap	-,004	,006	-,028	-,588	,557	,142	-,042	-,023
	Rspercap	,032	,060	,041	,541	,589	,347	,039	,021
	Citieskm	-38,876	29,238	-,061	-1,330	,185	-,088	-,095	-,052
	intretrank	-2,171	,647	-,219	-3,353	,001	-,514	-,234	-,132
	Tourist	13,165	6,075	,112	2,167	,031	,098	,154	,085
	Hospital	-14,870	16,374	-,046	-,908	,365	-,092	-,065	-,036
	Crime	2,443	1,572	,088	1,554	,122	,197	,111	,061
	green	-,127	,319	-,017	-,397	,692	-,091	-,028	-,016
	healthsector2011	-2653,471	1696,175	-,099	-1,564	,119	-,030	-,112	-,061

a. Dependent Variable: Rent

Stepwise method

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	936,699	60,936		15,372	,000		
	Population	,790	,059	,666	13,289	,000	1,000	1,000
2	(Constant)	-481,254	170,202		-2,828	,005		
	Population	,765	,051	,646	14,892	,000	,997	1,003
	DispInc	,089	,010	,380	8,760	,000	,997	1,003
3	(Constant)	80,080	212,333		,377	,706		
	Population	,615	,061	,518	10,011	,000	,650	1,537
	DispInc	,092	,010	,390	9,316	,000	,993	1,007
	intretrank	-2,140	,513	-,216	-4,170	,000	,652	1,533
4	(Constant)	-9,873	212,613		-,046	,963		
	Population	,606	,061	,511	9,984	,000	,649	1,542
	DispInc	,083	,010	,355	8,126	,000	,892	1,121
	intretrank	-2,352	,514	-,237	-4,580	,000	,635	1,574
	Accessroad	2,459	,960	,113	2,560	,011	,871	1,148
5	(Constant)	-28,100	210,341		-,134	,894		
	Population	,595	,060	,502	9,881	,000	,645	1,551
	DispInc	,084	,010	,357	8,266	,000	,892	1,121
	intretrank	-2,368	,508	-,239	-4,663	,000	,635	1,574
	Accessroad	3,137	,989	,144	3,172	,002	,803	1,245
	Citieskm	-66,811	27,248	-,105	-2,452	,015	,901	1,110
6	(Constant)	43,100	211,509		,204	,839		
	Population	,584	,060	,493	9,743	,000	,640	1,562
	DispInc	,084	,010	,359	8,389	,000	,891	1,122
	intretrank	-2,432	,505	-,245	-4,817	,000	,633	1,580
	Accessroad	3,892	1,046	,179	3,721	,000	,707	1,415
	Citieskm	-59,443	27,270	-,094	-2,180	,030	,886	1,129
	Newbus	-8,087	3,877	-,094	-2,086	,038	,810	1,234
7	(Constant)	577,379	310,622		1,859	,064		
	Population	,576	,059	,486	9,694	,000	,638	1,567
	DispInc	,091	,010	,389	8,787	,000	,820	1,220
	intretrank	-2,493	,500	-,251	-4,982	,000	,631	1,585
	Accessroad	3,797	1,036	,175	3,664	,000	,706	1,417
	Citieskm	-55,605	27,045	-,088	-2,056	,041	,883	1,133
	Newbus	-11,195	4,064	-,130	-2,755	,006	,723	1,383
	young	-2518,755	1081,699	-,103	-2,329	,021	,825	1,212
8	(Constant)	451,534	313,199		1,442	,151		

ANOVA[i]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,006E8	1	1,006E8	176,602	,000[a]
	Residual	1,259E8	221	569894,347		
	Total	2,266E8	222			
2	Regression	1,332E8	2	66606345,578	156,925	,000[b]
	Residual	93378368,277	220	424447,129		
	Total	2,266E8	222			
3	Regression	1,401E8	3	46693408,966	118,203	,000[c]
	Residual	86510832,536	219	395026,633		
	Total	2,266E8	222			
4	Regression	1,426E8	4	35651442,818	92,540	,000[d]
	Residual	83985288,162	218	385253,615		
	Total	2,266E8	222			
5	Regression	1,449E8	5	28973978,084	76,937	,000[e]
	Residual	81721169,013	217	376595,249		
	Total	2,266E8	222			
6	Regression	1,465E8	6	24413876,853	65,829	,000[f]
	Residual	80107798,315	216	370869,437		
	Total	2,266E8	222			
7	Regression	1,485E8	7	21207681,641	58,354	,000[g]
	Residual	78137287,948	215	363429,246		
	Total	2,266E8	222			
8	Regression	1,502E8	8	18771623,105	52,568	,000[h]
	Residual	76418074,591	214	357093,807		
	Total	2,266E8	222			

a. Predictors: (Constant), Population

b. Predictors: (Constant), Population, DispInc

c. Predictors: (Constant), Population, DispInc, intretrank

d. Predictors: (Constant), Population, DispInc, intretrank, Accessroad

e. Predictors: (Constant), Population, DispInc, intretrank, Accessroad, Citieskm

f. Predictors: (Constant), Population, DispInc, intretrank, Accessroad, Citieskm, Newbus

g. Predictors: (Constant), Population, DispInc, intretrank, Accessroad, Citieskm, Newbus, young

h. Predictors: (Constant), Population, DispInc, intretrank, Accessroad, Citieskm, Newbus, young, Crime

i. Dependent Variable: Rent

Model Summary[i]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	,666[a]	,444	,442	754,9134700	,444	176,602	1	221	,000
2	,767[b]	,588	,584	651,4960695	,144	76,731	1	220	,000
3	,786[c]	,618	,613	628,5114419	,030	17,385	1	219	,000
4	,793[d]	,629	,623	620,6880178	,011	6,556	1	218	,011
5	,800[e]	,639	,631	613,6735687	,010	6,012	1	217	,015
6	,804[f]	,646	,637	608,9905062	,007	4,350	1	216	,038
7	,809[g]	,655	,644	602,8509320	,009	5,422	1	215	,021
8	,814[h]	,663	,650	597,5732645	,008	4,814	1	214	,029

a. Predictors: (Constant), Population
b. Predictors: (Constant), Population, DispInc
c. Predictors: (Constant), Population, DispInc, intretrank
d. Predictors: (Constant), Population, DispInc, intretrank, Accessroad
e. Predictors: (Constant), Population, DispInc, intretrank, Accessroad, Citieskm
f. Predictors: (Constant), Population, DispInc, intretrank, Accessroad, Citieskm, Newbus
g. Predictors: (Constant), Population, DispInc, intretrank, Accessroad, Citieskm, Newbus, young
h. Predictors: (Constant), Population, DispInc, intretrank, Accessroad, Citieskm, Newbus, young, Crime
i. Dependent Variable: Rent

Population growth

Dependent Variable: DLOG(CRENT)
Method: Panel Least Squares
Date: 07/12/12 Time: 13:02
Sample (adjusted): 1983 2011
Periods included: 29
Cross-sections included: 159
Total panel (unbalanced) observations: 1359
White diagonal standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.016816	0.003315	5.072144	0.0000
DLOG(NPPTOT)	0.124056	0.593353	0.209076	0.8344

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.308588	Mean dependent var	0.017229
Adjusted R-squared	0.216899	S.D. dependent var	0.111491
S.E. of regression	0.098662	Akaike info criterion	-1.684032
Sum squared resid	11.67125	Schwarz criterion	-1.070109
Log likelihood	1304.299	Hannan-Quinn criter.	-1.454193
F-statistic	3.365610	Durbin-Watson stat	1.957387
Prob(F-statistic)	0.000000		

Economic Growth

Finding the appropriate lag structure:

Dependent Variable: DLOG(CRENT)
Method: Panel Least Squares
Date: 07/12/12 Time: 13:02
Sample (adjusted): 1986 2011
Periods included: 26
Cross-sections included: 159
Total panel (unbalanced) observations: 1346
White diagonal standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.003867	0.002922	1.323404	0.1860
DLOG(GDP)	0.645732	0.096680	6.679057	0.0000
DLOG(GDP(-1))	0.425433	0.086995	4.890296	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.369103	Mean dependent var	0.017002
Adjusted R-squared	0.283918	S.D. dependent var	0.111341
S.E. of regression	0.094218	Akaike info criterion	-1.774570
Sum squared resid	10.51937	Schwarz criterion	-1.151993
Log likelihood	1355.285	Hannan-Quinn criter.	-1.541380
F-statistic	4.332986	Durbin-Watson stat	2.049456
Prob(F-statistic)	0.000000		

Dependent Variable: DLOG(CRENT)
Method: Panel Least Squares
Date: 07/12/12 Time: 13:02
Sample (adjusted): 1987 2011
Periods included: 25
Cross-sections included: 159
Total panel (unbalanced) observations: 1327
White diagonal standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.001571	0.003186	0.493135	0.6220
DLOG(GDP)	0.673718	0.099628	6.762306	0.0000
DLOG(GDP(-1))	0.428350	0.087197	4.912432	0.0000
DLOG(GDP(-2))	0.128143	0.082716	1.549198	0.1216

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.371493	Mean dependent var	0.016561
Adjusted R-squared	0.284635	S.D. dependent var	0.111874
S.E. of regression	0.094623	Akaike info criterion	-1.763880
Sum squared resid	10.43076	Schwarz criterion	-1.130203
Log likelihood	1332.335	Hannan-Quinn criter.	-1.526365
F-statistic	4.277010	Durbin-Watson stat	2.031550
Prob(F-statistic)	0.000000		

Final model

Dependent Variable: DLOG(CRENT)
Method: Panel Least Squares
Date: 07/12/12 Time: 13:02
Sample (adjusted): 1986 2011
Periods included: 26
Cross-sections included: 159
Total panel (unbalanced) observations: 1346
White diagonal standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.011615	0.002734	4.247887	0.0000
DLOG(GDP(-1))	0.428173	0.093590	4.575006	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.331682	Mean dependent var	0.017002
Adjusted R-squared	0.242085	S.D. dependent var	0.111341
S.E. of regression	0.096931	Akaike info criterion	-1.718435
Sum squared resid	11.14331	Schwarz criterion	-1.099725
Log likelihood	1316.506	Hannan-Quinn criter.	-1.486694
F-statistic	3.701920	Durbin-Watson stat	2.044408
Prob(F-statistic)	0.000000		

Unemployment rates

Dependent Variable: DLOG(CRENT)
Method: Panel Least Squares
Date: 07/12/12 Time: 13:02
Sample (adjusted): 1983 2011
Periods included: 29
Cross-sections included: 159
Total panel (unbalanced) observations: 1289
White diagonal standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.016672	0.002694	6.189138	0.0000
DLOG(NRUT)	-0.145332	0.019884	-7.309147	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.354241	Mean dependent var	0.015349
Adjusted R-squared	0.263297	S.D. dependent var	0.112782
S.E. of regression	0.096802	Akaike info criterion	-1.716577
Sum squared resid	10.57945	Schwarz criterion	-1.075879
Log likelihood	1266.334	Hannan-Quinn criter.	-1.476084
F-statistic	3.895162	Durbin-Watson stat	2.042566
Prob(F-statistic)	0.000000		

Dependent Variable: DLOG(CRENT)
Method: Panel Least Squares
Date: 07/12/12 Time: 13:02
Sample (adjusted): 1984 2011
Periods included: 28
Cross-sections included: 159
Total panel (unbalanced) observations: 1259
White diagonal standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.015084	0.002749	5.488078	0.0000
DLOG(NRUT)	-0.155585	0.017786	-8.747394	0.0000
DLOG(NRUT(-1))	-0.025938	0.017761	-1.460407	0.1445

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.364620	Mean dependent var	0.013541
Adjusted R-squared	0.272032	S.D. dependent var	0.112253
S.E. of regression	0.095776	Akaike info criterion	-1.734684
Sum squared resid	10.07194	Schwarz criterion	-1.077631
Log likelihood	1252.984	Hannan-Quinn criter.	-1.487764
F-statistic	3.938119	Durbin-Watson stat	2.023033
Prob(F-statistic)	0.000000		

Dependent Variable: DLOG(CRENT)
Method: Panel Least Squares
Date: 07/12/12 Time: 13:02
Sample (adjusted): 1985 2011
Periods included: 27
Cross-sections included: 159
Total panel (unbalanced) observations: 1225
White diagonal standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.012656	0.002740	4.618689	0.0000
DLOG(NRUT)	-0.161506	0.018130	-8.908005	0.0000
DLOG(NRUT(-1))	-0.027469	0.017994	-1.526523	0.1272
DLOG(NRUT(-2))	-0.009470	0.016783	-0.564225	0.5727

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.378805	Mean dependent var	0.011295
Adjusted R-squared	0.284720	S.D. dependent var	0.111195
S.E. of regression	0.094043	Akaike info criterion	-1.767494
Sum squared resid	9.401182	Schwarz criterion	-1.091630
Log likelihood	1244.590	Hannan-Quinn criter.	-1.513160
F-statistic	4.026198	Durbin-Watson stat	2.071479
Prob(F-statistic)	0.000000		

Productivity

Dependent Variable: DLOG(CRENT)
Method: Panel Least Squares
Date: 07/12/12 Time: 13:02
Sample (adjusted): 1985 2011
Periods included: 27
Cross-sections included: 159
Total panel (unbalanced) observations: 1345
White diagonal standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.011441	0.002843	4.023850	0.0001
DLOG(PROD)	0.630211	0.098428	6.402762	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.348832	Mean dependent var	0.016837
Adjusted R-squared	0.261460	S.D. dependent var	0.111421
S.E. of regression	0.095754	Akaike info criterion	-1.742809
Sum squared resid	10.86498	Schwarz criterion	-1.123728
Log likelihood	1332.039	Hannan-Quinn criter.	-1.510920
F-statistic	3.992498	Durbin-Watson stat	2.031486
Prob(F-statistic)	0.000000		

Dependent Variable: DLOG(CRENT)
Method: Panel Least Squares
Date: 07/12/12 Time: 13:02
Sample (adjusted): 1986 2011
Periods included: 26
Cross-sections included: 159
Total panel (unbalanced) observations: 1326
White diagonal standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.007243	0.002766	2.618572	0.0089
DLOG(PROD)	0.634748	0.098530	6.442205	0.0000
DLOG(PROD(-1))	0.430995	0.085983	5.012591	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.369886	Mean dependent var	0.016418
Adjusted R-squared	0.283347	S.D. dependent var	0.111881
S.E. of regression	0.094713	Akaike info criterion	-1.762541
Sum squared resid	10.45070	Schwarz criterion	-1.132392
Log likelihood	1329.565	Hannan-Quinn criter.	-1.526339
F-statistic	4.274206	Durbin-Watson stat	2.045785
Prob(F-statistic)	0.000000		

Dependent Variable: DLOG(CRENT)
Method: Panel Least Squares
Date: 07/12/12 Time: 13:02
Sample (adjusted): 1987 2011
Periods included: 25
Cross-sections included: 159
Total panel (unbalanced) observations: 1307
White diagonal standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.005513	0.002909	1.895217	0.0583
DLOG(PROD)	0.656731	0.101818	6.450038	0.0000
DLOG(PROD(-1))	0.430112	0.086340	4.981591	0.0000
DLOG(PROD(-2))	0.119899	0.083021	1.444197	0.1490

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.372328	Mean dependent var	0.015780
Adjusted R-squared	0.284070	S.D. dependent var	0.112042
S.E. of regression	0.094801	Akaike info criterion	-1.758498
Sum squared resid	10.29047	Schwarz criterion	-1.117007
Log likelihood	1311.179	Hannan-Quinn criter.	-1.517873
F-statistic	4.218637	Durbin-Watson stat	2.029067
Prob(F-statistic)	0.000000		

Grouping countries

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Rent	215	1413,230019	1017,1819777	69,3712351
Countrydum	215	2,4698	,88485	,06035

One-Sample Test

	Test Value = 0					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Rent	20,372	214	,000	1413,2300190	1276,491597	1549,968441
Countrydum	40,927	214	,000	2,46977	2,3508	2,5887

Group Statistics

	Countrydum	N	Mean	Std. Deviation	Std. Error Mean
Rent	1,00	57	1418,771930	757,2345838	100,2981708
	3,00	158	1411,230722	1098,0702395	87,3577778

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Rent	Equal variances assumed	1,241	,267	,048	213	,962	7,5412077	157,5312301	-302,9786638	318,0610792
	Equal variances not assumed			,057	143,695	,955	7,5412077	133,0079111	-255,3636396	270,4460551

Growth markets 1:

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,525[a]	,276	,263	650,1538789
2	,607[b]	,368	,345	612,8078813
3	,701[c]	,491	,462	555,4251050
4	,759[d]	,576	,543	511,9783822

a. Predictors: (Constant), Product2011

b. Predictors: (Constant), Product2011, Crime

c. Predictors: (Constant), Product2011, Crime, Hospital

d. Predictors: (Constant), Product2011, Crime, Hospital, Population

ANOVAe

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8862132,394	1	8862132,394	20,966	,000[a]
	Residual	23248503,642	55	422700,066		
	Total	32110636,035	56			
2	Regression	11831827,069	2	5915913,534	15,753	,000[b]
	Residual	20278808,966	54	375533,499		
	Total	32110636,035	56			
3	Regression	15760292,528	3	5253430,843	17,029	,000[c]
	Residual	16350343,507	53	308497,047		
	Total	32110636,035	56			
4	Regression	18480299,115	4	4620074,779	17,626	,000[d]
	Residual	13630336,921	52	262121,864		
	Total	32110636,035	56			

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,525[a]	,276	,263	650,1538789
2	,607[b]	,368	,345	612,8078813
3	,701[c]	,491	,462	555,4251050
4	,759[d]	,576	,543	511,9783822

a. Predictors: (Constant), Product2011

b. Predictors: (Constant), Product2011, Crime

c. Predictors: (Constant), Product2011, Crime, Hospital

d. Predictors: (Constant), Product2011, Crime, Hospital, Population

e. Dependent Variable: Rent

Coefficientsa

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1566,471	657,631		-2,382	,021
	Product2011	53,668	11,721	,525	4,579	,000
2	(Constant)	-1802,776	625,526		-2,882	,006
	Product2011	46,300	11,354	,453	4,078	,000
	Crime	10,813	3,845	,313	2,812	,007
3	(Constant)	-407,329	688,732		-,591	,557
	Product2011	29,736	11,289	,291	2,634	,011
	Crime	17,801	3,998	,515	4,453	,000
	Hospital	-102,084	28,607	-,418	-3,569	,001
4	(Constant)	-323,728	635,388		-,509	,613
	Product2011	21,645	10,705	,212	2,022	,048
	Crime	19,061	3,706	,551	5,144	,000
	Hospital	-95,793	26,442	-,392	-3,623	,001
	Population	,317	,098	,306	3,221	,002

a. Dependent Variable: Rent

Emerging markets: 2

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,933[a]	,871	,849	186,2289815
2	,982[b]	,964	,950	106,9335118

a. Predictors: (Constant), Product2011

b. Predictors: (Constant), Product2011, gdpgrowthexp

ANOVAc

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1402246,599	1	1402246,599	40,432	,001[a]
	Residual	208087,401	6	34681,234		
	Total	1610334,000	7			
2	Regression	1553160,120	2	776580,060	67,914	,000[b]
	Residual	57173,880	5	11434,776		
	Total	1610334,000	7			

a. Predictors: (Constant), Product2011

b. Predictors: (Constant), Product2011, gdpgrowthexp

c. Dependent Variable: Rent

Coefficientsa

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-557,828	213,489		-2,613	,040
	Product2011	36,980	5,816	,933	6,359	,001
2	(Constant)	3236,023	1051,482		3,078	,028
	Product2011	26,376	4,435	,666	5,947	,002
	gdpgrowthexp	-30,073	8,278	-,407	-3,633	,015

a. Dependent Variable: Rent

Mature markets: 3

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,768[a]	,589	,586	706,1360119
2	,842[b]	,710	,706	595,6034667
3	,865[c]	,748	,743	556,8479565
4	,879[d]	,772	,766	531,3539018
5	,884[e]	,782	,774	521,5811848
6	,888[f]	,788	,780	515,0162671
7	,894[g]	,800	,791	502,5335111
8	,898[h]	,806	,796	495,8255717
9	,902[i]	,814	,802	488,0619586
10	,907[j]	,822	,810	478,3379191
11	,910[k]	,827	,814	473,0954294

a. Predictors: (Constant), Population

b. Predictors: (Constant), Population, DispInc

c. Predictors: (Constant), Population, DispInc, intretrank

d. Predictors: (Constant), Population, DispInc, intretrank, HeadcRetail

e. Predictors: (Constant), Population, DispInc, intretrank, HeadcRetail, Publtrans

f. Predictors: (Constant), Population, DispInc, intretrank, HeadcRetail, Publtrans, Crime

g. Predictors: (Constant), Population, DispInc, intretrank, HeadcRetail, Publtrans, Crime, Rspercap

h. Predictors: (Constant), Population, DispInc, intretrank, HeadcRetail, Publtrans, Crime, Rspercap, Product2011

i. Predictors: (Constant), Population, DispInc, intretrank, HeadcRetail, Publtrans, Crime, Rspercap, Product2011, Bussservsect

j. Predictors: (Constant), Population, DispInc, intretrank, HeadcRetail, Publtrans, Crime, Rspercap, Product2011, Bussservsect, Tourist

k. Predictors: (Constant), Population, DispInc, intretrank, HeadcRetail, Publtrans, Crime, Rspercap, Product2011, Bussservsect, Tourist, Accessroad

ANOVAl

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,115E8	1	1,115E8	223,650	,000[a]
	Residual	77785978,503	156	498628,067		
	Total	1,893E8	157			
2	Regression	1,343E8	2	67159402,253	189,318	,000[b]
	Residual	54985240,889	155	354743,490		
	Total	1,893E8	157			
3	Regression	1,416E8	3	47183926,601	152,167	,000[c]
	Residual	47752265,592	154	310079,647		
	Total	1,893E8	157			
4	Regression	1,461E8	4	36526622,288	129,372	,000[d]
	Residual	43197556,243	153	282336,969		
	Total	1,893E8	157			
5	Regression	1,480E8	5	29590582,336	108,770	,000[e]
	Residual	41351133,713	152	272046,932		
	Total	1,893E8	157			
6	Regression	1,493E8	6	24875423,388	93,784	,000[f]
	Residual	40051505,065	151	265241,755		
	Total	1,893E8	157			
7	Regression	1,514E8	7	21631865,131	85,657	,000[g]
	Residual	37880989,474	150	252539,930		
	Total	1,893E8	157			
8	Regression	1,527E8	8	19084179,845	77,628	,000[h]
	Residual	36630606,635	149	245842,998		
	Total	1,893E8	157			
9	Regression	1,540E8	9	17116642,559	71,857	,000[i]
	Residual	35254262,365	148	238204,475		
	Total	1,893E8	157			
10	Regression	1,557E8	10	15566939,216	68,035	,000[j]
	Residual	33634653,232	147	228807,165		
	Total	1,893E8	157			
11	Regression	1,566E8	11	14238766,340	63,617	,000[k]
	Residual	32677615,658	146	223819,285		
	Total	1,893E8	157			

a. Predictors: (Constant), Population

b. Predictors: (Constant), Population, DispInc

c. Predictors: (Constant), Population, DispInc, intretrank

d. Predictors: (Constant), Population, DispInc, intretrank, HeadcRetail

e. Predictors: (Constant), Population, DispInc, intretrank, HeadcRetail, Publtrans

f. Predictors: (Constant), Population, DispInc, intretrank, HeadcRetail, Publtrans, Crime

g. Predictors: (Constant), Population, DispInc, intretrank, HeadcRetail, Publtrans, Crime, Rspercap

h. Predictors: (Constant), Population, DispInc, intretrank, HeadcRetail, Publtrans, Crime, Rspercap, Product2011

i. Predictors: (Constant), Population, DispInc, intretrank, HeadcRetail, Publtrans, Crime, Rspercap, Product2011, Bussservsect

j. Predictors: (Constant), Population, DispInc, intretrank, HeadcRetail, Publtrans, Crime, Rspercap, Product2011, Bussservsect, Tourist

k. Predictors: (Constant), Population, DispInc, intretrank, HeadcRetail, Publtrans, Crime, Rspercap, Product2011, Bussservsect, Tourist, Accessroad

l. Dependent Variable: Rent

Coefficientsa

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	942,289	64,336		14,646	,000
	Population	,966	,065	,768	14,955	,000
2	(Constant)	-1502,574	309,747		-4,851	,000
	Population	,829	,057	,659	14,521	,000
	DispInc	,142	,018	,364	8,017	,000
3	(Constant)	-394,916	369,406		-1,069	,287
	Population	,683	,061	,543	11,142	,000
	DispInc	,123	,017	,313	7,172	,000
	intretrank	-2,758	,571	-,240	-4,830	,000
4	(Constant)	-505,800	353,573		-1,431	,155
	Population	,717	,059	,569	12,125	,000
	DispInc	,107	,017	,273	6,366	,000
	intretrank	-2,778	,545	-,242	-5,097	,000
	HeadcRetail	4414,330	1099,052	,160	4,016	,000
5	(Constant)	-317,558	354,512		-,896	,372
	Population	,708	,058	,563	12,184	,000
	DispInc	,107	,016	,273	6,484	,000
	intretrank	-2,942	,539	-,256	-5,461	,000
	HeadcRetail	4246,063	1080,770	,154	3,929	,000

	Publtrans	-70,505	27,063	-,100	-2,605	,010
6	(Constant)	-616,678	375,227		-1,643	,102
	Population	,732	,058	,581	12,537	,000
	DispInc	,101	,016	,257	6,109	,000
	intretrank	-2,713	,542	-,236	-5,006	,000
	HeadcRetail	4035,608	1071,394	,147	3,767	,000
	Publtrans	-76,876	26,877	-,109	-2,860	,005
	Crime	3,082	1,392	,088	2,214	,028
7	(Constant)	-887,692	377,623		-2,351	,020
	Population	,766	,058	,609	13,176	,000
	DispInc	,059	,022	,150	2,714	,007
	intretrank	-2,324	,545	-,202	-4,263	,000
	HeadcRetail	5429,468	1148,462	,197	4,728	,000
	Publtrans	-74,572	26,237	-,105	-2,842	,005
	Crime	4,293	1,420	,122	3,023	,003
	Rspercap	,126	,043	,157	2,932	,004
8	(Constant)	-451,249	419,844		-1,075	,284
	Population	,771	,057	,613	13,430	,000
	DispInc	,072	,022	,185	3,268	,001
	intretrank	-2,791	,576	-,243	-4,842	,000
	HeadcRetail	5142,534	1140,253	,187	4,510	,000
	Publtrans	-70,790	25,941	-,100	-2,729	,007
	Crime	4,369	1,402	,125	3,118	,002
	Rspercap	,148	,044	,184	3,397	,001
	Product2011	-10,757	4,770	-,117	-2,255	,026
9	(Constant)	-1191,874	515,486		-2,312	,022
	Population	,738	,058	,587	12,701	,000
	DispInc	,080	,022	,205	3,633	,000
	intretrank	-2,435	,586	-,212	-4,153	,000
	HeadcRetail	4893,446	1127,172	,178	4,341	,000
	Publtrans	-59,352	25,975	-,084	-2,285	,024
	Crime	4,429	1,380	,126	3,210	,002
	Rspercap	,146	,043	,181	3,395	,001
	Product2011	-11,593	4,708	-,126	-2,462	,015
	Bussservsect	1741,308	724,414	,100	2,404	,017
10	(Constant)	-1257,993	505,827		-2,487	,014
	Population	,742	,057	,589	13,017	,000
	DispInc	,078	,022	,200	3,620	,000
	intretrank	-2,425	,575	-,211	-4,220	,000
	HeadcRetail	5063,222	1106,556	,184	4,576	,000

	Publtrans	-66,752	25,609	-,094	-2,607	,010
	Crime	4,728	1,357	,135	3,484	,001
	Rspercap	,168	,043	,208	3,914	,000
	Product2011	-16,176	4,925	-,176	-3,284	,001
	Bussservsect	2231,732	733,520	,128	3,042	,003
	Tourist	12,381	4,654	,104	2,661	,009
11	(Constant)	-1408,022	505,517		-2,785	,006
	Population	,733	,057	,582	12,955	,000
	DispInc	,074	,021	,189	3,453	,001
	intretrank	-2,595	,574	-,226	-4,518	,000
	HeadcRetail	4684,420	1109,654	,170	4,222	,000
	Publtrans	-53,067	26,178	-,075	-2,027	,044
	Crime	4,864	1,344	,139	3,620	,000
	Rspercap	,177	,043	,220	4,163	,000
	Product2011	-15,834	4,874	-,172	-3,249	,001
	Bussservsect	1900,741	742,929	,109	2,558	,012
	Tourist	14,856	4,756	,125	3,124	,002
	Accessroad	2,157	1,043	,085	2,068	,040

a. Dependent Variable: Rent

Appendix IV Definitions and methods for data collection for explaining and explained variables

Market rent: The estimated amount for which a property, or a space within a property, should lease on the date of valuation between a willing lessor and a willing lessee on appropriate lease terms in an at arm's length transaction after proper marketing, wherein the parties had acted knowledgeably, prudently and without compulsion (RICS, 2011). The data in this research regard prime locations, which is the best location within a city. The data regard units of 100-200 m^2 and are in Euro's per m^2 per year.

Total population: Consists of all persons (nationals or foreigners), who are permanently settled in the economic territory of the country (or region/city), even if they are temporarily absent from it, on a given date. In this case the data are mid-year populations. A person staying or intending to stay at least one year is considered to be settled on the territory. By convention, the total population includes neither foreign students nor members of foreign armed forces stationed in a country (Experian, 2012).

Green pressure: the 0-15 year old population divided by the working age population (16-64 years old).

Grey pressure: the population aged 65 and over divided by the working age population (16-64 years old).

Households: A household is the basic unit of analysis in many social, micro economic and government models. The term refers to all individuals who live in the same dwelling. A household includes all the people who occupy a housing unit. A housing unit is a house, an apartment, a mobile home, a group of rooms, or a single room occupied (or if vacant, intended for occupancy) as separate living quarters. Separate living quarters are those in which the occupants live separately from any other people in the building and have a direct access from the outside of the building or through a common hall. The occupants may be a single family, one person living alone, two or more families living together, or any other group of related or unrelated people who share living quarters (Experian, 2012).

GDP: is a measure of total economic activity. GDP refers to the market value of all final goods and services produced within a country in a given period. In this case GDP at market prices (Nominal/Current) has been used. Market prices are the prices actually paid by the purchaser for goods and services, including transport costs, trade margins and taxes: GDP at market prices = GDP at basic prices + transport prices paid separately + non deductible taxes on expenditure – subsidies received (Experian, 2012).

Regional GDP: where official constant price regional GDP is unavailable, estimates are produced by combining current price GDP data with regional deflators for total value added.

Once the data for all regions are available, regional data are constrained to national data. These regional estimates are rebased to a consistent reference year to allow level comparisons to be made between countries (Experian, 2012).

Constant prices: refer to volume measures whose values are derived prices by applying to current quantities, prices relating to a specific base period. They allow figures to be presented so that the effects of inflation are removed. The values for each time period are expressed in terms of prices in some base period (e.g. the National Accounts may show constant price data at 2005 prices). The level of GDP is compared across different countries by converting their value in national currency according to either the current currency exchange rate, or the purchase power parity exchange rate (Experian, 2012).

Purchasing power parity exchange rate: is the exchange rate based on the purchasing power parity (PPP) of a currency relative to a selected standard. PPPs are the rates of currency conversion that equalise the purchasing power of different currencies by eliminating the differences in price levels between countries. In their simplest form, PPPs are simply price relatives which show the ratio of the prices in national currencies of the same good or service in different countries. The major use of PPPs is as a first step in making inter-country comparisons in real terms of GDP. The PPP benchmark year is 2005. The purchasing power parity method accounts for the relative effective domestic purchasing power of the average producer or consumer within an economy (Experian, 2012).

Productivity: Productivity is a measure of the efficiency of production. Productivity is a ratio of production output to what is required to produce it (inputs). The measure of productivity is defined as a total output per one unit of input. Inputs include labour and capital, while output is typically measured in revenues or other GDP components. In this instance, the definition of productivity is the ratio of GDP to total headcount employment (Experian, 2012).

Unemployment rate: The unemployment rate represents the number of unemployed as a percentage of the labour force. An unemployed person is defined by Eurostat, according to the guidelines of the International Labour Organization, as someone aged 15 to 74 without work during the reference week, who is available to start work within the next two weeks and who has actively sought employment at some time during the last four weeks. The main source used by Eurostat for unemployment figures is the European Union Labour force survey which is carried out in all EU-27 member states in accordance with European Legislation (Experian, 2012).

Consumer spending: (PPP, constant prices, 2005 base years) is what people acting either individually or collectively, spend on goods and services to spend their needs and wants. It encompasses all domestic costs (by residents and non-residents) for individual needs (Experian, 2012).

Household disposable income: (PPP, constant prices, 2005 base years) the amount of money that households have available for spending and saving after income taxes have been accounted for. Disposable income is derived from the balance of primary incomes of an institutional unit or sector by adding all current transfer taxes, except social transfers in kind, receivable by that unit or sector and subtracting all current transfers, except social transfers in kind, payable by that unit or sector; it is the balancing item in the secondary distribution of income account. The dataset is based on the *Net national disposable income* which is defined as the sum of the net disposable incomes of the institutional sectors. Net disposable income equals net national income (at market prices) minus current transfers (current taxes on income, wealth etc., social contributions and other current transfers) payable to non-resident units, plus current transfers receivable by resident units from the rest of the world.

Tourist nights: the number of tourist nights spent in collective accomodations (i.e. hotels, youth hostels etc.) relative to the resident population (several sources, see appendix V).

Cities: the number of other large cities (above 100.000 inhabitants) within a ring of 30km (www.freemaptools.com, 2012).

Centrality Index: ideally one would calculate the centrality index as follows: retail turnover at the location divided by retail spending from the resident population, times 100. As not all data are available to calculate the centrality index in this way, the centrality indices for the cities are derived from retail employment. In line with DiPasquale and Wheaton (1967), the measure for centrality is calculated as headcount employment in wholesale and retail divided by the resident population. A large proportion of retail jobs would indicate a higher concentration of retail businesses in the city.

Commuter Flows: the number of inbound commuters per 100 outbound commuters (www.urbanaudit.com, 2012).

Public transport: Length of public transport per inhabitant (www.urbanaudit.com, 2012)

Accessibility by road: the accessibility by road, assessed per city based on an index, where the EU27=100 (www.urbanaudit.com, 2012).

Education: students in upper and further education per 1000 resident population (ISCED level 3-4) (www.urbanaudit.com, 2012).

Green spaces: green spaces in m² to which the public has access, per capita (www.urbanaudit.com, 2012).

Hospitals: number of available hospital beds per 1000 inhabitants (www.urbanaudit.com,2012).

Crimes: total number of reported crimes per 1000 resident population (www.urbanaudit.com, 2012)

Appendix V. Overview of Sources

Country	City	code	based on	proportion	rents	years for rent	Population	%young	Population growth expectation
							GDP	%old	GDP growth expectation
							Productivity		GDP per capita
							Consumer Spending		CS per capita
							Retail Sales		RS per capita
Austria	Graz	AT221	NUTS3	0,64	CW	2007-2011	Experian	Eurostat, calc	Experian, calc
Austria	Innsbruck	AT332	NUTS3	0,43	CW	2007-2011	Experian	Eurostat, calc	Experian, calc
Austria	Linz	AT312	NUTS3	0,35	CW	2007-2011	Experian	Eurostat, calc	Experian, calc
Austria	Salzburg	AT323	NUTS3	0,44	CW	2007-2011	Experian	Eurostat, calc	Experian, calc
Austria	Wien	AT130	NUTS3	0,97	CBRE	1995-2011	Experian	Experian, calc	Experian, calc
Belgium	Antwerpen	BE211	NUTS3	0,47	JLL	2000-2011	Experian	Experian, calc	Experian, calc
Belgium	Brugge	BE251	NUTS3	0,43	CW	2006-2011	Experian	Eurostat, calc	Experian, calc
Belgium	Brussel/ Bruxelles	BE100	NUTS3	1	CBRE	2001-2011	Experian	Experian, calc	Experian, calc
Belgium	Gent	BE234	NUTS3	0,45	CW	2006-2011	Experian	Eurostat, calc	Experian, calc
Belgium	Hasselt	BE221	NUTS3	0,18	CW	2006-2011	Experian	Eurostat, calc	Experian, calc
Belgium	Liège	BE332	NUTS3	0,61	CW	2006-2011	Experian	Eurostat, calc	Experian, calc
Bulgaria	Sofia	BG412	NUTS3	0,97	CBRE	2000-2011	Experian	Experian, calc	Experian, calc
Czech Republic	Brno	CZ064	NUTS3	0,4	CW	2008-2011	Experian	Experian, calc	Experian, calc
Czech Republic	Praha	CZ010	NUTS3	1	CBRE	2001-2011	Experian	Experian, calc	Experian, calc
Denmark	Aarhus	DK042	NUTS3	0,37	CW	2007-2011	Experian	Eurostat, calc	Experian, calc
Denmark	København	DK011	NUTS3	0,77	CBRE	1989-2011	Experian	Experian, calc	Experian, calc
Denmark	Odense	DK031	NUTS3	0,39	CW	2007-2011	Experian	Eurostat, calc	Experian, calc
Finland	Helsinki	FI181	NUTS3	0,42	CBRE	1994-2011	Experian	Experian, calc	Experian, calc
Finland	Tampere	FI197	NUTS3	0,43	CBRE	2005-2011	Experian	Eurostat, calc	Experian, calc
Finland	Turku	FI183	NUTS3	0,39	CW	2007-2011	Experian	Eurostat, calc	Experian, calc
France	Aix-en-Provence	13001	employment zone	n/a	L'Argus	2007-2011	Experian	Experian, calc	Experian, calc
France	Amiens	80021	employment zone	n/a	L'Argus	2007-2011	Experian	Experian, calc	Experian, calc
France	Bordeaux	33063	employment zone	n/a	CW	2001-2011	Experian	Experian, calc	Experian, calc

France	Brest	29019	employment zone	n/a	L'Argus	2007-2011	Experian	Experian, calc	Experian, calc
France	Caen	14118	employment zone	n/a	L'Argus	2007-2011	Experian	Experian, calc	Experian, calc
France	Clermont-Ferrand	63113	employment zone	n/a	L'Argus	2007-2011	Experian	Experian, calc	Experian, calc
France	Dijon	21231	employment zone	n/a	L'Argus	2007-2011	Experian	Experian, calc	Experian, calc
France	Grenoble	38185	employment zone	n/a	L'Argus	2007-2011	Experian	Experian, calc	Experian, calc
France	Le Havre	76351	employment zone	n/a	L'Argus	2007-2011	Experian	Experian, calc	Experian, calc
France	Le Mans	72181	employment zone	n/a	L'Argus	2007-2011	Experian	Experian, calc	Experian, calc
France	Lille	59350	employment zone	n/a	CBRE	2005-2011	Experian	Experian, calc	Experian, calc
France	Limoges	87085	employment zone	n/a	L'Argus	2007-2011	Experian	Experian, calc	Experian, calc
France	Lyon	69123	employment zone	n/a	JLL	2000-2011	Experian	Experian, calc	Experian, calc
France	Marseille	13055	employment zone	n/a	CW	2001-2011	Experian	Experian, calc	Experian, calc
France	Metz	57463	employment zone	n/a	L'Argus	2007-2011	Experian	Experian, calc	Experian, calc
France	Montpellier	34172	employment zone	n/a	L'Argus	2007-2011	Experian	Experian, calc	Experian, calc
France	Mulhouse	68224	employment zone	n/a	L'Argus	2007-2011	Experian	Experian, calc	Experian, calc
France	Nancy	54395	employment zone	n/a	L'Argus	2007-2011	Experian	Experian, calc	Experian, calc
France	Nantes	44109	employment zone	n/a	CW	2001-2011	Experian	Experian, calc	Experian, calc
France	Nice	06088	employment zone	n/a	CW	2001-2011	Experian	Experian, calc	Experian, calc
France	Orleans	45234	employment zone	n/a	L'Argus	2007-2011	Experian	Experian, calc	Experian, calc
France	Paris	Paris	NUTS3 FR101, FR105, FR106	n/a	JLL	2000-2011	Experian	Experian, calc	Experian, calc
France	Reims	51454	employment zone	n/a	L'Argus	2007-2011	Experian	Experian, calc	Experian, calc
France	Rennes	35238	employment zone	n/a	L'Argus	2007-2011	Experian	Experian, calc	Experian, calc
France	Rouen	76540	employment zone	n/a	L'Argus	2007-2011	Experian	Experian, calc	Experian, calc
France	Saint-Etienne	42218	employment zone	n/a	L'Argus	2007-2011	Experian	Experian, calc	Experian, calc
France	Strasbourg	67482	employment zone	n/a	CW	2001-2011	Experian	Experian, calc	Experian, calc
France	Toulouse	31555	employment zone	n/a	CW	2001-2011	Experian	Experian, calc	Experian, calc
France	Tours	37261	employment zone	n/a	L'Argus	2007-2011	Experian	Experian, calc	Experian, calc
Germany	Aachen	DEA21	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Augsburg	DE271	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Berlin	DE300	NUTS3	1	CBRE	1999-2011	Experian	Experian, calc	Experian, calc
Germany	Bielefeld	DEA41	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Bochum	DEA51	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Bonn	DEA22	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Braunschweig	DE911	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Bremen	DE501	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc

Germany	Chemnitz	DED11	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Darmstadt	DE711	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Dortmund	DEA52	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Dresden	DED21	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Duisburg	DEA12	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Düsseldorf	DEA11	NUTS3	1	CBRE	1990-2011	Experian	Experian, calc	Experian, calc
Germany	Erfurt	DEG01	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Erlangen	DE252	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Essen	DEA13	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Frankfurt am Main	DE712	NUTS3	1	CBRE	1992-2011	Experian	Experian, calc	Experian, calc
Germany	Freiburg	DE131	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Gelsenkirchen	DEA32	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Gera	DEG02	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Göttingen	DE915	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Hagen	DEA53	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Halle	DEE02	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Hamburg	DE600	NUTS3	1	CBRE	2000-2011	Experian	Experian, calc	Experian, calc
Germany	Hannover	DE929	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Heidelberg	DE125	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Heilbronn	DE117	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Herne	DEA55	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Hildesheim	DE925	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Ingolstadt	DE211	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Karlsruhe	DE122	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Kassel	DE731	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Kiel	DEF02	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Köln	DEA23	NUTS3	1	JLL	2000-2011	Experian	Experian, calc	Experian, calc
Germany	Krefeld	DEA14	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Leipzig	DED31	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Leverkusen	DEA24	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Lübeck	DEF03	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Magdeburg	DEE03	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Mainz	DEB35	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Mannheim	DE126	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Mönchengladbach	DEA15	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc

Germany	Mülheim	DEA16	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	München	DE212	NUTS3	1	CBRE	1990-2011	Experian	Experian, calc	Experian, calc
Germany	Münster	DEA33	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Nürnberg	DE254	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Oberhausen	DEA17	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Oldenburg	DE943	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Osnabrück	DE944	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Paderborn	DEA47	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Pforzheim	DE129	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Potsdam	DE423	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Recklinghausen	DEA36	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Regensburg	DE232	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Reutlingen	DE141	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Rostock	DE803	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Saarbrücken	DEC01	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Siegen	DEA5A	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Solingen	DEA19	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Stuttgart	DE111	NUTS3	1	JLL	2000-2011	Experian	Experian, calc	Experian, calc
Germany	Trier	DEB21	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Ulm	DE144	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Wiesbaden	DE714	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Wolfsburg	DE913	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Wuppertal	DEA1A	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Germany	Würzburg	DE263	NUTS3	1	JLL	2002-2011	Experian	Experian, calc	Experian, calc
Greece	Athina	GR300	NUTS3	0,75	JLL	2000-2011	Experian	Experian, calc	Experian, calc
Greece	Thessaloniki	GR122	NUTS3	0,68	CW	2007-2011	Experian	Experian, calc	Experian, calc
Hungary	Budapest	HU101	NUTS3	1	CBRE	2005-2011	Experian	Experian, calc	Experian, calc
Ireland	Cork	IE025	NUTS3	0,22	CW	2007-2011	Experian	Eurostat, calc	Experian, calc
Ireland	Dublin	IE021	NUTS3	0,45	CBRE	1993-2011	Experian	Eurostat, calc	Experian, calc
Ireland	Galway	IE013	NUTS3	0,18	CW	2007-2011	Experian	Eurostat, calc	Experian, calc
Ireland	Limerick	IE023	NUTS3	0,16	CW	2007-2011	Experian	Eurostat, calc	Experian, calc
Ireland	Waterford	IE024	NUTS3	0,1	CW	2007-2011	Experian	Eurostat, calc	Experian, calc
Italy	Ancona	ITE32	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Arezzo	ITE18	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Bergamo	ITC46	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc

Italy	Bologna	IT37006	municipality + NUTS3	n/a	CW	2002-2011	Experian	Experian, calc	Experian, calc
Italy	Bolzano	ITD10	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Brescia	ITC47	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Cagliari	ITG27	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Catania	IT87015	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Ferrara	ITD56	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Firenze	IT48017	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Foggia	ITF41	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Forlì	ITD58	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Genova	IT10025	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Messina	IT83048	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Milano	IT15146	municipality + NUTS3	n/a	CBRE	1985-2011	Experian	Experian, calc	Experian, calc
Italy	Modena	ITD54	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Monza	IT15149	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Napoli	IT63049	municipality + NUTS3	n/a	CW	2002-2011	Experian	Experian, calc	Experian, calc
Italy	Novara	ITC15	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Parma	ITD52	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Pescara	ITF13	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Piacenza	ITD51	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Prato	ITE15	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Ravenna	ITD57	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Reggio Calabria	ITF65	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Reggio Emilia	ITD53	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Rimini	ITD59	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Roma	ITE43	municipality + NUTS3	n/a	JLL	2000-2011	Experian	Experian, calc	Experian, calc
Italy	Sassari	ITG25	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Taranto	ITF43	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Terni	ITE22	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Torino	IT1272	municipality + NUTS3	n/a	CW	2002-2011	Experian	Experian, calc	Experian, calc
Italy	Trento	ITD20	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Trieste	ITD44	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Venezia	IT27042	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Verona	IT23091	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Italy	Vicenza	ITD32	municipality + NUTS3	n/a	L'Argus	2011	Experian	Experian, calc	Experian, calc
Luxembourg	Luxembourg	LU000	NUTS3	0,21	JLL	2000-2011	Experian	Experian, calc	Experian, calc

Netherlands	Almere	NL0034	municipality	n/a	DTZ	2007-2010	Experian	Experian, calc	Experian, calc
Netherlands	Amersfoort	NL0307	municipality	n/a	DTZ	2007-2010	Experian	Experian, calc	Experian, calc
Netherlands	Amsterdam	NL0363	municipality	n/a	CBRE	1985-2011	Experian	Experian, calc	Experian, calc
Netherlands	Apeldoorn	NL0200	municipality	n/a	DTZ	2007-2010	Experian	Experian, calc	Experian, calc
Netherlands	Arnhem	NL0202	municipality	n/a	DTZ	2007-2010	Experian	Experian, calc	Experian, calc
Netherlands	Breda	NL0758	municipality	n/a	DTZ	2007-2010	Experian	Experian, calc	Experian, calc
Netherlands	Den Haag	NL0518	municipality	n/a	DTZ	2007-2010	Experian	Experian, calc	Experian, calc
Netherlands	Dordrecht	NL0505	municipality	n/a	DTZ	2007-2010	Experian	Experian, calc	Experian, calc
Netherlands	Ede	NL0228	municipality	n/a	DTZ	2007-2010	Experian	Experian, calc	Experian, calc
Netherlands	Eindhoven	NL0772	municipality	n/a	JLL	2000-2011	Experian	Experian, calc	Experian, calc
Netherlands	Emmen	NL0114	municipality	n/a	DTZ	2007-2010	Experian	Experian, calc	Experian, calc
Netherlands	Enschede	NL0153	municipality	n/a	DTZ	2007-2010	Experian	Experian, calc	Experian, calc
Netherlands	Groningen	NL0014	municipality	n/a	DTZ	2007-2010	Experian	Experian, calc	Experian, calc
Netherlands	Haarlem	NL0392	municipality	n/a	DTZ	2007-2010	Experian	Experian, calc	Experian, calc
Netherlands	Heerlen	NL0917	municipality	n/a	DTZ	2007-2010	Experian	Experian, calc	Experian, calc
Netherlands	Leiden	NL0546	municipality	n/a	DTZ	2007-2010	Experian	Experian, calc	Experian, calc
Netherlands	Maastricht	NL0935	municipality	n/a	DTZ	2007-2010	Experian	Experian, calc	Experian, calc
Netherlands	Nijmegen	NL0268	municipality	n/a	DTZ	2007-2010	Experian	Experian, calc	Experian, calc
Netherlands	Rotterdam	NL0599	municipality	n/a	CBRE	1985-2011	Experian	Experian, calc	Experian, calc
Netherlands	Tilburg	NL0855	municipality	n/a	DTZ	2007-2010	Experian	Experian, calc	Experian, calc
Netherlands	Utrecht	NL0344	municipality	n/a	CBRE	1990-2011	Experian	Experian, calc	Experian, calc
Netherlands	Zoetermeer	NL0637	municipality	n/a	DTZ	2007-2010	Experian	Experian, calc	Experian, calc
Netherlands	Zwolle	NL0193	municipality	n/a	DTZ	2007-2010	Experian	Experian, calc	Experian, calc
Norway	Oslo	NO011	NUTS3	0,99	CBRE	1997-2011	Experian	Experian, calc	Experian, calc
Poland	Katowice	PL22A	NUTS3	0,41	CW	2007-2011	Experian	Eurostat, calc	Experian, calc
Poland	Kraków	PL213	NUTS3	1	CW	2007-2011	Experian	Experian, calc	Experian, calc
Poland	Łódź	PL114	NUTS3	1	CW	2007-2011	Experian	Experian, calc	Experian, calc
Poland	Poznań	PL418	NUTS3	1	CW	2007-2011	Experian	Experian, calc	Experian, calc
Poland	Warszawa	PL127	NUTS3	0,99	CBRE	2001-2011	Experian	Experian, calc	Experian, calc
Poland	Wrocław	PL518	NUTS3	1	CW	2007-2011	Experian	Experian, calc	Experian, calc
Portugal	Lisboa	PT171	NUTS3	1	CBRE	1999-2011	Experian	Experian, calc	Experian, calc
Portugal	Porto	PT114	NUTS3	0,19	CBRE	2002-2011	Experian	Eurostat, calc	Experian, calc
Romania	Brasov	RO122	NUTS3	0,56	CW	2007-2011	Experian	Eurostat, calc	Experian, calc
Romania	Bucuresti	RO321	NUTS3	1	CBRE	2006-2011	Experian	Experian, calc	Experian, calc
Romania	Cluj Napoca	RO113	NUTS3	0,45	CW	2007-2011	Experian	Eurostat, calc	Experian, calc

Romania	Constanta	RO223	NUTS3	0,54	CW	2007-2011	Experian	Eurostat, calc	Experian, calc
Romania	Timisoara	RO424	NUTS3	0,46	CW	2007-2011	Experian	Eurostat, calc	Experian, calc
Slovakia	Bratislava	SK010	NUTS3	0,69	CBRE	2006-2011	Experian	Experian, calc	Experian, calc
Spain	Barcelona	ES_BAR1	municipality	n/a	CBRE	1985-2011	Experian	Experian, calc	Experian, calc
Spain	Bilbao	ES_BIL	municipality	n/a	CW	2007-2011	Experian	Experian, calc	Experian, calc
Spain	Madrid	ES_MAD1	municipality	n/a	CBRE	1985-2011	Experian	Experian, calc	Experian, calc
Spain	Málaga	ES_MAL	municipality	n/a	CW	2007-2011	Experian	Experian, calc	Experian, calc
Spain	Palma	ES07040	municipality	n/a	CW	2007-2011	Experian	Experian, calc	Experian, calc
Spain	Sevilla	ES_SEV	municipality	n/a	CW	2007-2011	Experian	Experian, calc	Experian, calc
Spain	Valencia	ES_VALE	municipality	n/a	CW	2007-2011	Experian	Experian, calc	Experian, calc
Spain	Zaragoza	ES243	municipality	n/a	CW	2007-2011	Experian	Experian, calc	Experian, calc
Sweden	Goteborg	SE214	NUTS3	0,35	CW	2007-2011	Experian	Experian, calc	Experian, calc
Sweden	Malmo	SE224	NUTS3	0,23	CW	2007-2011	Experian	Eurostat, calc	Experian, calc
Sweden	Stockholm	SE110	NUTS3	0,68	CBRE	1998-2011	Experian	Experian, calc	Experian, calc
Switzerland	Basel	CH031	NUTS3	1	W&P	2011	Experian	Experian, calc	Experian, calc
Switzerland	Bern	CH021	NUTS3	0,13	W&P	2011	Experian	Eurostat, calc	Experian, calc
Switzerland	Genève	CH013	NUTS3	1	CBRE	1998-2011	Experian	Experian, calc	Experian, calc
Switzerland	Lausanne	CH011	NUTS3	0,2	W&P	2011	Experian	Eurostat, calc	Experian, calc
Switzerland	Zurich	CH040	NUTS3	0,81	CBRE	1998-2011	Experian	Experian, calc	Experian, calc
UK	Manchester	UKD3	NUTS2	0,17	CBRE	1980-2011	Experian	Eurostat, calc	Experian, calc
UK	Leeds	UKE42	NUTS3	0,98	CW	2007-2011	Experian	Eurostat, calc	Experian, calc
UK	Birmingham	UKG31	NUTS3	1	CBRE	1980-2011	Experian	Eurostat, calc	Experian, calc
UK	London	UKI	NUTS1	1	CBRE	1984-2011	Experian	Eurostat, calc	Experian, calc
UK	Cardiff	UKL22	NUTS3	0,73	CW	2007-2011	Experian	Eurostat, calc	Experian, calc
UK	Edinburgh	UKM25	NUTS3	1	CBRE	1980-2011	Experian	Eurostat, calc	Experian, calc
UK	Glasgow	UKM34	NUTS3	1	CBRE	1980-2011	Experian	Eurostat, calc	Experian, calc

Country	City	code	based on	Unemployment rate	Unempl vs Nat. average	Bussiness service sector	Disposable Income per capita
						Education sector	
						Telecom & Transport sector	
						Health sector employment	

						Retail employment	
Austria	Graz	AT221	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Austria	Innsbruck	AT332	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Austria	Linz	AT312	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Austria	Salzburg	AT323	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Austria	Wien	AT130	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Belgium	Antwerpen	BE211	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Belgium	Brugge	BE251	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Belgium	Brussel/ Bruxelles	BE100	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Belgium	Gent	BE234	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Belgium	Hasselt	BE221	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Belgium	Liège	BE332	NUTS3	NUTS2, Experian	NUTS2, Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Bulgaria	Sofia	BG412	NUTS3	Experian	Experian, calc.	Experian, calc.	2009, Nat. level, Eurostat, calc.
Czech Republic	Brno	CZ064	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Czech Republic	Praha	CZ010	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Denmark	Aarhus	DK042	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Denmark	København	DK011	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Denmark	Odense	DK031	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Finland	Helsinki	FI181	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Finland	Tampere	FI197	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Finland	Turku	FI183	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
France	Aix-en-Provence	13001	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Amiens	80021	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Bordeaux	33063	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Brest	29019	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Caen	14118	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Clermont-Ferrand	63113	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Dijon	21231	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc

France	Grenoble	38185	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Le Havre	76351	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Le Mans	72181	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Lille	59350	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Limoges	87085	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Lyon	69123	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Marseille	13055	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Metz	57463	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Montpellier	34172	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Mulhouse	68224	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Nancy	54395	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Nantes	44109	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Nice	06088	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Orleans	45234	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Paris	Paris	NUTS3 FR101, FR105, FR106	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Reims	51454	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Rennes	35238	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Rouen	76540	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Saint-Etienne	42218	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Strasbourg	67482	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Toulouse	31555	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
France	Tours	37261	employment zone	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Germany	Aachen	DEA21	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Augsburg	DE271	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Berlin	DE300	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Bielefeld	DEA41	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Bochum	DEA51	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Bonn	DEA22	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc

Germany	Braunschweig	DE911	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Bremen	DE501	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Chemnitz	DED11	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Darmstadt	DE711	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Dortmund	DEA52	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Dresden	DED21	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Duisburg	DEA12	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Düsseldorf	DEA11	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Erfurt	DEG01	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Erlangen	DE252	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Essen	DEA13	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Frankfurt am Main	DE712	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Freiburg	DE131	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Gelsenkirchen	DEA32	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Gera	DEG02	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Göttingen	DE915	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Hagen	DEA53	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Halle	DEE02	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Hamburg	DE600	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Hannover	DE929	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Heidelberg	DE125	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Heilbronn	DE117	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Herne	DEA55	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Hildesheim	DE925	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Ingolstadt	DE211	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Karlsruhe	DE122	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Kassel	DE731	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Kiel	DEF02	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc

Germany	Köln	DEA23	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Krefeld	DEA14	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Leipzig	DED31	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Leverkusen	DEA24	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Lübeck	DEF03	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Magdeburg	DEE03	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Mainz	DEB35	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Mannheim	DE126	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Mönchengladbach	DEA15	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Mülheim	DEA16	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	München	DE212	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Münster	DEA33	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Nürnberg	DE254	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Oberhausen	DEA17	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Oldenburg	DE943	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Osnabrück	DE944	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Paderborn	DEA47	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Pforzheim	DE129	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Potsdam	DE423	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Recklinghausen	DEA36	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Regensburg	DE232	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Reutlingen	DE141	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Rostock	DE803	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Saarbrücken	DEC01	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Siegen	DEA5A	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Solingen	DEA19	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Stuttgart	DE111	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Trier	DEB21	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc

Germany	Ulm	DE144	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Wiesbaden	DE714	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Wolfsburg	DE913	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Wuppertal	DEA1A	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Germany	Würzburg	DE263	NUTS3	Experian	Experian, calc.	Experian, calc.	Experian, calc
Greece	Athina	GR300	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Greece	Thessaloniki	GR122	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Hungary	Budapest	HU101	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Ireland	Cork	IE025	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Ireland	Dublin	IE021	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Ireland	Galway	IE013	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Ireland	Limerick	IE023	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Ireland	Waterford	IE024	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Italy	Ancona	ITE32	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Arezzo	ITE18	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Bergamo	ITC46	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Bologna	IT37006	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Bolzano	ITD10	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Brescia	ITC47	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Cagliari	ITG27	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Catania	IT87015	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Ferrara	ITD56	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Firenze	IT48017	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Foggia	ITF41	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Forlì	ITD58	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Genova	IT10025	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Messina	IT83048	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Milano	IT15146	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc

Italy	Modena	ITD54	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Monza	IT15149	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Napoli	IT63049	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Novara	ITC15	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Parma	ITD52	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Pescara	ITF13	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Piacenza	ITD51	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Prato	ITE15	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Ravenna	ITD57	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Reggio Calabria	ITF65	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Reggio Emilia	ITD53	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Rimini	ITD59	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Roma	ITE43	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Sassari	ITG25	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Taranto	ITF43	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Terni	ITE22	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Torino	IT1272	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Trento	ITD20	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Trieste	ITD44	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Venezia	IT27042	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Verona	IT23091	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Italy	Vicenza	ITD32	municipality + NUTS3	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Luxembourg	Luxembourg	LU000	NUTS3	Experian	Experian, calc.	Experian, calc.	2009, Eurostat, calc.
Netherlands	Almere	NL0034	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Netherlands	Amersfoort	NL0307	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Netherlands	Amsterdam	NL0363	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Netherlands	Apeldoorn	NL0200	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Netherlands	Arnhem	NL0202	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc

Netherlands	Breda	NL0758	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Netherlands	Den Haag	NL0518	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Netherlands	Dordrecht	NL0505	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Netherlands	Ede	NL0228	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Netherlands	Eindhoven	NL0772	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Netherlands	Emmen	NL0114	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Netherlands	Enschede	NL0153	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Netherlands	Groningen	NL0014	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Netherlands	Haarlem	NL0392	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Netherlands	Heerlen	NL0917	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Netherlands	Leiden	NL0546	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Netherlands	Maastricht	NL0935	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Netherlands	Nijmegen	NL0268	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Netherlands	Rotterdam	NL0599	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Netherlands	Tilburg	NL0855	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Netherlands	Utrecht	NL0344	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Netherlands	Zoetermeer	NL0637	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Netherlands	Zwolle	NL0193	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc
Norway	Oslo	NO011	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Poland	Katowice	PL22A	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Poland	Kraków	PL213	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Poland	Łódź	PL114	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Poland	Poznań	PL418	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Poland	Warszawa	PL127	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Poland	Wrocław	PL518	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Portugal	Lisboa	PT171	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Portugal	Porto	PT114	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc
Romania	Brasov	RO122	NUTS3	Experian	Experian, calc.	Experian, calc.	Nat. level, Experian, calc.

Romania	Bucuresti	RO321	NUTS3	Experian	Experian, calc.	Experian, calc.	Nat. level, Experian, calc.
Romania	Cluj Napoca	RO113	NUTS3	Experian	Experian, calc.	Experian, calc.	Nat. level, Experian, calc.
Romania	Constanta	RO223	NUTS3	Experian	Experian, calc.	Experian, calc.	Nat. level, Experian, calc.
Romania	Timisoara	RO424	NUTS3	Experian	Experian, calc.	Experian, calc.	Nat. level, Experian, calc.
Slovakia	Bratislava	SK010	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc.
Spain	Barcelona	ES_BAR1	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc.
Spain	Bilbao	ES_BIL	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc.
Spain	Madrid	ES_MAD1	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc.
Spain	Málaga	ES_MAL	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc.
Spain	Palma	ES07040	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc.
Spain	Sevilla	ES_SEV	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc.
Spain	Valencia	ES_VALE	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc.
Spain	Zaragoza	ES243	municipality	NUTS3, Experian	NUTS3, Experian, calc.	Nuts3, Experian, calc.	Experian, calc.
Sweden	Goteborg	SE214	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc.
Sweden	Malmo	SE224	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc.
Sweden	Stockholm	SE110	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc.
Switzerland	Basel	CH031	NUTS3	Experian	Experian, calc.	Experian, calc.	Nat. level, Experian, calc.
Switzerland	Bern	CH021	NUTS3	Experian	Experian, calc.	Experian, calc.	Nat. level, Experian, calc.
Switzerland	Genève	CH013	NUTS3	Experian	Experian, calc.	Experian, calc.	Nat. level, Experian, calc.
Switzerland	Lausanne	CH011	NUTS3	Experian	Experian, calc.	Experian, calc.	Nat. level, Experian, calc.
Switzerland	Zurich	CH040	NUTS3	Experian	Experian, calc.	Experian, calc.	Nat. level, Experian, calc.
UK	Manchester	UKD3	NUTS2	Experian	Experian, calc.	Experian, calc.	Experian, calc.
UK	Leeds	UKE42	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc.
UK	Birmingham	UKG31	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc.
UK	London	UKI	NUTS1	Experian	Experian, calc.	Experian, calc.	Experian, calc.
UK	Cardiff	UKL22	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc.
UK	Edinburgh	UKM25	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc.
UK	Glasgow	UKM34	NUTS3	Experian	Experian, calc.	Experian, calc.	Nuts2, Experian, calc.

Country	City	code	Tourist nights	Commuter Flows	Crimes	student population	Green space
Austria	Graz	AT221	2007-2009, Urban Audit	n/a	2007-2009, Urban Audit	2007-2009, Urban Audit	n/a
Austria	Innsbruck	AT332	2007-2009, Urban Audit	n/a	2007-2009, Urban Audit	2007-2009, Urban Audit	n/a
Austria	Linz	AT312	2007-2009, Urban Audit	n/a	2007-2009, Urban Audit	2007-2009, Urban Audit	n/a
Austria	Salzburg	AT323	2007-2009, Urban Audit	n/a	2007-2009, Urban Audit	2007-2009, Urban Audit	n/a
Austria	Wien	AT130	2007-2009, Urban Audit	1989-1993, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	1999-2002, Urban Audit
Belgium	Antwerpen	BE211	Municipality, statbel, calc.	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Belgium	Brugge	BE251	Municipality, statbel, calc.	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Belgium	Brussel/ Bruxelles	BE100	Municipality, statbel, calc.	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Belgium	Gent	BE234	Municipality, statbel, calc.	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Belgium	Hasselt	BE221	Municipality, statbel, calc.	n/a	n/a	n/a	n/a
Belgium	Liège	BE332	Municipality, statbel, calc.	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Bulgaria	Sofia	BG412	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	1999-2002, Urban Audit
Czech Republic	Brno	CZ064	2010-2012, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	1999-2002, Urban Audit	1999-2002, Urban Audit
Czech Republic	Praha	CZ010	2010-2012, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	1999-2002, Urban Audit	1994-1998, Urban Audit
Denmark	Aarhus	DK042	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit
Denmark	København	DK011	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
Denmark	Odense	DK031	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
Finland	Helsinki	FI181	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
Finland	Tampere	FI197	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Finland	Turku	FI183	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
France	Aix-en-Provence	13001	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	n/a

France	Amiens	80021	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	n/a	
France	Bordeaux	33063	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	n/a	
France	Brest	29019	Nuts 2, 2010, DGCIS, calc.	n/a	n/a	n/a	n/a	
France	Caen	14118	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	n/a	
France	Clermont-Ferrand	63113	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	n/a	
France	Dijon	21231	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	n/a	
France	Grenoble	38185	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	n/a	
France	Le Havre	76351	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	n/a	
France	Le Mans	72181	Nuts 2, 2010, DGCIS, calc.	n/a	n/a	n/a	n/a	
France	Lille	59350	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	n/a	
France	Limoges	87085	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	n/a	
France	Lyon	69123	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	n/a	
France	Marseille	13055	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	n/a	
France	Metz	57463	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	n/a	
France	Montpellier	34172	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	n/a	
France	Mulhouse	68224	Nuts 2, 2010, DGCIS, calc.	n/a	n/a	n/a	n/a	
France	Nancy	54395	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	n/a	
France	Nantes	44109	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	n/a	
France	Nice	06088	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	n/a	n/a	
France	Orleans	45234	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	n/a	
France	Paris	Paris	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	n/a	
France	Reims	51454	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	n/a	
France	Rennes	35238	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	n/a	
France	Rouen	76540	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	n/a	
France	Saint-Etienne	42218	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	n/a	
France	Strasbourg	67482	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	n/a	
France	Toulouse	31555	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	n/a	
France	Tours	37261	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	n/a	

Germany	Aachen	DEA21	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Augsburg	DE271	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Berlin	DE300	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Bielefeld	DEA41	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Bochum	DEA51	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Bonn	DEA22	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Braunschweig	DE911	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Bremen	DE501	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Chemnitz	DED11	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Darmstadt	DE711	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Dortmund	DEA52	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Dresden	DED21	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Duisburg	DEA12	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Düsseldorf	DEA11	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Erfurt	DEG01	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Erlangen	DE252	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Essen	DEA13	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Frankfurt am Main	DE712	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Freiburg	DE131	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Gelsenkirchen	DEA32	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Gera	DEG02	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Göttingen	DE915	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Hagen	DEA53	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Halle	DEE02	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Hamburg	DE600	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Hannover	DE929	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Heidelberg	DE125	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Heilbronn	DE117	2010, Destatis, calc.	n/a	n/a	n/a	n/a

Germany	Herne	DEA55	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Hildesheim	DE925	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Ingolstadt	DE211	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Karlsruhe	DE122	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Kassel	DE731	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Kiel	DEF02	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Köln	DEA23	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Krefeld	DEA14	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Leipzig	DED31	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Leverkusen	DEA24	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Lübeck	DEF03	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Magdeburg	DEE03	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Mainz	DEB35	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Mannheim	DE126	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Mönchengladbach	DEA15	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Mülheim	DEA16	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	München	DE212	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Münster	DEA33	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Nürnberg	DE254	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Oberhausen	DEA17	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Oldenburg	DE943	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Osnabrück	DE944	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Paderborn	DEA47	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Pforzheim	DE129	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Potsdam	DE423	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Recklinghausen	DEA36	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Regensburg	DE232	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Reutlingen	DE141	2010, Destatis, calc.	n/a	n/a	n/a	n/a

Germany	Rostock	DE803	2010, Destatis, calc.	2007-2009, Urban Audit	n/a	n/a	n/a
Germany	Saarbrücken	DEC01	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Siegen	DEA5A	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Solingen	DEA19	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Stuttgart	DE111	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Trier	DEB21	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Ulm	DE144	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Wiesbaden	DE714	2010, Destatis, calc.	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Germany	Wolfsburg	DE913	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Wuppertal	DEA1A	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Germany	Würzburg	DE263	2010, Destatis, calc.	n/a	n/a	n/a	n/a
Greece	Athina	GR300	2003-2006, Urban Audit	n/a	n/a	2003-2006, Urban Audit	1999-2002, Urban Audit
Greece	Thessaloniki	GR122	2003-2006, Urban Audit	n/a	n/a	2003-2006, Urban Audit	n/a
Hungary	Budapest	HU101	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	1999-2002, Urban Audit
Ireland	Cork	IE025	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	n/a	n/a
Ireland	Dublin	IE021	1999-2002, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	n/a	2003-2006, Urban Audit
Ireland	Galway	IE013	1999-2002, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	n/a	n/a
Ireland	Limerick	IE023	1999-2002, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	n/a	n/a
Ireland	Waterford	IE024	replace by country mean	2003-2006, Urban Audit	2003-2006, Urban Audit	n/a	n/a
Italy	Ancona	ITE32	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Italy	Arezzo	ITE18	Nuts 2, 2011, Eurostat, calc.	n/a	n/a	n/a	n/a
Italy	Bergamo	ITC46	Nuts 2, 2011, Eurostat, calc.	n/a	n/a	n/a	n/a
Italy	Bologna	IT37006	2007-2009, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Italy	Bolzano	ITD10	Nuts 2, 2011, Eurostat, calc.	n/a	n/a	n/a	n/a
Italy	Brescia	ITC47	2007-2009, Urban Audit	n/a	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Italy	Cagliari	ITG27	2007-2009, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Italy	Catania	IT87015	1999-2002, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Italy	Ferrara	ITD56	Nuts 2, 2011, Eurostat, calc.	n/a	n/a	n/a	n/a

Italy	Firenze	IT48017	2007-2009, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Italy	Foggia	ITF41	2007-2009, Urban Audit	n/a	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Italy	Forlì	ITD58	Nuts 2, 2011, Eurostat, calc.	n/a	n/a	n/a	n/a
Italy	Genova	IT10025	2007-2009, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Italy	Messina	IT83048	Nuts 2, 2011, Eurostat, calc.	n/a	n/a	n/a	n/a
Italy	Milano	IT15146	2007-2009, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Italy	Modena	ITD54	2007-2009, Urban Audit	n/a	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Italy	Monza	IT15149	Nuts 2, 2011, Eurostat, calc.	n/a	n/a	n/a	n/a
Italy	Napoli	IT63049	2007-2009, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Italy	Novara	ITC15	Nuts 2, 2011, Eurostat, calc.	n/a	n/a	n/a	n/a
Italy	Parma	ITD52	Nuts 2, 2011, Eurostat, calc.	n/a	n/a	n/a	n/a
Italy	Pescara	ITF13	2007-2009, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Italy	Piacenza	ITD51	Nuts 2, 2011, Eurostat, calc.	n/a	n/a	n/a	n/a
Italy	Prato	ITE15	Nuts 2, 2011, Eurostat, calc.	n/a	n/a	n/a	n/a
Italy	Ravenna	ITD57	Nuts 2, 2011, Eurostat, calc.	n/a	n/a	n/a	n/a
Italy	Reggio Calabria	ITF65	2007-2009, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Italy	Reggio Emilia	ITD53	Nuts 2, 2011, Eurostat, calc.	n/a	n/a	n/a	n/a
Italy	Rimini	ITD59	Nuts 2, 2011, Eurostat, calc.	n/a	n/a	n/a	n/a
Italy	Roma	ITE43	2007-2009, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Italy	Sassari	ITG25	1999-2002, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Italy	Taranto	ITF43	2007-2009, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Italy	Terni	ITE22	Nuts 2, 2011, Eurostat, calc.	n/a	n/a	n/a	n/a
Italy	Torino	IT1272	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Italy	Trento	ITD20	2007-2009, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Italy	Trieste	ITD44	2007-2009, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Italy	Venezia	IT27042	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Italy	Verona	IT23091	2007-2009, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Italy	Vicenza	ITD32	Nuts 2, 2011, Eurostat, calc.	n/a	n/a	n/a	n/a

Luxembourg	Luxembourg	LU000	2003-2006, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	1999-2002, Urban Audit
Netherlands	Almere	NL0034	Nuts 2, 2010, Eurostat, calc.	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
Netherlands	Amersfoort	NL0307	Nuts 2, 2010, Eurostat, calc.	n/a	n/a	n/a	n/a
Netherlands	Amsterdam	NL0363	2007-2009, Urban Audit	2003-2006, Urban Audit	n/a	2003-2006, Urban Audit	2003-2006, Urban Audit
Netherlands	Apeldoorn	NL0200	Nuts 2, 2010, Eurostat, calc.	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
Netherlands	Arnhem	NL0202	Nuts 2, 2010, Eurostat, calc.	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
Netherlands	Breda	NL0758	2003-2006, Urban Audit	2003-2006, Urban Audit	n/a	2003-2006, Urban Audit	2003-2006, Urban Audit
Netherlands	Den Haag	NL0518	2007-2009, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
Netherlands	Dordrecht	NL0505	Nuts 2, 2010, Eurostat, calc.	n/a	n/a	n/a	n/a
Netherlands	Ede	NL0228	Nuts 2, 2010, Eurostat, calc.	n/a	n/a	n/a	n/a
Netherlands	Eindhoven	NL0772	Nuts 2, 2010, Eurostat, calc.	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
Netherlands	Emmen	NL0114	Nuts 2, 2010, Eurostat, calc.	n/a	n/a	n/a	n/a
Netherlands	Enschede	NL0153	2003-2006, Urban Audit	2003-2006, Urban Audit	n/a	2003-2006, Urban Audit	2003-2006, Urban Audit
Netherlands	Groningen	NL0014	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
Netherlands	Haarlem	NL0392	Nuts 2, 2010, Eurostat, calc.	n/a	n/a	n/a	n/a
Netherlands	Heerlen	NL0917	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
Netherlands	Leiden	NL0546	Nuts 2, 2010, Eurostat, calc.	n/a	n/a	n/a	n/a
Netherlands	Maastricht	NL0935	Nuts 2, 2010, Eurostat, calc.	n/a	n/a	n/a	n/a
Netherlands	Nijmegen	NL0268	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
Netherlands	Rotterdam	NL0599	2007-2009, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
Netherlands	Tilburg	NL0855	Nuts 2, 2010, Eurostat, calc.	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
Netherlands	Utrecht	NL0344	2007-2009, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
Netherlands	Zoetermeer	NL0637	Nuts 2, 2010, Eurostat, calc.	n/a	n/a	n/a	n/a
Netherlands	Zwolle	NL0193	Nuts 2, 2010, Eurostat, calc.	n/a	n/a	n/a	n/a
Norway	Oslo	NO011	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	n/a
Poland	Katowice	PL22A	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Poland	Kraków	PL213	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Poland	Łódź	PL114	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit

Poland	Poznań	PL418	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Poland	Warszawa	PL127	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Poland	Wrocław	PL518	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Portugal	Lisboa	PT171	2007-2009, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Portugal	Porto	PT114	2007-2009, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Romania	Brasov	RO122	Nuts 2, 2011, Eurostat, calc.	n/a	n/a	n/a	n/a
Romania	Bucuresti	RO321	2007-2009, Urban Audit	n/a	n/a	2007-2009, Urban Audit	2003-2006, Urban Audit
Romania	Cluj Napoca	RO113	2007-2009, Urban Audit	n/a	n/a	2007-2009, Urban Audit	2007-2009, Urban Audit
Romania	Constanta	RO223	Nuts 2, 2011, Eurostat, calc.	n/a	n/a	n/a	n/a
Romania	Timisoara	RO424	2007-2009, Urban Audit	n/a	n/a	2007-2009, Urban Audit	2007-2009, Urban Audit
Slovakia	Bratislava	SK010	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Spain	Barcelona	ES_BAR1	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Spain	Bilbao	ES_BIL	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	n/a
Spain	Madrid	ES_MAD1	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	1999-2002, Urban Audit
Spain	Málaga	ES_MAL	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	n/a
Spain	Palma	ES07040	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	n/a
Spain	Sevilla	ES_SEV	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	1999-2002, Urban Audit
Spain	Valencia	ES_VALE	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	1999-2002, Urban Audit
Spain	Zaragoza	ES243	2007-2009, Urban Audit	2007-2009, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Sweden	Goteborg	SE214	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	n/a
Sweden	Malmo	SE224	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Sweden	Stockholm	SE110	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Switzerland	Basel	CH031	2007-2009, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	n/a
Switzerland	Bern	CH021	2007-2009, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
Switzerland	Genève	CH013	2007-2009, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Switzerland	Lausanne	CH011	2007-2009, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	n/a
Switzerland	Zurich	CH040	2007-2009, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit
UK	Manchester	UKD3	2007-2009, Urban Audit	1999-2002, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit

UK	Leeds	UKE42	Nuts 2, 2010, Eurostat, calc.	1999-2002, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	n/a
UK	Birmingham	UKG31	2003-2006, Urban Audit	1999-2002, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	n/a
UK	London	UKI	Nuts 2, 2010, Eurostat, calc.	n/a	1999-2002, Urban Audit	2007-2009, Urban Audit	n/a
UK	Cardiff	UKL22	Nuts 2, 2010, Eurostat, calc.	1999-2002, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	n/a
UK	Edinburgh	UKM25	2003-2006, Urban Audit	n/a	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
UK	Glasgow	UKM34	Nuts 2, 2010, Eurostat, calc.	n/a	2007-2009, Urban Audit	2007-2009, Urban Audit	n/a

Country	City	code	Hospital beds	New business	Public Transport	Accessibility by road
Austria	Graz	AT221	2007-2009, Urban Audit	n/a	2007-2009, Urban Audit	2003-2006, Urban Audit
Austria	Innsbruck	AT332	2007-2009, Urban Audit	n/a	2007-2009, Urban Audit	n/a
Austria	Linz	AT312	2007-2009, Urban Audit	n/a	2007-2009, Urban Audit	2003-2006, Urban Audit
Austria	Salzburg	AT323	2007-2009, Urban Audit	n/a	2007-2009, Urban Audit	n/a
Austria	Wien	AT130	2007-2009, Urban Audit	n/a	2007-2009, Urban Audit	2003-2006, Urban Audit
Belgium	Antwerpen	BE211	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Belgium	Brugge	BE251	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Belgium	Brussel/ Bruxelles	BE100	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Belgium	Gent	BE234	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Belgium	Hasselt	BE221	n/a	n/a	n/a	n/a
Belgium	Liège	BE332	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Bulgaria	Sofia	BG412	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Czech Republic	Brno	CZ064	2007-2009, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Czech Republic	Praha	CZ010	2007-2009, Urban Audit	1999-2002, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Denmark	Aarhus	DK042	n/a	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit

Denmark	København	DK011	n/a	2003-2006, Urban Audit	n/a	2003-2006, Urban Audit
Denmark	Odense	DK031	n/a	2003-2006, Urban Audit	n/a	2003-2006, Urban Audit
Finland	Helsinki	FI181	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
Finland	Tampere	FI197	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Finland	Turku	FI183	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
France	Aix-en-Provence	13001	n/a	2003-2006, Urban Audit	2003-2006, Urban Audit	n/a
France	Amiens	80021	1999-2002, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
France	Bordeaux	33063	1999-2002, Urban Audit	2003-2006, Urban Audit	n/a	2003-2006, Urban Audit
France	Brest	29019	n/a	n/a	n/a	n/a
France	Caen	14118	1999-2002, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
France	Clermont-Ferrand	63113	1999-2002, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
France	Dijon	21231	1999-2002, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
France	Grenoble	38185	1999-2002, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
France	Le Havre	76351	1999-2002, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
France	Le Mans	72181	n/a	n/a	n/a	n/a
France	Lille	59350	1999-2002, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
France	Limoges	87085	1999-2002, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
France	Lyon	69123	1999-2002, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
France	Marseille	13055	1999-2002, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
France	Metz	57463	1999-2002, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
France	Montpellier	34172	1999-2002, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
France	Mulhouse	68224	n/a	n/a	n/a	n/a
France	Nancy	54395	1999-2002, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
France	Nantes	44109	1999-2002, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
France	Nice	06088	n/a	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
France	Orleans	45234	1999-2002, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
France	Paris	Paris	1999-2002, Urban Audit	2003-2006, Urban Audit	n/a	2003-2006, Urban Audit
France	Reims	51454	1999-2002, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit

France	Rennes	35238	1999-2002, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	2003-2006, Urban Audit
France	Rouen	76540	1999-2002, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
France	Saint-Etienne	42218	1999-2002, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
France	Strasbourg	67482	1999-2002, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
France	Toulouse	31555	1999-2002, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
France	Tours	37261	1999-2002, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit	n/a
Germany	Aachen	DEA21	n/a	n/a	n/a	n/a
Germany	Augsburg	DE271	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Berlin	DE300	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Bielefeld	DEA41	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Bochum	DEA51	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Bonn	DEA22	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Braunschweig	DE911	n/a	n/a	n/a	n/a
Germany	Bremen	DE501	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Chemnitz	DED11	n/a	n/a	n/a	2003-2006, Urban Audit
Germany	Darmstadt	DE711	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Dortmund	DEA52	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Dresden	DED21	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Duisburg	DEA12	n/a	n/a	n/a	n/a
Germany	Düsseldorf	DEA11	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Erfurt	DEG01	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Erlangen	DE252	n/a	n/a	n/a	n/a
Germany	Essen	DEA13	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Frankfurt am Main	DE712	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Freiburg	DE131	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Gelsenkirchen	DEA32	n/a	n/a	n/a	n/a
Germany	Gera	DEG02	n/a	n/a	n/a	n/a
Germany	Göttingen	DE915	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit

Germany	Hagen	DEA53	n/a	n/a	n/a	n/a
Germany	Halle	DEE02	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Hamburg	DE600	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Hannover	DE929	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Heidelberg	DE125	n/a	n/a	n/a	n/a
Germany	Heilbronn	DE117	n/a	n/a	n/a	n/a
Germany	Herne	DEA55	n/a	n/a	n/a	n/a
Germany	Hildesheim	DE925	n/a	n/a	n/a	n/a
Germany	Ingolstadt	DE211	n/a	n/a	n/a	n/a
Germany	Karlsruhe	DE122	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Kassel	DE731	n/a	n/a	n/a	n/a
Germany	Kiel	DEF02	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	n/a
Germany	Köln	DEA23	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Krefeld	DEA14	n/a	n/a	n/a	n/a
Germany	Leipzig	DED31	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Leverkusen	DEA24	n/a	n/a	n/a	n/a
Germany	Lübeck	DEF03	n/a	n/a	n/a	n/a
Germany	Magdeburg	DEE03	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Mainz	DEB35	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Mannheim	DE126	n/a	n/a	n/a	n/a
Germany	Mönchengladbach	DEA15	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Mülheim	DEA16	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	München	DE212	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Münster	DEA33	n/a	n/a	n/a	n/a
Germany	Nürnberg	DE254	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Oberhausen	DEA17	n/a	n/a	n/a	n/a
Germany	Oldenburg	DE943	n/a	n/a	n/a	n/a
Germany	Osnabrück	DE944	n/a	n/a	n/a	n/a

Germany	Paderborn	DEA47	n/a	n/a	n/a	n/a
Germany	Pforzheim	DE129	n/a	n/a	n/a	n/a
Germany	Potsdam	DE423	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	n/a
Germany	Recklinghausen	DEA36	n/a	n/a	n/a	n/a
Germany	Regensburg	DE232	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Reutlingen	DE141	n/a	n/a	n/a	n/a
Germany	Rostock	DE803	2003-2006, Urban Audit	n/a	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Saarbrücken	DEC01	n/a	n/a	2007-2009, Urban Audit	n/a
Germany	Siegen	DEA5A	n/a	n/a	n/a	n/a
Germany	Solingen	DEA19	n/a	n/a	n/a	n/a
Germany	Stuttgart	DE111	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	n/a
Germany	Trier	DEB21	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Ulm	DE144	n/a	n/a	n/a	n/a
Germany	Wiesbaden	DE714	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Germany	Wolfsburg	DE913	n/a	n/a	n/a	n/a
Germany	Wuppertal	DEA1A	n/a	n/a	n/a	n/a
Germany	Würzburg	DE263	n/a	n/a	n/a	n/a
Greece	Athina	GR300	2003-2006, Urban Audit	2003-2006, Urban Audit	1999-2002, Urban Audit	2003-2006, Urban Audit
Greece	Thessaloniki	GR122	2003-2006, Urban Audit	2003-2006, Urban Audit	n/a	2003-2006, Urban Audit
Hungary	Budapest	HU101	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Ireland	Cork	IE025	1999-2002, Urban Audit	n/a	n/a	2003-2006, Urban Audit
Ireland	Dublin	IE021	1999-2002, Urban Audit	n/a	2003-2006, Urban Audit	2003-2006, Urban Audit
Ireland	Galway	IE013	1999-2002, Urban Audit	n/a	2003-2006, Urban Audit	2003-2006, Urban Audit
Ireland	Limerick	IE023	1999-2002, Urban Audit	n/a	n/a	2003-2006, Urban Audit
Ireland	Waterford	IE024	n/a	n/a		n/a
Italy	Ancona	ITE32	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Italy	Arezzo	ITE18	n/a	n/a	n/a	n/a
Italy	Bergamo	ITC46	n/a	n/a	n/a	n/a

Italy	Bologna	IT37006	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Italy	Bolzano	ITD10	n/a	n/a	n/a	n/a
Italy	Brescia	ITC47	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	n/a
Italy	Cagliari	ITG27	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Italy	Catania	IT87015	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Italy	Ferrara	ITD56	n/a	n/a	n/a	n/a
Italy	Firenze	IT48017	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Italy	Foggia	ITF41	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	n/a
Italy	Forlì	ITD58	n/a	n/a	n/a	n/a
Italy	Genova	IT10025	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Italy	Messina	IT83048	n/a	n/a	n/a	n/a
Italy	Milano	IT15146	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Italy	Modena	ITD54	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	n/a
Italy	Monza	IT15149	n/a	n/a	n/a	n/a
Italy	Napoli	IT63049	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Italy	Novara	ITC15	n/a	n/a	n/a	n/a
Italy	Parma	ITD52	n/a	n/a	n/a	n/a
Italy	Pescara	ITF13	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Italy	Piacenza	ITD51	n/a	n/a	n/a	n/a
Italy	Prato	ITE15	n/a	n/a	n/a	n/a
Italy	Ravenna	ITD57	n/a	n/a	n/a	n/a
Italy	Reggio Calabria	ITF65	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Italy	Reggio Emilia	ITD53	n/a	n/a	n/a	n/a
Italy	Rimini	ITD59	n/a	n/a	n/a	n/a
Italy	Roma	ITE43	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Italy	Sassari	ITG25	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Italy	Taranto	ITF43	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Italy	Terni	ITE22	n/a	n/a	n/a	n/a

Italy	Torino	IT1272	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Italy	Trento	ITD20	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Italy	Trieste	ITD44	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Italy	Venezia	IT27042	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Italy	Verona	IT23091	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Italy	Vicenza	ITD32	n/a	n/a	n/a	n/a
Luxembourg	Luxembourg	LU000	2007-2009, Urban Audit	2007-2009, Urban Audit	1999-2002, Urban Audit	2003-2006, Urban Audit
Netherlands	Almere	NL0034	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit	n/a
Netherlands	Amersfoort	NL0307	n/a	n/a	n/a	n/a
Netherlands	Amsterdam	NL0363	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
Netherlands	Apeldoorn	NL0200	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit	n/a
Netherlands	Arnhem	NL0202	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
Netherlands	Breda	NL0758	2003-2006, Urban Audit	2007-2009, Urban Audit	n/a	n/a
Netherlands	Den Haag	NL0518	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
Netherlands	Dordrecht	NL0505	n/a	n/a	n/a	n/a
Netherlands	Ede	NL0228	n/a	n/a	n/a	n/a
Netherlands	Eindhoven	NL0772	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
Netherlands	Emmen	NL0114	n/a	n/a	n/a	n/a
Netherlands	Enschede	NL0153	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
Netherlands	Groningen	NL0014	2003-2006, Urban Audit	2007-2009, Urban Audit	n/a	n/a
Netherlands	Haarlem	NL0392	n/a	n/a	n/a	n/a
Netherlands	Heerlen	NL0917	2003-2006, Urban Audit	2007-2009, Urban Audit	n/a	n/a
Netherlands	Leiden	NL0546	n/a	n/a	n/a	n/a
Netherlands	Maastricht	NL0935	n/a	n/a	n/a	n/a
Netherlands	Nijmegen	NL0268	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit	n/a
Netherlands	Rotterdam	NL0599	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
Netherlands	Tilburg	NL0855	2003-2006, Urban Audit	2007-2009, Urban Audit	1999-2002, Urban Audit	2003-2006, Urban Audit
Netherlands	Utrecht	NL0344	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit

Netherlands	Zoetermeer	NL0637	n/a	n/a	n/a	n/a
Netherlands	Zwolle	NL0193	n/a	n/a	n/a	n/a
Norway	Oslo	NO011	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit	n/a
Poland	Katowice	PL22A	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Poland	Kraków	PL213	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Poland	Łódź	PL114	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Poland	Poznań	PL418	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Poland	Warszawa	PL127	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Poland	Wrocław	PL518	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Portugal	Lisboa	PT171	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Portugal	Porto	PT114	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Romania	Brasov	RO122	n/a	n/a	n/a	n/a
Romania	Bucuresti	RO321	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit	2003-2006, Urban Audit
Romania	Cluj Napoca	RO113	2007-2009, Urban Audit	2007-2009, Urban Audit	n/a	2003-2006, Urban Audit
Romania	Constanta	RO223	n/a	n/a	n/a	n/a
Romania	Timisoara	RO424	2007-2009, Urban Audit	2007-2009, Urban Audit	n/a	2003-2006, Urban Audit
Slovakia	Bratislava	SK010	2007-2009, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Spain	Barcelona	ES_BAR1	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Spain	Bilbao	ES_BIL	2007-2009, Urban Audit	2003-2006, Urban Audit	n/a	n/a
Spain	Madrid	ES_MAD1	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Spain	Málaga	ES_MAL	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Spain	Palma	ES07040	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Spain	Sevilla	ES_SEV	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Spain	Valencia	ES_VALE	2007-2009, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Spain	Zaragoza	ES243	2007-2009, Urban Audit	2003-2006, Urban Audit	n/a	2003-2006, Urban Audit
Sweden	Goteborg	SE214	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Sweden	Malmo	SE224	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit
Sweden	Stockholm	SE110	2003-2006, Urban Audit	2007-2009, Urban Audit	2007-2009, Urban Audit	2003-2006, Urban Audit

Switzerland	Basel	CH031	n/a	n/a	2007-2009, Urban Audit	n/a
Switzerland	Bern	CH021	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	n/a
Switzerland	Genève	CH013	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	n/a
Switzerland	Lausanne	CH011	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	n/a
Switzerland	Zurich	CH040	2003-2006, Urban Audit	2003-2006, Urban Audit	2007-2009, Urban Audit	n/a
UK	Manchester	UKD3	n/a	2007-2009, Urban Audit	n/a	2003-2006, Urban Audit
UK	Leeds	UKE42	n/a	2007-2009, Urban Audit	n/a	2003-2006, Urban Audit
UK	Birmingham	UKG31	n/a	2007-2009, Urban Audit	n/a	2003-2006, Urban Audit
UK	London	UKI	n/a	2007-2009, Urban Audit	1999-2002, Urban Audit	2003-2006, Urban Audit
UK	Cardiff	UKL22	n/a	2007-2009, Urban Audit	n/a	2003-2006, Urban Audit
UK	Edinburgh	UKM25	n/a	2007-2009, Urban Audit	n/a	2003-2006, Urban Audit
UK	Glasgow	UKM34	n/a	2007-2009, Urban Audit	n/a	2003-2006, Urban Audit

Country	**City**	**code**	**Patents**	**International retail ranking**	**Cities**
Austria	Graz	AT221	2010, RWI	2012, CBRE	freemaptools
Austria	Innsbruck	AT332	2010, RWI	2012, CBRE	freemaptools
Austria	Linz	AT312	2010, RWI	estimation	freemaptools
Austria	Salzburg	AT323	2010, RWI	estimation	freemaptools
Austria	Wien	AT130	2010, RWI	2012, CBRE	freemaptools
Belgium	Antwerpen	BE211	2010, RWI	2012, CBRE	freemaptools
Belgium	Brugge	BE251	2010, RWI	estimation	freemaptools
Belgium	Brussel/ Bruxelles	BE100	2010, RWI	2012, CBRE	freemaptools
Belgium	Gent	BE234	2010, RWI	estimation	freemaptools

Belgium	Hasselt	BE221	n/a	estimation	freemaptools
Belgium	Liège	BE332	2010, RWI	estimation	freemaptools
Bulgaria	Sofia	BG412	2010, RWI	2012, CBRE	freemaptools
Czech Republic	Brno	CZ064	n/a	2012, CBRE	freemaptools
Czech Republic	Praha	CZ010	2010, RWI	2012, CBRE	freemaptools
Denmark	Aarhus	DK042	2010, RWI	2012, CBRE	freemaptools
Denmark	København	DK011	2010, RWI	2012, CBRE	freemaptools
Denmark	Odense	DK031	2010, RWI	estimation	freemaptools
Finland	Helsinki	FI181	2010, RWI	2012, CBRE	freemaptools
Finland	Tampere	FI197	2010, RWI	2012, CBRE	freemaptools
Finland	Turku	FI183	2010, RWI	estimation	freemaptools
France	Aix-en-Provence	13001	2010, RWI	estimation	freemaptools
France	Amiens	80021	2010, RWI	estimation	freemaptools
France	Bordeaux	33063	2010, RWI	2012, CBRE	freemaptools
France	Brest	29019	n/a	estimation	freemaptools
France	Caen	14118	2010, RWI	estimation	freemaptools
France	Clermont-Ferrand	63113	2010, RWI	estimation	freemaptools
France	Dijon	21231	2010, RWI	estimation	freemaptools
France	Grenoble	38185	2010, RWI	estimation	freemaptools
France	Le Havre	76351	2010, RWI	estimation	freemaptools
France	Le Mans	72181	n/a	estimation	freemaptools
France	Lille	59350	2010, RWI	2012, CBRE	freemaptools
France	Limoges	87085	2010, RWI	estimation	freemaptools
France	Lyon	69123	2010, RWI	2012, CBRE	freemaptools
France	Marseille	13055	2010, RWI	2012, CBRE	freemaptools
France	Metz	57463	2010, RWI	estimation	freemaptools
France	Montpellier	34172	2010, RWI	estimation	freemaptools
France	Mulhouse	68224	n/a	estimation	freemaptools

France	Nancy	54395	2010, RWI	estimation	freemaptools
France	Nantes	44109	2010, RWI	estimation	freemaptools
France	Nice	06088	2010, RWI	2012, CBRE	freemaptools
France	Orleans	45234	2010, RWI	estimation	freemaptools
France	Paris	Paris	2010, RWI	2012, CBRE	freemaptools
France	Reims	51454	2010, RWI	estimation	freemaptools
France	Rennes	35238	2010, RWI	estimation	freemaptools
France	Rouen	76540	2010, RWI	estimation	freemaptools
France	Saint-Etienne	42218	2010, RWI	estimation	freemaptools
France	Strasbourg	67482	2010, RWI	estimation	freemaptools
France	Toulouse	31555	2010, RWI	estimation	freemaptools
France	Tours	37261	2010, RWI	estimation	freemaptools
Germany	Aachen	DEA21	n/a	2012, CBRE	freemaptools
Germany	Augsburg	DE271	2010, RWI	estimation	freemaptools
Germany	Berlin	DE300	2010, RWI	2012, CBRE	freemaptools
Germany	Bielefeld	DEA41	2010, RWI	estimation	freemaptools
Germany	Bochum	DEA51	2010, RWI	estimation	freemaptools
Germany	Bonn	DEA22	2010, RWI	estimation	freemaptools
Germany	Braunschweig	DE911	n/a	estimation	freemaptools
Germany	Bremen	DE501	2010, RWI	estimation	freemaptools
Germany	Chemnitz	DED11	n/a	estimation	freemaptools
Germany	Darmstadt	DE711	2010, RWI	estimation	freemaptools
Germany	Dortmund	DEA52	2010, RWI	estimation	freemaptools
Germany	Dresden	DED21	2010, RWI	estimation	freemaptools
Germany	Duisburg	DEA12	n/a	estimation	freemaptools
Germany	Düsseldorf	DEA11	2010, RWI	2012, CBRE	freemaptools
Germany	Erfurt	DEG01	2010, RWI	estimation	freemaptools
Germany	Erlangen	DE252	n/a	estimation	freemaptools

Germany	Essen	DEA13	2010, RWI	estimation	freemaptools
Germany	Frankfurt am Main	DE712	2010, RWI	2012, CBRE	freemaptools
Germany	Freiburg	DE131	2010, RWI	estimation	freemaptools
Germany	Gelsenkirchen	DEA32	n/a	estimation	freemaptools
Germany	Gera	DEG02	n/a	estimation	freemaptools
Germany	Göttingen	DE915	2010, RWI	estimation	freemaptools
Germany	Hagen	DEA53	n/a	estimation	freemaptools
Germany	Halle	DEE02	2010, RWI	estimation	freemaptools
Germany	Hamburg	DE600	2010, RWI	2012, CBRE	freemaptools
Germany	Hannover	DE929	2010, RWI	estimation	freemaptools
Germany	Heidelberg	DE125	n/a	estimation	freemaptools
Germany	Heilbronn	DE117	n/a	estimation	freemaptools
Germany	Herne	DEA55	n/a	estimation	freemaptools
Germany	Hildesheim	DE925	n/a	estimation	freemaptools
Germany	Ingolstadt	DE211	n/a	estimation	freemaptools
Germany	Karlsruhe	DE122	2010, RWI	estimation	freemaptools
Germany	Kassel	DE731	n/a	estimation	freemaptools
Germany	Kiel	DEF02	2010, RWI	estimation	freemaptools
Germany	Köln	DEA23	2010, RWI	2012, CBRE	freemaptools
Germany	Krefeld	DEA14	n/a	estimation	freemaptools
Germany	Leipzig	DED31	2010, RWI	estimation	freemaptools
Germany	Leverkusen	DEA24	n/a	estimation	freemaptools
Germany	Lübeck	DEF03	n/a	estimation	freemaptools
Germany	Magdeburg	DEE03	2010, RWI	estimation	freemaptools
Germany	Mainz	DEB35	2010, RWI	estimation	freemaptools
Germany	Mannheim	DE126	n/a	estimation	freemaptools
Germany	Mönchengladbach	DEA15	2010, RWI	estimation	freemaptools
Germany	Mülheim	DEA16	2010, RWI	estimation	freemaptools

Germany	München	DE212	2010, RWI	2012, CBRE	freemaptools
Germany	Münster	DEA33	n/a	estimation	freemaptools
Germany	Nürnberg	DE254	2010, RWI	estimation	freemaptools
Germany	Oberhausen	DEA17	n/a	estimation	freemaptools
Germany	Oldenburg	DE943	n/a	estimation	freemaptools
Germany	Osnabrück	DE944	n/a	estimation	freemaptools
Germany	Paderborn	DEA47	n/a	estimation	freemaptools
Germany	Pforzheim	DE129	n/a	estimation	freemaptools
Germany	Potsdam	DE423	2010, RWI	estimation	freemaptools
Germany	Recklinghausen	DEA36	n/a	estimation	freemaptools
Germany	Regensburg	DE232	2010, RWI	estimation	freemaptools
Germany	Reutlingen	DE141	n/a	estimation	freemaptools
Germany	Rostock	DE803	n/a	estimation	freemaptools
Germany	Saarbrücken	DEC01	2010, RWI	estimation	freemaptools
Germany	Siegen	DEA5A	n/a	estimation	freemaptools
Germany	Solingen	DEA19	n/a	estimation	freemaptools
Germany	Stuttgart	DE111	2010, RWI	2012, CBRE	freemaptools
Germany	Trier	DEB21	2010, RWI	estimation	freemaptools
Germany	Ulm	DE144	n/a	estimation	freemaptools
Germany	Wiesbaden	DE714	2010, RWI	estimation	freemaptools
Germany	Wolfsburg	DE913	n/a	estimation	freemaptools
Germany	Wuppertal	DEA1A	2010, RWI	estimation	freemaptools
Germany	Würzburg	DE263	n/a	estimation	freemaptools
Greece	Athina	GR300	2010, RWI	2012, CBRE	freemaptools
Greece	Thessaloniki	GR122	2010, RWI	2012, CBRE	freemaptools
Hungary	Budapest	HU101	2010, RWI	2012, CBRE	freemaptools
Ireland	Cork	IE025	2010, RWI	2012, CBRE	freemaptools
Ireland	Dublin	IE021	2010, RWI	2012, CBRE	freemaptools

Ireland	Galway	IE013	2010, RWI	estimation	freemaptools
Ireland	Limerick	IE023	2010, RWI	estimation	freemaptools
Ireland	Waterford	IE024	2010, RWI	estimation	freemaptools
Italy	Ancona	ITE32	2010, RWI	estimation	freemaptools
Italy	Arezzo	ITE18	n/a	estimation	freemaptools
Italy	Bergamo	ITC46	n/a	estimation	freemaptools
Italy	Bologna	IT37006	2010, RWI	estimation	freemaptools
Italy	Bolzano	ITD10	n/a	estimation	freemaptools
Italy	Brescia	ITC47	2010, RWI	estimation	freemaptools
Italy	Cagliari	ITG27	2010, RWI	estimation	freemaptools
Italy	Catania	IT87015	2010, RWI	estimation	freemaptools
Italy	Ferrara	ITD56	n/a	estimation	freemaptools
Italy	Firenze	IT48017	2010, RWI	estimation	freemaptools
Italy	Foggia	ITF41	2010, RWI	estimation	freemaptools
Italy	Forlì	ITD58	n/a	estimation	freemaptools
Italy	Genova	IT10025	2010, RWI	estimation	freemaptools
Italy	Messina	IT83048	n/a	estimation	freemaptools
Italy	Milano	IT15146	2010, RWI	2012, CBRE	freemaptools
Italy	Modena	ITD54	2010, RWI	estimation	freemaptools
Italy	Monza	IT15149	n/a	estimation	freemaptools
Italy	Napoli	IT63049	2010, RWI	2012, CBRE	freemaptools
Italy	Novara	ITC15	n/a	estimation	freemaptools
Italy	Parma	ITD52	n/a	estimation	freemaptools
Italy	Pescara	ITF13	2010, RWI	estimation	freemaptools
Italy	Piacenza	ITD51	n/a	estimation	freemaptools
Italy	Prato	ITE15	n/a	estimation	freemaptools
Italy	Ravenna	ITD57	n/a	estimation	freemaptools
Italy	Reggio Calabria	ITF65	2010, RWI	estimation	freemaptools

Italy	Reggio Emilia	ITD53	n/a	estimation	freemaptools
Italy	Rimini	ITD59	n/a	estimation	freemaptools
Italy	Roma	ITE43	2010, RWI	2012, CBRE	freemaptools
Italy	Sassari	ITG25	2010, RWI	estimation	freemaptools
Italy	Taranto	ITF43	2010, RWI	estimation	freemaptools
Italy	Terni	ITE22	n/a	estimation	freemaptools
Italy	Torino	IT1272	2010, RWI	2012, CBRE	freemaptools
Italy	Trento	ITD20	2010, RWI	estimation	freemaptools
Italy	Trieste	ITD44	2010, RWI	estimation	freemaptools
Italy	Venezia	IT27042	2010, RWI	estimation	freemaptools
Italy	Verona	IT23091	2010, RWI	estimation	freemaptools
Italy	Vicenza	ITD32	n/a	estimation	freemaptools
Luxembourg	Luxembourg	LU000	2010, RWI	2012, CBRE	freemaptools
Netherlands	Almere	NL0034	2010, RWI	estimation	freemaptools
Netherlands	Amersfoort	NL0307	n/a	estimation	freemaptools
Netherlands	Amsterdam	NL0363	2010, RWI	2012, CBRE	freemaptools
Netherlands	Apeldoorn	NL0200	2010, RWI	estimation	freemaptools
Netherlands	Arnhem	NL0202	2010, RWI	estimation	freemaptools
Netherlands	Breda	NL0758	2010, RWI	estimation	freemaptools
Netherlands	Den Haag	NL0518	2010, RWI	estimation	freemaptools
Netherlands	Dordrecht	NL0505	n/a	estimation	freemaptools
Netherlands	Ede	NL0228	n/a	estimation	freemaptools
Netherlands	Eindhoven	NL0772	2010, RWI	estimation	freemaptools
Netherlands	Emmen	NL0114	n/a	estimation	freemaptools
Netherlands	Enschede	NL0153	2010, RWI	estimation	freemaptools
Netherlands	Groningen	NL0014	2010, RWI	estimation	freemaptools
Netherlands	Haarlem	NL0392	n/a	estimation	freemaptools
Netherlands	Heerlen	NL0917	2010, RWI	estimation	freemaptools

Netherlands	Leiden	NL0546	n/a	estimation	freemaptools
Netherlands	Maastricht	NL0935	n/a	estimation	freemaptools
Netherlands	Nijmegen	NL0268	2010, RWI	estimation	freemaptools
Netherlands	Rotterdam	NL0599	2010, RWI	2012, CBRE	freemaptools
Netherlands	Tilburg	NL0855	2010, RWI	estimation	freemaptools
Netherlands	Utrecht	NL0344	2010, RWI	2012, CBRE	freemaptools
Netherlands	Zoetermeer	NL0637	n/a	estimation	freemaptools
Netherlands	Zwolle	NL0193	n/a	estimation	freemaptools
Norway	Oslo	NO011	2010, RWI	2012, CBRE	freemaptools
Poland	Katowice	PL22A	2010, RWI	estimation	freemaptools
Poland	Kraków	PL213	2010, RWI	2012, CBRE	freemaptools
Poland	Łódź	PL114	2010, RWI	2012, CBRE	freemaptools
Poland	Poznań	PL418	2010, RWI	estimation	freemaptools
Poland	Warszawa	PL127	2010, RWI	2012, CBRE	freemaptools
Poland	Wrocław	PL518	2010, RWI	estimation	freemaptools
Portugal	Lisboa	PT171	2010, RWI	2012, CBRE	freemaptools
Portugal	Porto	PT114	2010, RWI	2012, CBRE	freemaptools
Romania	Brasov	RO122	n/a	estimation	freemaptools
Romania	Bucuresti	RO321	2010, RWI	2012, CBRE	freemaptools
Romania	Cluj Napoca	RO113	2010, RWI	estimation	freemaptools
Romania	Constanta	RO223	n/a	estimation	freemaptools
Romania	Timisoara	RO424	2010, RWI	estimation	freemaptools
Slovakia	Bratislava	SK010	2010, RWI	2012, CBRE	freemaptools
Spain	Barcelona	ES_BAR1	2010, RWI	2012, CBRE	freemaptools
Spain	Bilbao	ES_BIL	2010, RWI	estimation	freemaptools
Spain	Madrid	ES_MAD1	2010, RWI	2012, CBRE	freemaptools
Spain	Málaga	ES_MAL	2010, RWI	2012, CBRE	freemaptools
Spain	Palma	ES07040	2010, RWI	estimation	freemaptools

Spain	Sevilla	ES_SEV	2010, RWI	2012, CBRE	freemaptools
Spain	Valencia	ES_VALE	2010, RWI	2012, CBRE	freemaptools
Spain	Zaragoza	ES243	2010, RWI	2012, CBRE	freemaptools
Sweden	Goteborg	SE214	2010, RWI	2012, CBRE	freemaptools
Sweden	Malmo	SE224	2010, RWI	estimation	freemaptools
Sweden	Stockholm	SE110	2010, RWI	2012, CBRE	freemaptools
Switzerland	Basel	CH031	n/a	estimation	freemaptools
Switzerland	Bern	CH021	2010, RWI	estimation	freemaptools
Switzerland	Genève	CH013	2010, RWI	2012, CBRE	freemaptools
Switzerland	Lausanne	CH011	2010, RWI	estimation	freemaptools
Switzerland	Zurich	CH040	2010, RWI	2012, CBRE	freemaptools
UK	Manchester	UKD3	2010, RWI	estimation	freemaptools
UK	Leeds	UKE42	2010, RWI	2012, CBRE	freemaptools
UK	Birmingham	UKG31	2010, RWI	2012, CBRE	freemaptools
UK	London	UKI	2010, RWI	2012, CBRE	freemaptools
UK	Cardiff	UKL22	2010, RWI	estimation	freemaptools
UK	Edinburgh	UKM25	2010, RWI	estimation	freemaptools
UK	Glasgow	UKM34	2010, RWI	2012, CBRE	freemaptools

Country	Code	Long term economic risk Long term Political Risk Business Environment	corruption perception	Real Estate transparency	economic volatility	Government bond rate (long term)	Inflation
Austria	AT	BMI	transparency international	JLL	Experian, calc.	Experian	Experian
Belgium	BE	BMI	transparency international	JLL	Experian, calc.	Experian	Experian
Bulgaria	BG	BMI	transparency international	JLL	Experian, calc.	Experian	Experian
Czech Republic	CZ	BMI	transparency international	JLL	Experian, calc.	Experian	Experian
Denmark	DK	BMI	transparency international	JLL	Experian, calc.	Experian	Experian
Finland	FI	BMI	transparency international	JLL	Experian, calc.	Experian	Experian
France	FR	BMI	transparency international	JLL	Experian, calc.	Experian	Experian
Germany	DE	BMI	transparency international	JLL	Experian, calc.	Experian	Experian
Greece	GR	BMI	transparency international	JLL	Experian, calc.	Experian	Experian
Hungary	HU	BMI	transparency international	JLL	Experian, calc.	Experian	Experian
Ireland	IE	BMI	transparency international	JLL	Experian, calc.	Experian	Experian
Italy	IT	BMI	transparency international	JLL	Experian, calc.	Experian	Experian
Luxembourg	LU	BMI	transparency international	Estimation	Experian, calc.	Experian	Experian
Netherlands	NL	BMI	transparency international	JLL	Experian, calc.	Experian	Experian
Norway	NO	BMI	transparency international	JLL	Experian, calc.	Experian	Experian
Poland	PL	BMI	transparency international	JLL	Experian, calc.	Experian	Experian
Portugal	PT	BMI	transparency international	JLL	Experian, calc.	Experian	Experian

Romania	RO	BMI	transparency international	JLL	Experian, calc.	Experian	Experian
Slovakia	SK	BMI	transparency international	JLL	Experian, calc.	Experian	Experian
Spain	ES	BMI	transparency international	JLL	Experian, calc.	Experian	Experian
Sweden	SE	BMI	transparency international	JLL	Experian, calc.	Experian	Experian
Switzerland	CH	BMI	transparency international	JLL	Experian, calc.	Experian	Experian
United Kingdom	UK	BMI	transparency international	JLL	Experian, calc.	Experian	Experian