

Czech University of Life Sciences Prague

Faculty of Economics and Management



Diploma thesis

**Comparative Analysis of Real Estate Market in the Czech
Republic and the Netherlands**

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CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

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PECA, Stephen P. Real estate development and investment: a comprehensive approach. Hoboken, N.J.: Wiley, c2009, xiii, 208 p. Wiley finance series. ISBN 04-702-2308-1.

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Declaration

I declare that I have worked on my diploma thesis titled “Comparative Analysis of Real Estate Market in the Czech Republic and the Netherlands” by myself and I have used only the sources mentioned at the end of the thesis.

In Prague 29 March, 2013 _____

Tereza Lošťáková

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Komparativní analýza trhu nemovitostí v České republice a Nizozemí

Comparative Analysis of Real Estate Market in the Czech Republic and the Netherlands

Souhrn

Téma Diplomové práce je komparativní analýza trhu nemovitostí v České republice a v Nizozemí. Diplomová práce je zaměřená zejména na rezidenční nemovitosti. V domech nebo v bytech žijeme celý život a trávíme zde spoustu času. To je důvod, proč je téma trhu nemovitostí pro každého z nás tak významné a důležité. Diplomová práce obsahuje srovnání trhu nemovitostí zaměřené na města Praha a Rotterdam. Tato města jsou si relativně podobná, v případě cen na trhu nemovitostí.

Klíčová slova:

Trh, nemovitosti, analýza, ekonomické ukazatele, vývoj, podmínky, Česká republika, Nizozemí

Summary

The topic of this Diploma thesis is a comparative analysis of the real estate market in the Czech Republic and the Netherlands. This thesis is primarily focused on residential property. Houses or flats are places where we live, and therefore, we spend a lot of time there. That is the reason why this topic is important and relevant for today. This diploma thesis contains comparison of the real estate market mainly in the city of Prague and in the city of Rotterdam. These cities are relatively similar in regards to real estate pricing.

Key words:

Market, properties, analysis, economic indicators, development, conditions, The Czech Republic, The Netherlands

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1 Introduction

Real estate market is in every developed economy in the world one of the most important parts of the economy. This is true also in the case of Czech Republic and the Netherlands, which were selected for the analysis of the diploma thesis. The topic is a comparative analysis of the real estate market in the Czech Republic and the Netherlands. Every one of us goes through the process of choosing a place to live at least once in life, and therefore, real estate is always an often discussed topic. This thesis is primarily focusing on residential property. Houses or flats are places where we live, and therefore, we spend a lot of time there. That is the reason why this topic is important and actual. This Diploma thesis contains comparison of the real estate market mainly in the city of Prague and in the city of Rotterdam. These cities are relatively similar in regards to real estate pricing. The real estate market has changed tremendously everywhere since 2008, the year connected with economic crisis. This crisis has greatly affected the real estate market mainly in the areas of pricing, supply and demand.

It is necessary to be focus on both side of the real estate market there are two point of view, on one side are buyers and on the other side are sellers. Buying and selling property is connected to laws, limitations and rules, which will be described as well. People who are interested in buying a property can choose real estate agents to help them find a suitable property. There are many real estate agencies in the market and they specialize in selling properties as well. Real estate agencies have the advantages of market and law knowledge and market orientation. Clients and contacts are also benefits. In addition, the theoretical part will also focus on real estate financing. There are several possibilities how to finance property and receive money. In the theoretical part are included those topics from a general point of view.

There are various views that affected the real estate market, can be historical, political, social, cultural and natural elements plus economic indicators that are included in decision making on the selection of the property.

Situation in the real estate market is not positive in the time of economic crisis, so the economic aspect has to be included. In the Diploma thesis are describing and evaluating the macroeconomic indicators such as gross domestic product, inflation, unemployment, disposable income of households and further in analysis will be calculated ratios important for the real estate market. These indicators are the ratio between the price of the property and income of the population, and other indicator is the ratio between the price of real estate and rents. Furthermore, in this thesis will be analyzed and compared non-market factors that affect the price of real estate, such as pollution (water, air), noise, traffic, population statistics, crime rate and quality of life.

Detailed analysis is also shown in the virtual map created on the Google maps website. There will be two maps, one map of Prague and one map of Rotterdam. In each map are apartments in different parts of the city, in Prague it is 10 places according to division of Prague and in Rotterdam there are 14 parts of the cities. The maps might also show other important places such as main roads, highways, airports, shopping malls, natural indicators and statistical data. In these examples are demonstrated how place, location, environment and other factors influence prices of the apartments. The virtual maps can be posted on the internet so that everyone can benefit from the information they contain.

2 Goals and methodology

2.1 Goals of the Diploma thesis

The aim is to evaluate and compare the real estate market in the Czech Republic and in the Netherlands, especially in the cities Prague and Rotterdam. Main goals are evaluation of the economic crises, impact on the real estate market and identifying factors affecting the real estate market. Comparative analysis will be specialized in the city of Prague Rotterdam, where will be compared the basic economic data, the evolution of prices, non-market factors and other factors affecting the real estate market. Economic factors will be selected in relation to real estate, such as gross domestic product, gross national product, inflation, unemployment rate, gross domestic product, wages and other related to real estate market. Final goal is creation of virtual map, where will be shown data from analysis of real estate market on selected cities.

2.2 Methodology

The methodological tools are mainly abstraction, induction, deduction, extraction and analysis. Qualitative methods such as description and quantitative methods such as processing, data collection and economic analysis will be used. Economic analysis will help to define the real estate market, important indicators – price to income ratio and price to rent ratio, supply and demand. For analysis of selected apartments were determined criteria. Among the main criteria are size of the apartments – minimum is 65m² and maximum 95m². Other criteria were the same condition of apartments – furnished of the buildings. The aim of the analysis is to obtain concrete results. The main method is the comparison. The aim of comparison is to determine the identical or different characters. The comparison is based on the generalized certain results.

3 Theoretical part

3.1 Definition of terms

Real estate

Real estate is basically a piece of land, and anything that is permanently affixed to it, that can be bought or sold, mainly employed to gain capital and looked at from a financial profit motive. It is a portion of land that has been improved for making it a more comfortable and useful place to live or to carry any business operation. Real estate can be divided into two most familiar types, commercial and residential real estate. Commercial real estate involves the sale and lease of property for business purposes. By contrast, residential real estate involves the sale and rental of land and houses to individuals and families for living. On the market, it is possible to differentiate more types of real estate, as will be shown below¹.

Property

Property is anything that can be owned by a person or entity. Property is divided into two types. The first type is “real property”, which is any interest in land, real estate, growing plants or improvements on it; the other type is “personal property” (sometimes called "personality") that refers to non-real estate items, including everything from apples to automobiles. The law makes a distinction between these types of property, with the classification affecting many of the rights and legal remedies available to the owners².

“The government, and, in particular, the courts are obligated to protect property rights and to help clarify ownership.” Property means not only money and other tangible things of value, but also includes any intangible right considered as a source or element of income or wealth.

¹The free dictionary: Real estate market. THE GALE GROUP. 2008

² Bevens, Neal R. *Real Estate and Property Law for Paralegals.*, 2009

Market

The market is an area where there is exchange. This exchange involves, on the one side, the seller and, on the other, the buyer. Exchange may occur either in person, or through agents, or intermediaries. Exchange may also take place without personal participation, most often through the Internet.

Exchange is realized through the exchange of generally equivalent items (of a generally accepted value). The most commonly used medium of exchange is money; however, other forms of legal tender can be found, such as gold, silver, platinum, precious stones and timber, saffron, fur etc. All of the above forms of the market have the same economic function, i.e. to determine prices and identify the amount of goods which different entities want to buy and sell.

3.2 Real Estate market

Real estate represents a significant portion of most people's wealth. The size and scale of the real estate market make it an attractive and lucrative sector for many investors. The real estate market is divided into several segments, which operate, to some degree, separately. Each property is a different matter, serving a specific purpose in a specific space and time. Therefore, supply and demand in the property market are very individual by nature.

An important aspect about the real estate market is investment which is characterized by a relatively long payback period, which is a function of investment in the production or supply process. Investing in real estate is considered one of the most reliable ways to save money, precisely because there is no rapid deterioration³.

The most important subjects on the real estate market are buyers and sellers. Buyers and sellers make contracts and create the market; more than two participants (buyers and sellers)

³ Brueggeman, W. B., Fisher, J. D., Real Estate Finance and Investments., 2011

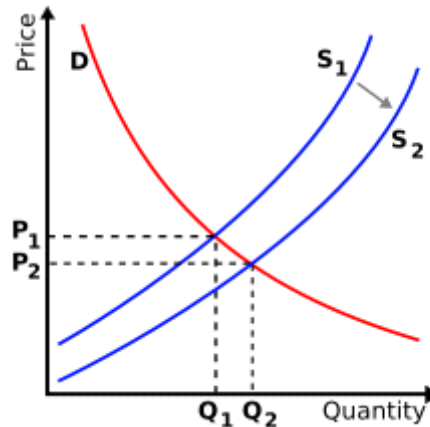
may be involved. The confrontation between supply and demand leads to the formation of market prices on the real estate market.

3.2.1 Supply

Supply is an economic concept of expressing the volume of product output, producing a body that wants to enter the market to sell at a specified price. We distinguish elastic (flexible) supply and inelastic supply. With the increasing price and quantity offered, this is known as the law of increasing supply. The supply curve expresses the functional dependence between the price of goods sold and the amount. This is explained by the high prices of goods for new manufacturers, meaning that higher production will bring higher profits⁴.

Graph 1: Supply curve

The supply curves illustrate that at a high price the quantity of goods offered for sale will be high, whereas at a low price the quantity of goods offered for sale will be low.



Source: Google pictures, supply and demand curve

⁴ Investopedia: Economics Basics: Supply and Demand. Heakal, Reem., 2011

Division of supply

- Aggregate – sum of all sales which come to the market with one manufacturer; the price is determined by the market
- Individual – offer of one producer; production volume is determined by the individual producer's price and goods
- Partial (market) – the sum of individual offers on the market with only a single commodity

Supply of the real estate market is, in general terms, determined by the development of the construction sector. The housing market is often divided into two segments; the segment of existing housing with non-elastic supply, in which the price is determined; and the segment of new housing construction, where the price is determined by the extent of new construction.

3.2.2 Demand

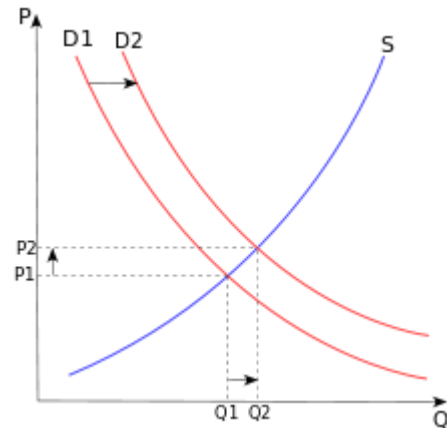
Demand is the quantity of goods (services) that buyers are willing to buy at a specified price at a certain place and at a certain time.

With the increasing price and the decreasing quantity demanded, this is known as the law of diminishing demand. The demand curve expresses the functional dependence between the price of goods sold and the amount. Here too, we can differentiate between elastic and inelastic demand⁵.

⁵ Investopedia: Economics Basics: Supply and Demand. Heakal, Reem., 2011

Graph 2: Demand curve

The demand curves illustrate that at a low price quantity demanded (quantity of goods people will want to buy at that price) will be high, and at a high price the quantity demanded will be low.



Source: Google pictures, supply and demand curve

Division of demand

- Individual - one customer's demand in the market
- Aggregate - demand of all customers in all types of goods
- Partial - the demand of all customers of one particular commodity

The aggregate of supply and demand serve to assess the market equilibrium.

Demand of property is determined mainly by disposable income households whose main component is paid wages. They affect both the accumulation of savings and household wealth, availability and risk loans. Among other factors, the labor market can affect real estate prices, unemployment rate of economic activity of the population and the number of vacancies. These factors are usually either directly on the disposable income of households (lower unemployment and higher economic activity rate of the population at a given wage means higher disposable income of households), or indirectly through labor mobility (migrating). With the exception of unemployment, growth factors of the labor market should lead to an increase in housing prices.

3.3 Division of properties

3.3.1 The subject purpose classification of property

Real estate property can be divided into various types, with each having its own distinctive structure. Real estate is divided into five groups according to the purpose of use:

- Land
- Residential properties
 - Apartment
 - House
 - Mobile homes
- Commercial and industrial properties
 - Retail (shopping centre, sports centre)
 - Offices
 - Factories
 - Logistic centers
 - Hotels
- Agricultural property
- Specific purpose (school, church)⁶

⁶ Procházka, Petr. *Real Estate Economics and Transactions: Lecture I*. Provozně ekonomická fakulta, Katedra ekonomiky, 2012.

The diploma thesis is focused on residential properties, designed for human occupation. Residential property is zoned for single-family homes, multi-family apartments, townhouses, condominiums or co-ops.

Residential property

Any property that a municipality has designated for single family homes, apartments, co-operatives, townhouses, and any other place where people live.

Residential real estate can be divided into two basic types: flats and houses. Both can be further divided into new and old properties. This will be explained with the below examples of advantages and disadvantages.

New Constructions

Advantages

- no costs of repairs and reconstruction
- applicants may move in immediately
- opportunity to purchase a new building before completion, possibility to influence the final appearance
- use of new modern materials for construction
- current building regulations
- possibility to file warranty claims for equipment or whole buildings

Disadvantages

- risks associated with the selection of the house, which is not yet completed (for example extension deadline, the possibility of increasing prices)
- higher price for new modern design property

- location – new buildings are located mostly on the outskirts of the city
- mostly located in large cities

Old buildings

Advantages

- price is lower compared to a new building (not consider location)
- historical value, artistic value
- location – older buildings are found everywhere
- familiarization with the surroundings, neighbors, habits (which, in the case of development projects, is not possible)
- technical condition of the property is proven over time

Disadvantages

- investment in maintenance and reconstruction
- more owners over time, worse conditions
- sometimes older and invalid standards, resulting in higher costs

Apartment

The apartment is part of a house, room or several rooms used for living. Its size is defined in two ways. The first way is the number of square meters of floor area + balcony and cellar. The other way is the number of rooms, with the bathroom, kitchen, toilet and corridor not counting as a room. For example, 1+kk is one room with a kitchenette and bathroom, 2+1 are two

rooms + a separate kitchen and a bathroom. Really small flats called studio apartments (garsoniera) are popular in bigger cities, especially for young people or students.

Advantages

- lower purchase price than that of a house (price per square meter is higher in the apartment but the total price is less)
- easier possibility to rent and move

Disadvantages

- more noise (neighbors, elevator)
- limitations of space, lack of a garden, space for hobbies

House

A house is a separate building with one or more floors, designed for living. There are several types of houses such as free-standing houses with gardens, semi-detached houses or row houses.

Advantages

- more quiet and privacy
- possibility of extensions, greater flexibility in reconstruction
- possibility to use the house as a commercial space - business purposes

Disadvantages

- price
- maintenance⁷

From the economic view, residential property provides the most stable returns, because no matter what the economic situation is, people always need a place to live. In normal markets, residential occupancy tends to stay high. Another fact contributing to the stability of this type of property is that the loss of a single tenant has a minimal impact, whereas if a tenant moves out of any other type of property, the negative effects can be much more significant. Many people invest their money in the real estate so as to gain a reasonable amount of capital. Investment in a real estate should be decided while keeping in mind the surroundings and the chances of its appreciation. One of the main advantages of investing in real estate is that the price of the land would appreciate irrespective of political and economic conditions. Land is a limited resource, the area of land that can be put to use is also limited, and a further reason is that population is on a constant increase⁸.

3.3.2 Type of ownership

The market economy is characterized by the segmentation of the ownership of the real estate market into:

- private property
- cooperative ownership
- public ownership (state, municipal ownership, organizations and foundations)

⁷ Hypoteční banka: Rozhodování o typu nemovitosti., 2013

⁸ Investor Words: What is Residence Property., 2011

In the case of ownership of an apartment or house, there is a property right to possess, use and to dispose. The ownership right is not absolute or unlimited.

Generally, there are limiting rights and legally protected interests of other persons. The exercise of rights may lead to conflict between the law and good morals. Some obligations arise for the owners directly from the law (for example, the obligation to pay property tax) or from decisions made by state authorities (for example, expropriation rights corresponding to an easement); other obligations are based on a contract with another person (for example the creation of a lien, lease).

Ownership rights can be obtained on the basis of a real estate transfer decision, by a state authority or directly from the law. One of the most important ways to obtain ownership of the property directly from the law is inheritance. Contract on the property must comply with the formal and content requirements. The written form must have a real estate transfer contract and other contract provisions of the law or resulting from the agreement of the participants⁹.

Cooperative ownership

Ownership of an apartment unit in which the apartment owner has purchased shares in the corporation. The cooperative owner is, in essence, a shareholder in a corporation whose principal asset is a building. In return for stock in the corporation, the owner receives a proprietary lease granting occupancy of a specific unit in the building. The owner thus occupies under a lease but does not own the unit, and his or her interest is treated as personal property.

Voting power in a co-op is usually one vote per unit. The co-op corporation may take out or assume a single mortgage on the entire building. Coop buyers may have more difficulty in obtaining financing to purchase since they are buying personal, not real property. Upon

⁹ Ronovská, Kateřina, Lenka Dobešová, Filip Melzer a Miloslav Hrdlička. *Jak správně pronajmout, prodat, koupit dům či byt.*, 2012

resale, the co-op tenant normally must obtain the approval of the co-ops' board of director for the proposed purchaser or lessee.

Condominiums and Cooperatives

Condominiums are multi-unit dwellings with privately owned residences and shared common areas. Condominiums are real property, meaning that buyers own the deeds to their dwellings. Co-ops are not considered real property. When somebody buys into a co-op, then the individual is a shareholder in the corporation that owns the property. As a shareholder, you are entitled to exclusive use of a housing unit in the property. A cooperative is a self-help business owned and democratically controlled by the people who use its services. Housing cooperatives are usually non-business, delivering either the needs of its members or managing foreign housing stock¹⁰.

The main difference to movable property is the type of material characteristics, namely:

Physical characteristics:

- **immobile** – Real Estate is firmly linked to a certain place, so it is extremely important to pay attention to the spatial allocation of property
- **unique** – the law holds that no two parcels of land are exactly the same; this uniqueness is also known as “nonhomogeneity” or “heterogeneity”
- **indestructible** – physical lifetime of residential buildings is estimated on average at 80-100 years, but it is often more, therefore the construction of the property and its operation is a demanding process

¹⁰ Smith, Lisa. Investopedia: Housing Cooperatives: A Unique Type Of Home Ownership., 2010

Economic characteristics:

- scarcity
- improvements
- area preference
- permanence¹¹

Some other characteristics from the investment point of view:

- tangible – possibility to visit the investment, visit the tenants in the case of lease, a certain degree of physical control over investment
- high transaction costs – real estate agent-related commissions, lawyers' fees, engineers' fees and other costs, longer holding period is common than for example in the stock market
- lower liquidity – no public exchange exists for the trading of real estate,
- variability among regions – location is one of the most important aspects of real estate investment; differences in location influence the eventual returns¹²

Components of property

According to § 120 of the Civil Code, component of a thing (including real estate) is defined as all that appertains to the thing with respect to its nature and can not be separated from the thing without devaluation of the thing. For registration of the property ownership rights to real estate and, ultimately, for the valuation, it is essential that the building is not a component of the land. Components of the land can be divided into two types: above the surface and subsurface. Above the surface components are mostly land vegetation. Generally, the

¹¹ CÍSAŘ, J.: Vybrané otázky z trhu nemovitostí., 1996

¹² Jacobus, Charles J. *Real Estate: An Introduction to the Profession.*, 2010

components of land are all that is above and below the surface, if it is not prejudiced by any other legal regime.

The following shall not be a component of property:

- construction
- deposits of reserved resources (raw materials, which are owned by the state)
- archaeological and paleontological findings

From a legal point of view it is important to define these terms precisely. This helps prevent potential problems. Determination of part of the land is difficult in the case of technical equipment, which, for example, may be located partially in the ground.

Cadastre of Real Estate of the Czech Republic

The cadastre is a set of data on properties in the Czech Republic containing a list and description of geometric and positional determination. The cadastre provides a comprehensive, continuously updated information system on land, buildings, flats and commercial spaces.

The cadastre is a source of information that is used to protect the rights, for tax and fee purposes, environmental protection, agricultural and forest land, mineral resources, cultural heritage, territorial development, real estate valuation, as well as for scientific, economic and statistical purposes. It is necessary to register the property and prevent legal problems and irregularities. The purpose of the cadastre is also the security aspect.

In the cadastre are registered:

- land in the form of plots
- building connected to ground with a solid foundation

- flats and non-residential premises (defined as “units” under Act No. 72/1994 Coll. on the ownership of flats)
- unfinished buildings, apartments and non-residential premises under certain conditions

Conditions for land cadastre are the signs on buildings. Buildings are often labeled by descriptive numbers. Other options are evidence numbers. This designation has been assigned by the municipality and for each village this number must be unique¹³.

Main participants in the real estate market

- Owners
- Realtors
- Investors (Pension funds, real estate investment trusts)
- Developers
- Lawyers
- Real estate managers (asset management, property management)
- Government
- Counsellors (relocation)
- Banks, finance professionals
- Other professionals (architects, civil engineers)

An important role in the real estate market is that of real estate agencies and real estate brokers. In spite of a relatively high price, which real estate agents charge, more than 70

¹³ Olivová, Květa, Kuba, Bohumil., *Byty a katastr nemovitostí.*, 2008

percent of people in Europe choose to sell or purchase real estate through a broker. Precisely for this reason the real estate agents are an important factor.

Real estate agencies

A significant role on the real estate market is that of estate agents and real estate brokers. Their role on the market is to act as intermediaries between buyers and sellers. A broker of real estate is a person or agency which has license to operate and perform dealings on real estate and can help people buy or sell property. Brokering the sale of real estate is activity carried out with a trade certificate, regulated by Act No. 455/1991 Coll. on Trade Licensing (Trade Licensing Act). Real estate brokers mediate the purchase, sale, rental of houses, flats or land, or flat exchanges. Nowadays, estate agencies offer a complex range of services, including organization, especially during the construction of new properties for sale (in cooperation with construction companies), auctions and implementation of transfer of public housing to private ownership.

Their activity consists mainly of gathering offers and subsequently comparing them with the demand. They also provide other advanced services, such as basic legal and financial counselling. It is also common that they deal with lawyers concerning, for example, ownership issues or the correctness of contracts of sale or lease.

Brokers can also help to find good investment. Real estate brokers make their money on commissions that are dependent on the amount of money spent in buying the real estate.

In the last thirty years the residential real estate industry has demanded higher commission rates. This fact influences the number of agents in the real estate market. Real estate is a field of business which is relatively easy to enter, but more difficult to survive in.

The business of real estate sales has a significant turnover rate, making the industry a highly competitive field¹⁴.

Advantages

- experience on the real estate market
- experience in the field, flexibility (the agent is available all the time whereas the owner of the apartment, for example, has a job)
- recognition of the actual candidates
- speed in mutual communication
- greater access to offers and customers, real estate databases
- communication with lawyers and other professionals

Disadvantages

- Commissions - can be charged to the seller, buyer, or both, depending on the broker contract¹⁵

Process of selling property by a real estate agent

- > Information about the property, price, condition, ownership
- > Information about the client
- > A personal tour of the real estate broker - take photos and check information
- > Agreeing on terms of the transaction, the signing of the agency contract

¹⁴ McCrea, Bridget. *The Real Estate Agent's Field Guide: Essential Insider Advice for Surviving in a Competitive Market.*,2004

¹⁵ Yahoo Finance: 10 Things Your Real Estate Broker Will Not Tell You., 2013

- > Inclusion of the property to the menu, visit the property candidate
- > Payment of a deposit, usually 10% of the purchase price
- > Submission of contracts – ownership of the property, the actual Land Register
- > The signing of the purchase contract – in the presence of a lawyer
- > Processing of other formal issues
- > In the case of cash payment, the time for payment is one month; in the case of mortgage financing, two months¹⁶

Realtors Association of the Czech Republic

The largest association of traders and professionals working in the real estate market in the Czech Republic. The association was founded in 1991 by several real estate agencies.

Today, it has a membership of more than 200 real estate agencies. The aim is to amend the Trade Act to oversee the real estate brokers. They want to introduce licensing for brokers and it should lead to the improvement of professionalism and ethics in the business¹⁷.

3.4 Factors that influence real estate market

3.4.1 Price

Price is the term used for the required, offered, or the actual amount for the goods or service. On the other hand, value is not always actually paid, required or offered. The value is the

¹⁶ McCrea, Bridget. *The Real Estate Agent's Field Guide: Essential Insider Advice for Surviving in a Competitive Market.*,2004

¹⁷ Expats: Association of Real Estates., 2006

relationship between goods and services, and the relationship between the buyer and seller. The value is a very important aspect in determining the valuation of real estate and real estate prices. The market price has a tendency to oscillate around the equilibrium price, determined by the ratio between demand and supply.

Types of prices

- starting price – the value of costs (for construction)
- purchase price – price upon the completion of the property, excluding depreciation
- current price – the price minus depreciation, adequate wear and tear, and minus the cost of repairing all defects
- yield rate – the expected revenues from property
- market value – real price, created in a particular purchase or sale

The market price and market value may differ substantially, depending on the agreement of the seller and buyer and on the specific conditions¹⁸.

Main effect on the value and price of the apartment / house

- position
- natural surroundings, the environment
- condition of the flat/house, maintenance, age of building
- type of ownership
- floor, orientation to the cardinal

¹⁸ Business Dictionary: Definition of term Price., 2011

- traffic conditions (distance to major roads, public transport, parking options)
- possibilities of cultural and sports activities

3.4.2 Destination

Location has a great and lasting influence on the price of real estate. Even in the past, the correct position was very important. Where the property is supposed to be a place for living, the choice of position is the most important decision. Over the last century the situation has changed substantially; before, people lived in villages in particular, whereas nowadays the trend is the opposite, with more people moving to cities. It is mainly due to the declining interest in agriculture and greater development of industry and services. These sectors are mainly concentrated in the cities.

People are most concentrated in the centers of large cities and the reasons for this are better transport access to jobs, cultural activities, sports and recreational activities, and the overall city-oriented lifestyle. Closely related to this is also the price of real estate in cities, which is higher due to the higher demand for housing.

3.4.3 State

The state creates a legal environment in which the real estate market can work. State and the applicable laws set the rules, the state creates and amends the law of property, rights of tenants and affects the real estate market through the tax system. The state affects property prices directly by regulations: for example in the Czech Republic, the state regulates the maximum amount of rent for a certain group of tenants of residential property. The rate of "interference" of the state in the housing market is relatively high. There is positive and negative influence of the government on the market. The basic aim is to ensure a minimum standard for everyone to satisfy the basic human need to have a home, which is often closely related to the protection of

the family as the most important social unit of society. Many states include the right to housing among basic social human rights.

3.4.4 Macroeconomic factors

“Macroeconomic indicators are statistics that indicate the current status of the economy of a state depending on a particular area of the economy (industry, labor market, trade, etc.). They are published regularly at a certain time by governmental agencies and the private sector¹⁹.”

Main macroeconomic indicators

Main macroeconomic factors that are connected with real estate market and have impact on it.

Gross Domestic Product (GDP)

The most important indicator is the GDP report. GDP is essentially a state of the economy in the widest scale. It is the sum of value added by all sectors considered as productive. First, the calculation is given in current prices. To avoid the influence of price changes, average prices of the previous year are included in the calculation; this enables to obtain data using constant prices. A key value is the growth rate of GDP. GDP includes only goods and services produced in one country, regardless of the nationality of the manufacturer, while GNP does not include products and services from foreign manufacturers, but the services and goods produced by companies of one country with activities in other countries.

During the global economic growth, the difference between GDP and GNP is declining in developed countries. In smaller, developing countries, this difference may be significant²⁰.

¹⁹ Instant Forex Trading: Economic indicators., 2011

²⁰ Koba, Mark. CNBC: Gross Domestic Product., 2011

Inflation

Inflation is defined as a rise in the price level. It is the rate of depreciation of the currency over a specified period of time – a measure of how fast a currency loses its value. The inflation rate is measured by the consumer price index. The inflation rate is appropriate for making adjustments or considerations of average quantities. It is taken into account particularly when calculating real wages, pensions, etc. Central banks attempt to stop severe inflation – as well as severe deflation – in an attempt to keep the excessive growth of prices to a minimum.

Unemployment rate

This calculation includes people without work who are actively looking for a job. The unemployment rate is calculated by dividing the number of unemployed labor force, where the labor force is the sum of the employed and unemployed. The unemployment rate helps deduce that wages grow faster with a low unemployment rate, especially when inflation is expected to accelerate. It is equally possible to calculate the employment indicators. The rate reflects the overall health of an economy or business cycle. In order to understand how an economy is functioning, it is important to know how many jobs are being created or destroyed, what percentage of the work force is actively working, and how many new people are claiming unemployment.

Interest Rates Announcement

Interest rates play the most important role in moving the prices of currencies in the foreign exchange market. As institutions that set interest rates, central banks are therefore the most influential actors.

Consumer Price Index

The Consumer Price Index (CPI) is probably the most crucial indicator of inflation. It represents changes in the level of retail prices for the basic consumer basket. If the economy develops in normal conditions, the increase in CPI can lead to an increase in basic interest rates. This, in turn, leads to an increase in the attractiveness of a currency.

Balance of Payments

The Balance of Payments represents the ratio between the amount of payments received from abroad and the amount of payments going abroad. In other words, it shows the total foreign trade operations, trade balance, and balance between export and import, transfer payments²¹.

3.5 Financing of real estate property

A home is the most expensive purchase most people ever make and almost everyone needs to borrow a large amount of money to do it. In a case of purchase, construction or renovation of a house or apartment, it is possible to get money in several ways. There are three types of loans: building savings, consumer loan or mortgage. Each of them has its specifics and is suitable for other purposes.

3.5.1 Building savings

This is a suitable way of saving for clients who want to conveniently save money for the purchase, renovation or buying equipment for the apartment or house. Savings with the state support are suitable for customers who plan to use money in the future; the most common

²¹ Markets.com: Main macroeconomic indicators., 2011

period is six years. After this time, the client can use the money for any purpose or use a more advantageous credit.

First, the client selects the target amount, and after reaching a certain percentage it is possible to get a loan and to achieve the target amount. This type of financing has certain advantages, such as constant interest rates, shorter repayment period than in mortgages; on the other hand, money cannot be used before the end of savings period. The major advantage is that state support is 15% of the amount saved (but maximum CZK 2,000 per year)²².

3.5.2 Consumer Credit

This type of loan is suitable for lower amounts, for example; therefore, it is not intended to finance the purchase of a house or apartment. This method is most commonly used to purchase for non-commercial purposes, for example for home equipment or renovation. The amount that clients borrow with this loan is around CZK 500,000, but it can be lower than that. In the case of higher amounts it is preferable to use other types of loan. In the case of smaller amounts some banks may not require a guarantor; other banks always require a guarantor. It is also possible to guarantee with property in the case of higher amounts. Banks have different requirements on client's solvency and its collateral.

For each loan applicant, the bank has to determine their expected ability to repay the loan granted, which means their credibility, which is obtained using scoring. According to the findings of the applicant's creditworthiness, the bank fixes the interest rate. As a rule, the higher the credibility the client proves, the lower the interest rate on the loan fixed by the bank, and vice versa. The reason for this is that with less creditworthy applicants the bank incurs higher credit risks, which compensates for higher interest income from the loans. The interest rate depends on the type of loan and the maturity date; at present, the interest rate on consumer loans ranges from 8.5 to 15.9% per year. The biggest advantage of consumer loans is immediate satisfaction of current needs without a long-term saving.

²² Association of Czech Building Savings Banks: Buildings savings., 2013

3.5.3 Mortgages

This type of financing is used mainly in the case of renting a larger amount of money. Mortgage can be utilized for any purpose, the repayment period can be set arbitrarily, and there is the possibility of interest rate fixation. Clients guarantee for borrowed money with the property. The bank assesses the applicant's ability to pay the loan; it is necessary to prove sufficient income. The applicant should also have a good payment history, pay obligations on time and also show bank statements as proof of their ability to pay.

A mortgage is the most accessible financial tool to purchase one's own housing. However, it can also be used for the purchase of anything or to repay disadvantageous loans. Methods of payment of the mortgage are: annuity, progressive, regressive. The annuity payment is the same amount each month and this is the most common method.

An applicant for a mortgage or loan should be an adult citizen of the Czech Republic or a foreigner who has a long-term or permanent residence in the Czech Republic. A disadvantage in obtaining bank money is the interest rate. It is a percentage of the amount for a certain period of time. It is a financial reward for the bank for lending money²³.

3.6 Hedonic price method

Factors affecting the price on the real estate market cannot be directly quantified because there is no market, for example, for the quality of air, noise, crime rate etc. One possibility how to quantify those factors is the Hedonic price method.

- the word “Hedonic” comes from Greek and means “pleasure”
- one of the oldest methods used to determine the demand for non-market commodities
- the Hedonic price method falls into the category of Revealed preference methods, based on observations of consumer behavior in real markets

²³ Svačina, Luboš. Hypoindex: Hypotéky slaví 15leté výročí od vstupu na český trh., 2010

Application of the method

- using this method assumes that the real estate market (or labor market) is a market of perfect competition and is in equilibrium, although in fact these markets are often significantly regulated, which is the reason why this method is not widely used in the Czech Republic.
- for the application of this method, large amounts of data are needed

Importance of HPM

- for the evaluation of the property's environment, price is the most important quality aspect; the price is influenced not only by the technical equipment, number of rooms and access to the center, but also by the quality of air in the locality, ambient noise, etc.
- when choosing the location of housing, clients take into consideration the natural environment
- the method is used in determining how environmental factors are reflected in market prices (e.g. prices to buy, sell, rent)²⁴

Advantages

- can be used to estimate values based on actual choices
- property markets are relatively efficient in responding to information, so can they can be good indicators of value

²⁴ Sherwin, Rosen. *Hedonic Prices and Implicit Markets: Product Differentiation in Pure Competition.*, 2002

- data on property sales and characteristics are readily available through many sources, and can be related to other secondary data sources to obtain descriptive variables for the analysis
- the method is versatile, and can be adapted to consider several possible interactions between market goods and environmental quality

Disadvantages

- quality assessment can be subjective as some people prefer quantity over quality
- the scope of environmental benefits that can be measured is limited to things that are related to housing prices
- the method will only capture people's willingness to pay for perceived differences in environmental attributes, and their direct consequences
- the results depend heavily on the model specification²⁵

²⁵ King, Dennis M., Marisa J. Mazzotta., Ecosystem Valuation: Hedonic Pricing Method., 2000

4 Practical part

4.1 The Netherlands

The Netherlands is located in Western Europe. It borders on Belgium in the south, on Germany in the east, and is washed by the North Sea in the North and West. The Netherlands is also called Holland, although it is only part of the Netherlands. With an excellent network of canals, roads and railways this country is an important gateway to other European countries, particularly to Germany. Approximately one sixth of the area is covered by water. The area of 41,547 square kilometers with around 16 million inhabitants; the population density is 492 people per km². In comparison with other countries, the Netherlands is the third most densely populated country after Monaco and Malta.

The Netherlands is divided into 13 provinces, Noord Holland being most important as this is where the capital Amsterdam is located; other important cities are Rotterdam and The Hague lying in Zuid Holland (West Holland). The main language is Dutch, which is a Germanic language. Another language – considered as a distinct language – is Frisian, spoken by over 400,000 people. The Netherlands has an oceanic climate, which is characterized by cooler summers and warmer winters. The average temperature in summer reaches 20 degrees of Celsius and in the winter it is around zero. Currently, the Netherlands is a constitutional parliamentary monarchy. There is a system of Bicameral Parliament until today which consists of the lower and upper chambers, comparable with the Czech Chamber of Deputies and the Senate. Queen Beatrix of the Netherlands is the official head of state, although she announced her abdication in 2013 and will be replaced by her son this year.

The Netherlands is one of the richest countries in the world. The country is a member of the Eurozone, the Netherlands was even among the founding countries of the then European Economic Community. GDP is currently around 30,500 euro per capita. The main trading partners are Germany, Belgium, France, the United Kingdom and the United States.

The Netherlands purposefully seeks the position of a world transportation hub in both marine (Rotterdam), and air transport. Furthermore, it seeks position as an important logistics center for the distribution of energy in northwestern Europe. Important is air transportation, which in Amsterdam is called Schiphol. The airport is, in terms of the volume of passenger and goods transport – the third largest in Europe after Paris Charles de Gaulle and Frankfurt. Other smaller airports are in Rotterdam, Maastricht, Groningen and Eindhoven. The road network in the Netherlands reaches a length of about 135,000 km (of which 3,023 km are highway roads). The continuous increase in traffic in recent years has led to a worsening of problems with frequent traffic jams²⁶.

- 13% of the Netherlands is built-up (with houses, roads, railways, industrial parks). This is the most in the whole EU.

4.1.1 Rotterdam

The city of Rotterdam is particularly important because of its port, the largest in Europe. Its global leadership was lost after a long 42 years in 2004, when it was overtaken by Shanghai, China. Statistical data on transshipment of goods for the year 2011 show that the port of Rotterdam passed 430 million tons of cargo. The largest customers of the port are China and Germany. Apart from shipping, the port of Rotterdam also serves as a major energy center and an industrial cluster predominantly for petrochemicals.

More than 60,000 people work in the port which offers indirect employment to around 250,000 people. The city is not just known as a big port but also as the third largest office city in the country, after Amsterdam and The Hague. It is home to the head offices of multinational companies such as Unilever, Nationale Nederlanden ING Group and Robeco. Rotterdam is relatively inexpensive as a business city location. The position of Rotterdam is very advantageous. It takes 19 minutes from Rotterdam Central Station to Amsterdam thanks to a

²⁶ De Capua, Sarah. *Netherlands.*, 2003

high speed train link; in addition, there is a good connection with other European cities, with the journey to Paris, for example, taking two and half hours²⁷.

Rotterdam is divided into 14 parts, namely Centrum, Charlois, Delfshaven, Feijenoord, Hillegersberg-Schiebroek, Hoogvliet, Hook of Holland, IJsselmonde, Kralingen-Crooswijk, Noord, Overschie, Pernis, Prins Alexander and Rozenburg.

For clarity, some basic data about the city are shown in the table.

Table 1: Basic Facts about Rotterdam1

Area	319.35 km ²
Number of inhabitants	582,289 → men 49,3% women 50,7%
Density	2,821 per km ²
Land	206.44 km ²
Water	112.91 km ²
Number of apartments	265,630
Average price of apartment	EUR 155,000
Number of cars	177,695

Source: OECD-iLibrary.org

²⁷ Dijkman, M. *Holland Real Estate: Year Book 2010.*, 2011

4.2 The Czech Republic

The Czech Republic is a landlocked country located in the middle temperate zone of the northern hemisphere in the central part of Europe and occupies the historical lands of Bohemia, Moravia and Silesia. National borders are adjacent to Poland, Germany, Austria and Slovakia. The area of the Czech Republic is 78,865 square kilometers of which 2% is water. The population is 10,517,247 inhabitants, placing the country 78th in the world; the population density is 133.4 inhabitants per km²

Internally, the Czech Republic is divided into 14 regions, one of which is the capital city, Prague. The biggest is the Central Region, which surrounds Prague from all sides. Among the largest cities in the Czech Republic are the capital Prague, followed by Plzeň, Brno, Liberec and Ostrava.

Czech territory passes the main European watershed. The longest river in the Czech Republic is the Vltava (433 km), which flows into the Elbe at Melnik (370 km). The highest point is Mount Sněžka (1,602 m) in the Giant Mountains, the lowest point is the Elbe in the outflow from the Czech territory at Hřensko 115 m above sea level.

The Czech Republic is a parliamentary, democratic state with a liberal state regime and a political system based on free competition of political parties and movements. The head of state is the President of the Republic and the only supreme legislative authority is the bicameral Parliament of the Czech Republic. In 1999 the Czech Republic joined NATO and on 1 May 2004 it became a full member of the European Union.

The Czech Republic has a long tradition in industry. The structure of industrial production is evolving towards a structure typical for small market economies. In recent years, the share of the food industry has been on the increase whereas the share of engineering is decreasing but remains one of the most important industries in the Czech Republic. The most traditional industries producing consumer goods are textiles and clothing, shoes, porcelain, ceramics and jewelery. The food industry revolves mainly around the production of flour,

sugar, meat and beer. The Czech Republic is a long tradition in freshwater fish with its lakes is well developed. Important export crop is hops.

The Czech Republic is home to four national parks (Giant Forest, Podyjí and České Švýcarsko/Bohemian Switzerland) with the strictest protection regime. In the Czech Republic there are numerous hot and cold mineral water springs, which are used for medicinal and curative treatments in the spa area, with many springs designed for production of mineral and table water²⁸.

4.2.1 Prague

Prague is the capital of the Czech Republic. It is also the political, economic and cultural center of the country. It is the seat of the president, government and parliament. Prague is also the center of higher and vocational education institutions and a number of research and scientific institutes. Prague is the most important Czech urban conservation area and one of the largest urban conservation areas in the world. In 1992 the historical core, covering an area of 866 ha, was added to the Unesco World Cultural and Natural Heritage list. There are over 1,200 immovable cultural monuments in the historical center and more than 1,500 monuments out of the center²⁹. Basic data about Prague are summarized in the table below.

Table 2: Basic data about Prague2

		Increase/decrease in%	Comments
Density (people per km ²)	2,518		
Max. altitude (meter above sea level)	399	Zličín	

²⁸ Český statistický úřad: Vývoj ekonomiky České republiky v 1. až 3. čtvrtletí., 2012

²⁹ Prague welcome: O Praze. *Pražská informační služba.*, 2013

Min. altitude (meter above sea level)	177	Suchdol	
Average annual air temperature °C	7.8		2012
Annual precipitation mm	651.5		2012
Number of inhabitants (2012)	1,245,213	+0.3	Difference in the same time last year
GDP (CZK millions)	973,094	+0.8	growth at constant prices of the previous year = real growth
GDP per capita CZK	776,968		EUR 30,730
Household disposable income per capita (CZK)	251,275	-1.8	
Average wages (CZK)	31,661	+1.0	
Unemployment rate (%)	2.8	-1.8	
Share of unemployment (January 2013)	4.41	+0.25	In ages 15-64, proportion of the population of the same age
Prague's share of total crime in the Czech Republic (%)	23.8		2012
Length of river Vltava km	30		
Flats launched (2012)	2,827	+3.4	
Flats completed (2012)	4,024	+15.6	
Family houses	89,825		2011
Apartments	496,911		2011

Source: CZSO.cz, own table

4.3 Financing property in the Czech Republic

4.3.1 Building savings

Offer of savings in the Czech Republic changes from year to year, sometimes even faster. Building savings may operate specialized banks, which have been granted special permissions.

In the Czech Republic this license own a 5 Building Savings Banks:

- Českomoravská stavební spořitelna, a.s.
- Modrá pyramida stavební spořitelna, a.s.
- Raiffeisen stavební spořitelna, a.s.
- Stavební spořitelna České spořitelny, a.s.
- Wüstenrot stavební spořitelna, a.s.³⁰

Building savings is done in two stages. During the first stage – the saving time – the depositor regularly puts money on his/her building savings account and the state is obliged to provide state support depending on the amount of money saved. Deposits and the state support for building savings accounts are interest-bearing.

The next stage is to provide advantageous loans from building savings for housing needs. Building savings are therefore advantageous to save money and at the same time to obtain advantageous loans for housing needs.

In 2011 the state support was reduced to 10% of the maximum of CZK 20,000 a year. Clients made use of 92,785 loans amounting to CZK 48 billion in total. The average amount per loan reached almost CZK 517,000.

³⁰ Svačina, Luboš. Hypoindex: Hypotéky slaví 15leté výročí od vstupu na český trh., 2010

- 45% of the total amount was used to finance renovations and modernization of housing
- There was a year-on-year decrease in the number of new contracts, but not as high as when the state support was last reduced in 2004
- The credit/deposit ratio decreased for the first time – by 0.6 percentage points to 67.6%.
- 59% of people who used credit to finance their housing needs took a loan from a building savings bank³¹

4.3.2 Mortgages in the Czech Republic

Currently is the best time ever to purchase own housing through a mortgage. This is mainly due to two factors. The first is low interest rates; according to Hypoindex, the average rate in December 2012 was 3.17%, which is a record high. The other factor is low and stable property prices. It can be seen that the advantage of this period are potential customers aware of their own housing.

The banks providing mortgages in the Czech Republic:

Česká spořitelna, a.s., Československá obchodní banka, a. s., GE Money Bank, a.s., Hypoteční banka, a.s., ING Bank N.V., Komerční banka, a.s., LBBW Bank CZ a.s., Oberbank AG pobočka Česká republika, Poštovní spořitelna (part of ČSOB, a.s.), Raiffeisenbank a.s., UniCredit Bank Czech Republic, a.s., Volksbank CZ, a.s., Waldviertler Sparkasse von 1842 AG, Wüstenrot hypoteční banka a.s.³².

³¹ Association of Czech Building Savings Banks: Výroční zpráva 2011., 2013

³² Svačina, Luboš. Hypoindex: Hypotéky slaví 15leté výročí od vstupu na český trh., 2010

Table 3: Volume of mortgages in the Czech Republic

Year	Volume of mortgages (mil.CZK)
2005	340,884
2006	451,600
2007	612,408
2008	715,080
2009	795,715
2010	831,837
2011	853,906

Source: infip.cz/grafy/nemovitosti

The table shows that even in times of economic crisis, the volume of mortgage loans in the Czech Republic is still rising. This situation is due to the situation in the mortgage market in times of economic crisis, people borrow more money and were also favorable conditions, so the volume of mortgages continues to rise over the years.

The banks providing mortgages in the Czech Republic:

Česká spořitelna, a.s., Československá obchodní banka, a. s., GE Money Bank, a.s., Hypoteční banka, a.s., ING Bank N.V., Komerční banka, a.s., LBBW Bank CZ a.s., Oberbank AG pobočka Česká republika, Poštovní spořitelna (part of ČSOB, a.s.), Raiffeisenbank a.s., UniCredit Bank Czech Republic, a.s., Volksbank CZ, a.s., Waldviertler Sparkasse von 1842 AG, Wüstenrot hypoteční banka a.s.³³.

³³ Svačina, Luboš. Hypoindex: Hypotéky slaví 15leté výročí od vstupu na český trh., 2010

List of the most profitable banks in the Czech Republic (2010):

- Komerční banka - CZK 13.33 bil.
- Česká spořitelna – CZK 12.05 bil.
- UniCredit Bank – CZK 3.00 bil.
- Raiffeisenbank – CZK 1.82 bil.
- GE Money Bank – CZK 1.35 bil.³⁴

Banks certainly are willing to lend, but in comparison with the year 2005, for example, the methodology of banks is more stringent. So for the same amount of mortgage it is now necessary to have a higher income, the bank detects more information about the client, and the customer scoring process is more complex. In the past, clients were able to borrow from most banks; nowadays, they are able to choose from only half of the mortgage products, the rest being inaccessible to them.

4.4 Financing property in the Netherlands

Compared to other mortgage markets in Europe, the Dutch residential mortgage market is typified by a wide range of mortgage loan products and a high degree of competition between mortgage lenders.

Central bank is De Nederlandsche Bank N.V. Other major banks are:

- ABN AMRO Bank N.V.
- Rabobank

³⁴Euroekonom: banky-zisk.,2012

- ING Bank N.V.
- Delta Loyd
- Aegon

In the Netherlands, a special type of mortgage that in the Czech Republic, according to experts, is missing. This type of mortgage is called Mortgage Interest-Only (I-O mortgage). In this case, the debtor pays, for the entire duration of the loan, just interest and principals payments until fully repaid at the end of the payment schedule. This mortgage is appropriate for the Netherlands, because they have liberalized mortgage market, and with high income taxes³⁵.

4.5 Economic situation in the Netherlands and real estate overview

The Netherlands is one of the advanced economies and is characterized by a strong focus on international trade and investment, technological industrial and agricultural production and advanced research and development infrastructure and a strong service sector, including the financial sector. The Netherlands, according to Eurostat statistics, is the sixth largest economy in the EU. It ranks 16th in the comparison of the global economic output. According to the index of the United Nations Development Programme in 2011, which compares living standards in different countries from a broader perspective, taking into account different aspects of quality of life, the Netherlands, in 2011, was third in the world behind Norway and Australia.

Last year, the Netherlands saw a worsening in the growth of income of its residents. According to the analysis of Rabobank, the worsening economic situation is due to a drop in confidence, caused by long-term political instability. This has resulted in a large decrease in investment and a decline in consumer spending. Another negative factor is a worsening

³⁵ Tůmová, Věra. Peníze: Některé chytré hypotéky v Česku stále chyb., 2007

situation in the labor market, with the 2012 unemployment rate being the highest in the 21st century³⁶.

Dutch house prices have been increasing in the past decade; they reached their highest levels in 1999 and 2000, with prices increasing by 15-20% annually. The house price boom can be attributed to persistently low interest rates and a low supply of new dwellings. The growing prices of houses can be attributed to the fiscal regime and liberalization of the mortgage market, in addition to competition between mortgage suppliers. After a housing boom lasting almost 15 years, the Dutch housing market started to weaken in 2008. That year was the turning point for all countries, mainly due to a global financial collapse³⁷.

2008 – houses price fell by 5.3%

2009 – dropped by 1.5%

2010 – rose slightly by 1%

2011 – dropped by 3.8%

4.6 Economic situation in The Czech Republic and real estate overview

In recent years the Czech Republic has had good conditions for new development. The main reason for this has been, in recent years, low interest rates and a high consumer demand, a great demand of real estate financing through low-interest mortgage loans, an improvement of delivery systems and a higher availability of loans to households. By the year 2008, thanks

³⁶ Harmans, Gerard M. *Nizozemska.*, 2008

³⁷ BusinessInfo: Nizozemské ekonomice se daří hůře než zbytku Evropy., 2012

to a higher demand and good availability of loans, housing prices rose throughout the Czech Republic.

The price development up to 2008 was characterized by an increasing trend every year. A major change in the market occurred just in 2008. This change was caused by an economy-wide crisis and the so-called “bursting bubble”. The turn of 2008 and 2009 is characterized by a significant decline in demand for housing. In this period, people were expecting another decline and they therefore preferred to postpone the purchase of real estate and, naturally, to reduce the volume of investment. Another cause of the decline in the property market was also deterioration in the credit policy of the banks, with loans becoming less available to consumers for financial reasons.

The situation hit the real estate market throughout the Czech Republic with a few exceptions, which managed to maintain a constant price level, such as the center of Prague and the historical part of Karlovy Vary. Family homes have more price stability, particularly due to a reduced supply compared to apartments. Prices of family homes are not so variable in the real estate market, in particular due to the smaller amount, but also because living in family houses is more stable than in flats.

Real estate prices continue to decline on average. The decrease of dwellings in 2009 was almost 13%, and they continued to decline in 2010. In those years, it is possible to observe significant changes caused by the above mentioned crisis in 2008. On the one hand there are the sellers, for whom the situation is less favorable and it would be better for them to sell the property later when housing prices will stabilize. On the other hand, the buyers, for whom the situation is advantageous, also due to the above mentioned interest rates and the available credits. This situation may result in an increased demand, and housing prices are expected to rise again as it was before 2008.

The number of households in the Czech Republic is still increasing, but at the same time the average size of households is declining. In the last ten years especially, the number of single parent families is still increasing; there has been an even bigger increase in the number of households of individuals. In 1961, an average household consisted of 3 persons, in 2011 it

was 2.3 persons per household. The difference in the number of persons per household is especially marked between large and small cities. In Prague, the average number of persons per household is 2.1 whereas in smaller towns and villages, it is 2.6 persons per household. Prague has the highest average share of households of individuals in whole Czech Republic³⁸.

4.7 Economic factors influencing real estate market

4.7.1 GDP – Gross domestic product

It is possible to differentiate two main indexes: Nominal GDP and Real GDP. The main difference is that the Nominal GDP does not take into account inflation, whereas the Real GDP does. But it is an important distinction because this is why some GDP reports are revised.

Table 4: GDP per capita

GDP EUR per capita	2004	2005	2006	2007	2008	2009	2010	2011
Czech Republic	15,221	16,120	17,636	19,295	19,610	19,417	19,144	19,748
Netherlands	25,162	26,613	28,869	30,876	32,538	31,147	31,983	32,476

Source: OECD-ilibrary.org, own table

³⁸ *OECD-ilibrary: Country statistical profile: Czech Republic 2013*

Table 5: Real GDP growth

Real GDP growth (%)	2004	2005	2006	2007	2008	2009	2010	2011
Czech Republic	4.7	6.8	7.0	5.7	3.1	-4.7	2.7	1.7
Netherlands	2.2	2.0	3.4	3.9	1.8	-3.5	1.7	1.2

Source: OECD-ilibrary.org, own table

Usually, GDP growth is a comparison to the previous quarter or year. The table shows data as per year. For example, if the 2010 GDP is up 2.7 percent, this means that the economy had grown by 2.7 percent over the first quarter.

The year 2011 was not favorable for the Dutch economy. GDP growth amounted to only 1.2%; because of the recession in the second half of the year, GDP growth was lower than in the comparable period of 2010.

4.7.2 Inflation rate (all items, annual growth) %

Inflation in the Czech Republic is calculated by the Czech Statistical Office as a weighted average of a total of 775 items. An important factor is the significance (importance) of items in the total household consumption. Individual items are collectively called consumer basket. Of all the items, 117 are called “regulated”. Inflation negatively affects wages, whose purchasing power is decreasing. It does not, however, affect the owners of material goods, as the price of property increases along with inflation. For this reason inflation affects more socially weaker groups. If the inflation rate is higher than the nominal interest rate, the value of deposits and loans decreases. Creditors lose and debtors gain. High inflation leads to a decrease in demand, which causes an overall reduction in sales and hence the real product.

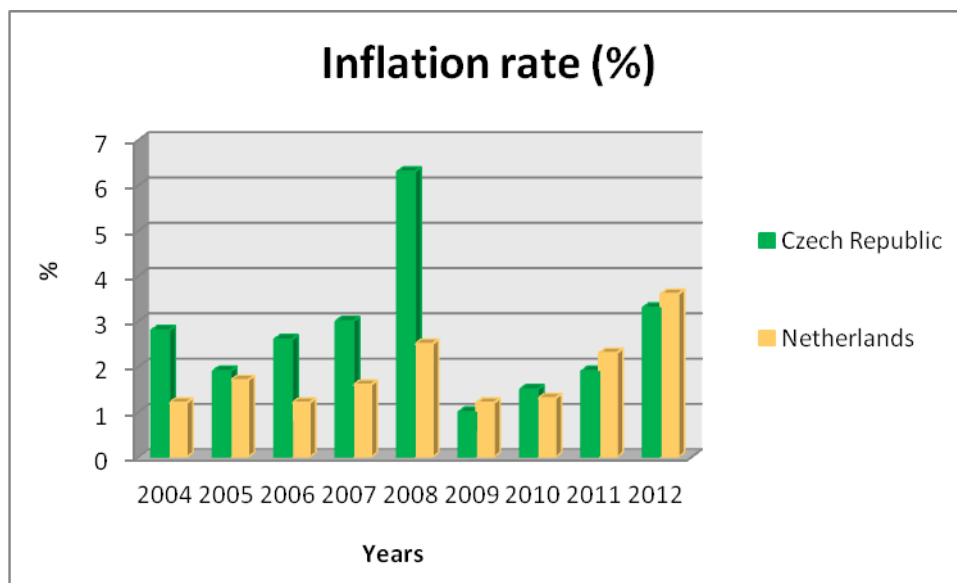
For these reasons, inflation is an important factor in assessing the situation in the property market³⁹.

Table 6: Inflation rate

Inflation rate (%)	2004	2005	2006	2007	2008	2009	2010	2011	2012
Czech Republic	2.8	1.9	2.6	3.0	6.3	1.0	1.5	1.9	3.3
Netherlands	1.2	1.7	1.2	1.6	2.5	1.2	1.3	2.3	3.6

Source: OECD-ilibrary.org, own table

Graph 3: Inflation rate



Source: own graph

³⁹Český statistický úřad 2013. Míra inflace.2011

4.7.3 Gross national income (GNI) per capita

GNI consists of the personal consumption expenditure, the gross private investment, the government consumption expenditures, the net income from assets abroad (net income receipts), and the gross exports of goods and services, after deducting two components: the gross imports of goods and services, and the indirect business taxes. The GNI is similar to the gross national product (GNP), except that in measuring the GNP one does not deduct the indirect business taxes.

Table 7: GNI per capita

GNI EUR per capita	2004	2005	2006	2007	2008	2009	2010	2011
Czech Republic	14,499	15,441	16,730	17,918	18,690	18,116	17,855	18,407
Netherlands	25,836	26,741	29,645	31,388	31,847	30,367	31,711	32,802

Source: OECD-ilibrary.org, own table

The following is the formula for calculation of Gross National Income:

$$\text{GNI} = \text{GDP} + (\text{FL} - \text{DL}) + \text{NCI} = \text{C} + \text{I} + \text{G} + (\text{X} - \text{M}) + (\text{FL} - \text{DL}) + \text{NCI}$$

In which FL and DL are, respectively, the foreign and domestic income from labor, and NCI denotes the net capital inflow⁴⁰.

4.7.4 Household disposable income (annual growth) %

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. Disposable

⁴⁰ European Commission Eurostat: Glossary:Gross national income., 2013

personal income is often monitored as one of the many key economic indicators used to determine the overall state of the economy.

Calculated as: Also known as "disposable personal income" (DPI)

DPI= Personal Income – Personal Income Taxes Payments

Table 8: Household disposable income

Household disposable income (%)	2004	2005	2006	2007	2008	2009	2010	2011
Czech Republic	1.8	5.1	5.6	3.8	2.1	1.3	0.2	--
Netherlands	0.6	-0.3	0.5	2.6	-0.3	-1.1	-0.1	-0.2

Source: OECD-ilibrary.org, own table

This indicator mainly affects the demand of real estate, because its major component are wages of the population. Household disposable income is significant indicator because it determines the wealth of households, savings of people and availability of housing loans.

Data for 2011 in The Czech Republic were not available from the same source as the others.

4.7.5 Unemployment rate

The unemployment rate significantly affects the real estate market. The main reason is the lack of funding for housing, but also people lose their job and the possibility to obtain for example mortgage. The main requirement for obtaining a mortgage is a permanent job and thus steady income.

Calculation for unemployment rate is:

$$n = (\text{unemployed} / (\text{employed} + \text{unemployed})) * 100$$

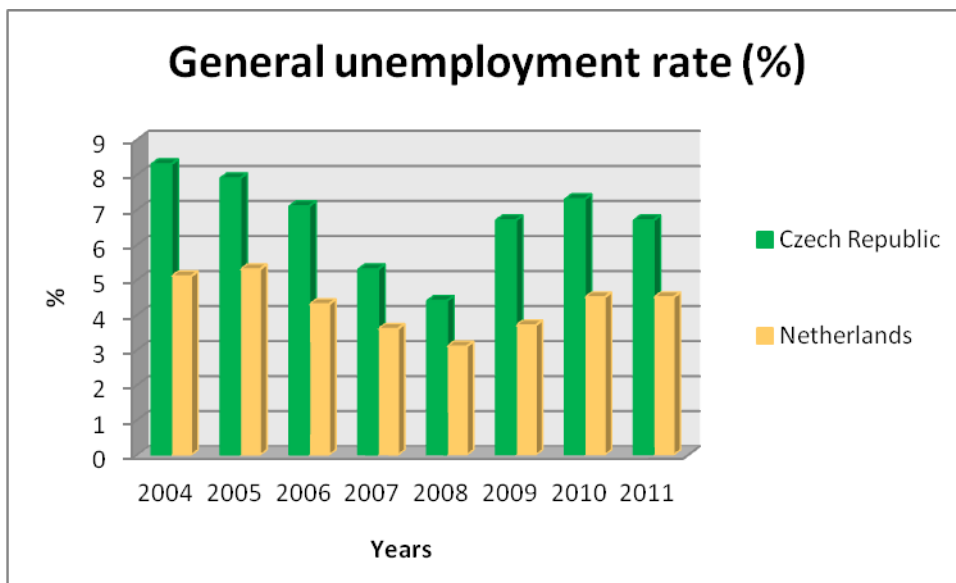
The result of the calculation is shown in percentage.

Table 9: General unemployment rate

General unemployment rate (%)	2004	2005	2006	2007	2008	2009	2010	2011
Czech Republic	8.3	7.9	7.1	5.3	4.4	6.7	7.3	6.7
Netherlands	5.1	5.3	4.3	3.6	3.1	3.7	4.5	4.5

Source: OECD-iLibrary.org, own table

Graph 4 General unemployment rate



Source: own graph

4.7.6 Average wages

Gross average monthly wages cover total wages and salaries in cash and in kind, before any tax deduction and before social security contributions. They include wages and salaries, remuneration for time not worked, bonuses and gratuities paid by the employer to the employee. In most countries, wages cover the total economy and are expressed per full-time equivalent employee⁴¹.

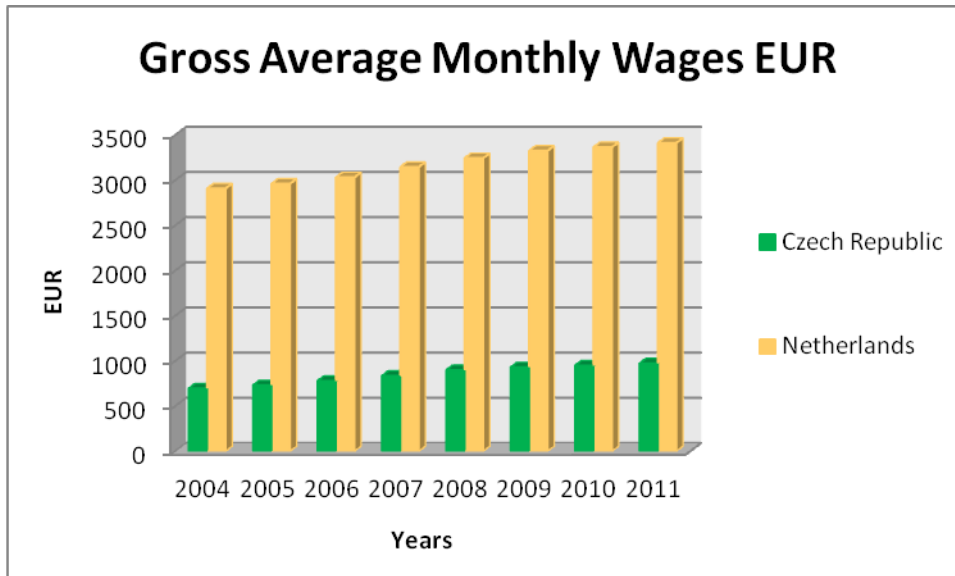
Table 10: Gross average monthly wages

Gross Average Monthly Wages EUR	2004	2005	2006	2007	2008	2009	2010	2011
Czech Republic	695	730	778	834	899	929	949	972
Netherlands	2,909	2,962	3,032	3,147	3,245	3,327	3,366	3,413

Sources: OECD-iLibrary.org, own table

⁴¹ Český statistický úřad.. Wages and registered number of employees.2013

Graph 5 Gross wages



Source: own graph

4.8 Non market factors influencing real estate in selected countries

Residential property prices may be also affected by various demographic factors. Of those stemming from the labor market for the increase of population migration in the same direction should act natural population growth. The growth in real estate prices should also contribute to higher divorce was mostly arise two from the one same household, creating a need for new housing. Same direction can act as marriage, when it is often established a completely new home. Demand of housing can by also affected the age structure of the population, which is reflected in the economic activity of the population. The tables below are mentioned other factors such as crime rates, quality indexes of life and pollution, which has a great impact on real estate prices.

Table 11: Population statistics

Population statistics	Czech Republic	Netherlands	Year
Life expectancy at birth	77.7	80.8	2010
Total population (mil.)	10,520	16,615	2010
Population growth rate %	0.3	0.5	2010
Youth population aged less than 15, % of population	13.6	17.5	2011
Elderly population aged 65 and over, % of population	15.8	15.6	2011

Source: OECD-ilibrary.org, own table

Table 12: Crime issues

Crime issues	Prague	Rotterdam
Crime index	34.54	74.27
Safety Scale	65.46	25.73
Level of crime	31.82	85.0
Worries home broken and things stolen	37.5	75
Worries car stolen	43.75	65
Worries of physical attack (color of skin, ethnic or religion)	18.75	58.33
Problem of dealing drugs	35	83
Problem corruption and bribery	57.14	55

Source: Numbeo.com

The Crime Index is an estimation of overall crime. Any crime level up to 50 is reasonable whereas crime levels over 100 are too high. This case is not an issue of either country. Complementary to the crime index is the safety index: if a country has a high safety index, it is considered to be very safe. The crime index of Rotterdam is relatively high in comparison with Prague. The principal reason for this is the high number of foreigners⁴².

In the Netherlands are immigrants very actual topic. Nearly 90% of crime is committed in Rotterdam by foreigners. The Dutch have historically been very open to foreigners, but nowadays the government is trying to tighten rules for obtaining citizenship in the Netherlands. Worse situation in Prague compared to Rotterdam in the case of corruption. Holland is well known for politics and government control & openness.

4.8.1 Pollution

Air pollution in Prague

In the last twenty years emissions of sulphur dioxide and suspended particulates have dropped significantly in Prague, the decrease in other pollutants monitored has been of little importance. Especially the adverse effects of automotive traffic have still persisted. The size and quality of public transport have been receiving emphasis, the objective being to reduce the use of individual automotive transport. In recent years there has been a substantial improvement in air quality in the city. This should improve the influence of relatively good dispersion conditions.

In 2006, the limit was exceeded for the average annual concentration of airborne dust PM10 at several locations in Prague (at 4 out of 15 monitoring stations). Since 2009 there has been a significant improvement, with this concentration not exceeded at either of the monitored places. The year 2006 was also difficult because the average annual concentration of nitrogen dioxide NO₂ exceeded the limit at six locations. In 2012, the levels were

⁴² Numbeo.com, Crime Comparison Between Rotterdam and Prague., 2013

significantly exceeded only in Prague 2 in Legerova street. These values are marked, for clarity, in the map of Prague⁴³.

Water pollution in Prague

Water quality has also improved significantly in recent years. Evaluation of water is referred to as “unpolluted water” or “slightly to moderately polluted”. Slightly polluted water is especially in small streams. Drinking water in Prague has permanently been at a good level. Water quality is regularly inspected and conforms to strict limits. The water source for Prague is Waterworks Želivka, with almost 80% of drinking water coming from this source⁴⁴.

Noise and transport in Prague

Road traffic is a completely dominant source of noise. According to calculations implemented within the strategic noise maps, 87% of the population is burdened by daily noise L (day) over 55 dB; similarly, 85% of the population is burdened with night noise L (night) above 45 dB. Based on the strategic noise maps, critical areas are identified, which are given priority attention in the planning and implementation of noise control measures.

Transport is a significant factor affecting the quality of the environment in Prague. Increased pollution is mainly caused by the still increasing amount of individual automobile transport. In order to promote a sustainable development of transport, the city has been developing public transport, striving for completion of the outer ring road, supporting fuel consumption reduction in transport, mitigating impacts on air quality and noise nuisance, minimising encroachment of further areas for transport purposes and supporting bicycle and pedestrian transport as well as a healthy lifestyle. In Prague and its surroundings, public transport has been provided by the system of Prague Integrated Transport (PID), which includes underground, trams, city and commuting buses, railway and, in localities along the river, ferries⁴⁵.

⁴³ Informace o kvalitě ovzduší v ČR Informace o kvalitě ovzduší v ČR, 2013

⁴⁴ Pospíšilová, J. Collective of authors. *Prague Environment: Prague*. 2008

⁴⁵ Pospíšilová, J. Collective of authors. *Prague Environment: Prague*. 2008

Air pollution in Rotterdam

The city of Rotterdam is one of the most polluted areas in the Netherlands, mainly because of large amounts of industry, traffic and shipping. There are four reasons why Rotterdam has an ambition to reduce this pollution: improving public health, reaching European guidelines, reaching national legislation regarding spatial development and reducing the amount of greenhouse gases, such as CO₂. About 55 measures have been taken in Rotterdam including measures reducing pollution originating from ships, and more will follow, including among others:

- Low emission zones
- Promoting cleaner vehicles
- Traffic management and promoting cycle and pedestrian traffic
- Speed limit on the inner-city motorway

Water pollution in Rotterdam

Rotterdam draws its drinking water from ground water sources. Ground water or well water is stored below the surface of the earth in deep, porous rocks called aquifers. The process of getting water is called percolation and takes years to complete. This method requires less treatment than surface water. Drinking water is tested regularly, according to the state regulation, for numerous contaminants.

Water forms an essential part of the city and plays a crucial role in its development. As it was mentioned before, water is important from an economic perspective mainly because of the port and important transport roads⁴⁶.

⁴⁶ Rotterdamclimateinitiative: Rotterdam Climate Proof projects on the map. 2012

Noise in Rotterdam

The 2007 Rotterdam noise map indicates that more than 108,000 people in Rotterdam are inconvenienced by noise caused by road traffic, rail traffic, industry and aircraft. Road traffic noise is by far the biggest problem, affecting 88,000 people. About 60,000 people currently live within 50 meters of busy inner city and secondary roads or within 100 to 300 meters of a motorway. Poor air quality in Rotterdam is responsible for 10-12% of the health issues. This is the main reason why it is necessary to focus on reducing noise pollution and continue to improve the air quality, and these will be good steps towards ensuring good health for all the people of Rotterdam.

A clear goal with respect to noise control has been formulated: in 2014 the noise levels due to road traffic in the homes of 15,000 inhabitants of Rotterdam will have been reduced by at least 3 decibels compared to the levels in 2010⁴⁷.

Table 13: Comparison of main pollution indexes in the cities

	Prague	Rotterdam
Air pollution	47.22	33.33
Noise and light pollution	53.57	25.00
Water pollution	14.29	0.00
Pollution index	38.68	26.44
Pollution exponential scale	74.72	52.86
Dirty and untidy city	35.71	25.00
Unsatisfaction to spend time in the city	31.25	12.50

Source: Numbeo.com

⁴⁷ Rotterdamclimateinitiative: Reducing noise pollution and improving the air quality., 2012

The Pollution Index is an estimation of the overall pollution in the city. It consists mainly of air pollution and water pollution (including other types of pollution). Another significant factor is the pollution exponential scale that shows very high numbers for very polluted cities. In this case Prague has a relatively high amount of pollution. Water pollution is zero in Rotterdam, because of a highly-controlled system in the city, which is because of the port mainly. The table is missing another factor, namely drinking water pollution, which is zero in the two cities. Quality of drinking water is very high and it is harmless to health to drink water there⁴⁸.

Indicators useable for consumers

- Consumer Prices in Prague are 35.84% **lower** than in Rotterdam
- Consumer Prices Including Rent in Prague are 36.83% **lower** than in Rotterdam
- Rent Prices in Prague are 39.28% **lower** than in Rotterdam
- Restaurant Prices in Prague are 61.99% **lower** than in Rotterdam
- Groceries Prices in Prague are 26.15% **lower** than in Rotterdam
- Local Purchasing Power in Prague is 31.56% **lower** than in Rotterdam

It is necessary to have around CZK 54,643.7 (EUR 2,147.91) in Prague to maintain the same standard of life that is possible to have with EUR 3,400.00 in Rotterdam. This calculation uses Consumer Prices Including Rent Index.

⁴⁸ Numbeo.com, Pollution Comparison Between Rotterdam and Prague., 2013

Table 14: Other indexes

	Prague	Rotterdam
Quality of life	118.0	112.26
Purchasing Power Index	64.22	94.52
Safety Index	65.46	25.73
Health Care Index	64.15	36.11
Consumer Price Index	62.44	97.01
Traffic Commute Time Index	31.75	57.50

Source: Numbeo.com

4.9 Analysis of selected apartments in Rotterdam and Prague

4.9.1 Selected apartments in Rotterdam

Locality	Street	Type	m ²	Floor	Price in EUR/m ²	Price for flat EUR
Charlois	Charloisse Hoofd	3+1	95 m ²	12	2,105.3	200,000 k.k.
Delfshaven	V.O.C.-plein	3+1	85 m ²	4	2,935.3	249,500 k.k.
Feijnoord	Zinkerstraat	3+1	95 m ²	2	2,100	199,500 k.k.
Hillegersberg-Schiebroek	Molenvijver	2+1	80 m ²	1	2,312.5	185,000 k.k.
Hoogvliet	Keizersmantelweg	2+1	89 m ²	2	2,129.2	189,500 k.k.
Hook of Holland	Concordiastraat	3+1	79 m ²	4	2,265.8	179,000 k.k.
IJsselmonde	Ruigoord	3+1	75 m ²	1	1.453,3	109.000 k.k.
Kralingen	Avenue Concordia	2+1	75 m ²	1	3.060	229.500 k.k.
Noord	Balderikstraat	2+1	80 m ²	3	1.743,8	139.500 k.k.
Overschie	Oranjestraat	2+1	80 m ²	1	1.993,7	159.500 k.k.
Pernis	Deijffelbroekseweg	3+1	85 m ²	4	2.047,1	174.000 k.k.
Prins Alexander	Zocherstraat	3+1	85 m ²	3	1.635,3	139.000 k.k.
Rozenburg	Ruysdaelstraat	3+1	85 m ²	3	1.523,6	129.500 k.k.
Centrum	Kruisplein	2+1	88 m ²	10	2.591	228.000 v.o.n.

Source: funda.nl

Kralingen is a very popular area for living. It is a good place for young people but also for families with children. The advantage is the proximity to the city which is 15 minutes by car. The surrounding area is home to luxury villas but also affordable apartments. Another advantage of this area is a large lake and forest park. This area is an attraction for tourists and local people mainly for the relaxation opportunities it offers. In summer there is the possibility of sailing and in winter ice skating on the lake. It is obvious from the table above that the price is one of the highest in Rotterdam.

The Hillegersberg is one of the few places that were not affected by bombing in the Second World War, and therefore there is a historic center with old houses and old streets. Therefore, this area is attractive for living or for investments. Apartments in this area are affordable and popular for the local people. The area is suitable also for families with children because of several international schools and two lakes with the popular Plaswijck Park. The proximity of the airport can be a big advantage but also a negative problem for some people, due to increased levels of noise and pollution⁴⁹.

Expensive parts

- Delfshaven – good location near the center, by the water, tourist attraction The Euromast (the biggest watchtower in the Netherlands)
- Kralingen – reasons for its high prices are described above
- Centrum – expensive area in every city, job opportunities, city life
- Charlois – exclusive location by the river; the important connection with the other riverside and road network is Maastunnel (the world's first rectangular shaped underwater tunnel)

⁴⁹ Rotterdam Cityguide: RAVEL GUIDE TO ROTTERDAM, NETHERLANDS.2012

- Feijnoord – a place suitable for people working in the center, very good connection, the bridge Erasmusburg is a connection between this area and the center (Erasmusburg is also a tourist attraction, pictures are included in the attachments)

Other parts of Rotterdam

- Overschie – adequate lower prices of apartment, adverse environmental conditions - surrounded by highways and an airport, environmentally compromised⁵⁰
- Rozenburg – adequate lower prices of apartment, lies in the delta of the Rhine and Maas rivers, area of reclamation activities, the existence of the port makes it an industrial area

Table 15: Average Prices in Rotterdam

	Average price of apartment (euro)	Average price per m ² (euro)
Average in Rotterdam	155,000	2,105
Average from selected flats	179,321.4	2,135.4

Sources: numbeo.com, own calculation

The data from this table show the average price of apartments in Rotterdam and from selected apartments in the table above. The difference between data from the Rotterdam average and the data from the analysis is 13.6%. The difference between the average price per m² in Rotterdam and the data from the analysis is 1.4%, which is a much smaller difference. It

⁵⁰ Except integrated sustainability: Inspiration Book Sustainable Overschie.2012

means that the data from the analysis were selected more appropriately for average price per square meter.

4.9.2 Selected apartments in Prague

Locality	Street	Type	m ²	Floor	Material	Price in CZK/1m ²	Price in CZK/flat
Prague 1	U půjčovny	4+kk	85	4	Brick	94,118	8,000,000
Prague 2	Legerova	3+1	91	4	Brick	38,462	3,500,000
Prague 3	Na ohradě	3+1	85	4	Brick	49,294	4,190,000
Prague4	Kloboukova	3+1	77	4	Panel	34,805	2,680,000
Prague 5	V lesíčku	2+1	64	2	Brick	81,250	5,200,000
Prague 6	Jugoslávských partyzánů	2+1	78	5	Brick	63,974	4,990,000
Prague 7	Dukelských hrdinů	2+1	72	3	Brick	58,333	4,200,000
Prague 8	Štětínská	3+1	75	7	Panel	32,667	2,450,000
Prague 9	Nové Vysočany	2+kk	65	3	Brick	46,000	2,990,000
Prague10	Na Louži	2+1	65	1	Brick	34,769	2,260,000

Sources: Sreality.cz, reality.remax-czech.cz, hyperreality.cz

Expensive parts:

- Prague 1 – the most expensive area (on average) in Prague
- Prague 3 – apartment in better part of Prague 3, close to the Vítkov park
- Prague 5 – close to the tourist attraction of Petřín Tower, close to city center
- Prague 6 – attractive location, good connection with centre, close to the airport

Other parts

- Prague 8 – typical example of apartment in this area; prefabricated concrete panels are the principal building material
- Prague 9, 10 - affordable apartments to housing

Table 16: Average Prices in Prague

	Average price of apartment (CZK)	Average price per m ² (CZK)
Average in Prague	4,046,000	53,367
Average from selected flats	4,436,922.5	56,815.3

Source: realitymix.centrum.cz/statistika-nemovitosti, own calculation

The data from this table shows the average price of apartment in Prague and from selected apartments in the table above. The difference between data from the Prague average and data from the analysis is 8.8%. The difference between the average price per m² in Prague and data from the analysis is 6.1%, which is a smaller difference. It means that data from the analysis were selected more appropriately for average price per square meter.

The table shows that the analysis worked with suitable apartments that fit to the Prague average calculation. It is possible to evaluate this analysis as a good selection of data based on specified parameters.

Table 17: Development of housing prices in some parts of Prague (example of flat 40 m2)

2011	January	July
Prague 1	4.67 mil.	4.14 mil
Prague 4	2.01 mil.	2.03 mil.
Prague 5	2.18 mil.	2.13 mil.
Prague 6	2.37 mil.	2.21 mil.

Source: praha.idnes.cz

This table above shows how the prices are changing during the year. For the analysis are chosen average data per year. For the participants on the real estate market is significant the period of the year for example for the purchase. During the year are better months for the purchase but ale for the selling of the property.

Table 18: The most expensive parts of Prague

Podolí	150 517 CZK/m ²
Vinohrady	124 042 CZK/m ²
Strašnice	92 566 CZK/m ²
Smíchov	90 940 CZK/m ²
Břevnov	87 406 CZK/m ²
Bráník	82 519 CZK/m ²
Kobylisy	81 637 CZK/m ²

Source: iDnes: Podolí je podle cen bytů ta nejlepší adresa v Praze, 2011

The most expensive parts in Prague are selected according to price per square meter.

Table 19: The cheapest parts of Prague

Satalice	43 273 CZK/m ²
Cholupice	45 079 CZK/m ²
Vinoř	45 866 CZK/m ²
Běchovice	46 451 CZK/m ²
Slivenec	46 484 CZK/m ²
Uhřetěves	46 755 CZK/m ²
Hostavice	47 484 CZK/m ²

Source: iDnes: Podolí je podle cen bytů ta nejlepší adresa v Praze, 2011

Table 20: Rentals

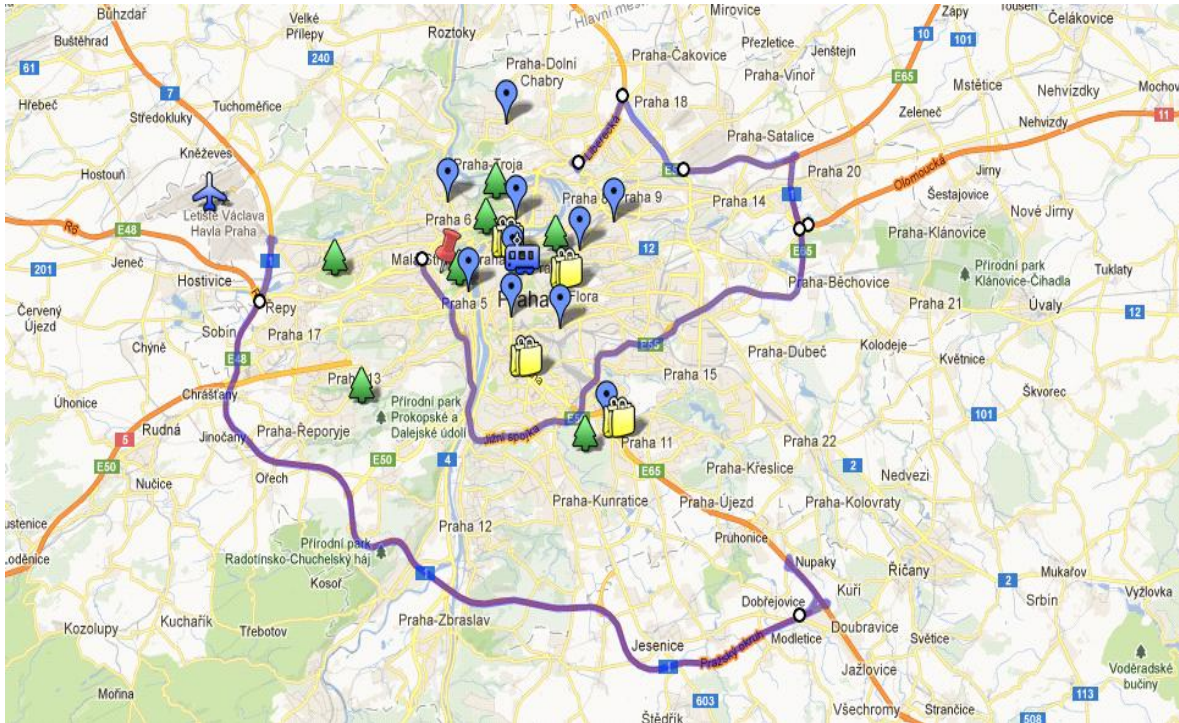
Rent per month EUR	Prague	Rotterdam
Apartment (1 bedroom) in the Centre	472	750
Apartment (1 bedroom) outside	324	650
Apartment (3 bedrooms) Centre	983	1,500
Apartment (3bedrooms) Outside	590	1,000

Source: Numbeo.com

This table shows significant difference between Rotterdam and Prague in case of renting an apartment. According to analysis the difference between prices in Prague and Rotterdam are not that significant in contrast to renting. In the table above it is possible to see almost double prices. In Rotterdam, it is very financially demanding to rent an apartment. It is always better to seek for own housing and in some countries it is better to get a mortgage. The Dutch government is trying to achieve stability of the population, and as it was already mentioned limit immigration.

4.10 Maps of research analysis

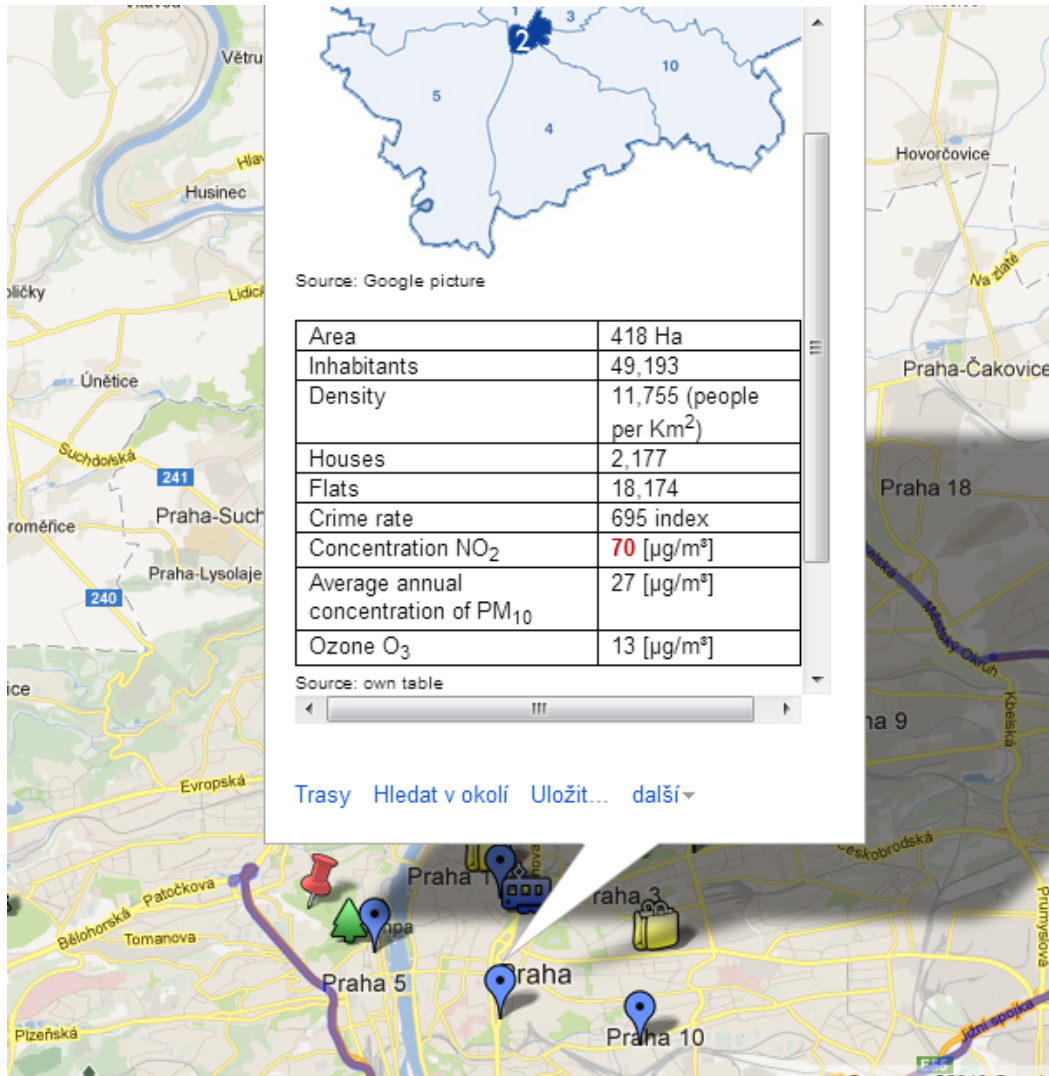
Map 1: Prague



Source: google map, own creation

This picture offers an overall view of the capital Prague. For the purposes of this analysis and for the creation of the map, a basic division of Prague into 10 parts was used. The blue points show apartments from the table of analysis, located in different parts of Prague. Each point of the map is possible to open to display a window with details about the location. Next picture shows this point. On the map is also possible to see main road called Prague round circle, that help to the traffic situation in Prague. On the other hand this Prague round circle affect the living in that area.

Map 2: Prague 2

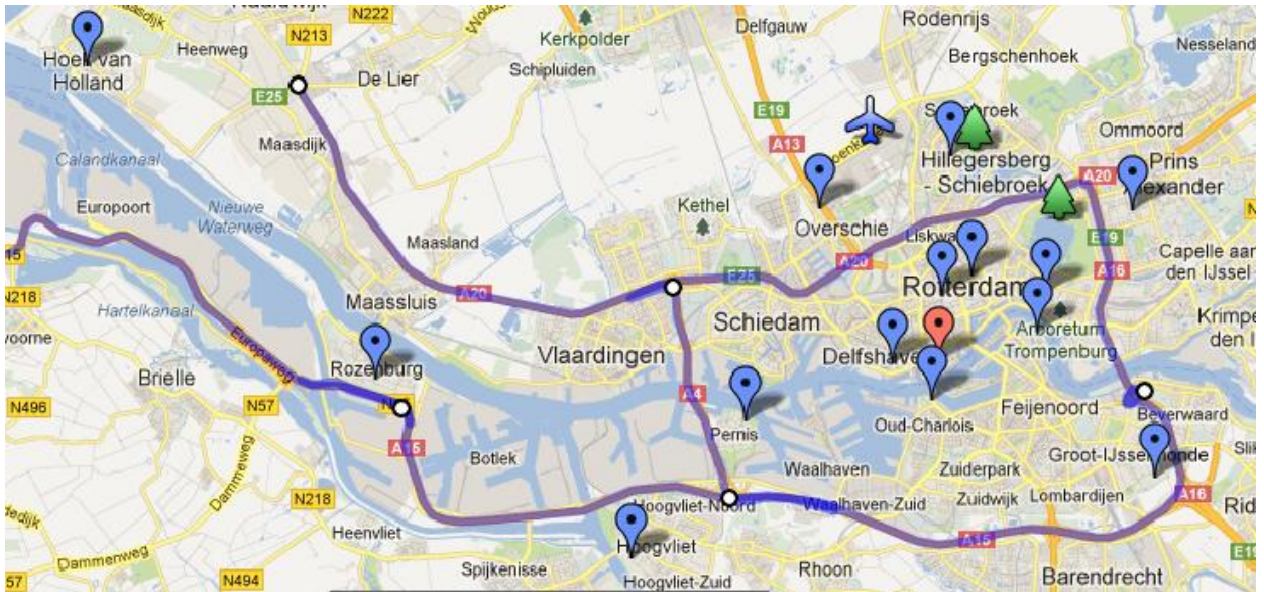


Source: google map, own creation

On this map above is shown one example of analysed places Prague 2. Example is different from the others because of the quit high value. In the table is one red number, which means concentration of NO₂. Limit for this concentration is 40[µg/m³] per year. From that is clear the issue of this places, the high pollution. The reason is also in place of measurement, that is in Legerova street. This street is in centre on the main road. It obvious, that places like this is not

favorable for living, especially for people who are sensitive or people with respiration problems.

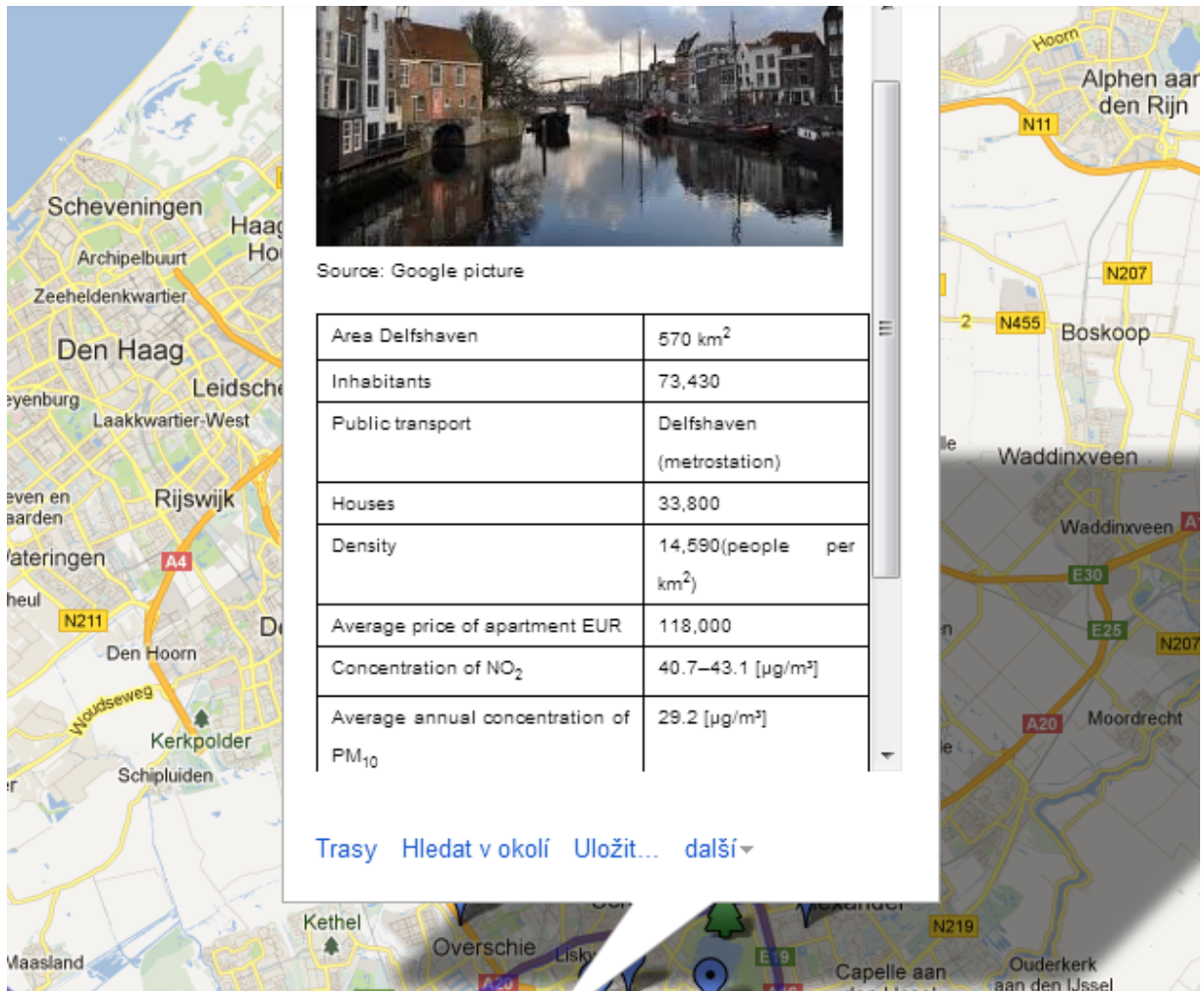
Map 3: Rotterdam



Source: google map, own creation

This picture offers an overall view of the city of Rotterdam. For the purposes of this analysis and for the creation of the map, a basic division of Rotterdam into 14 parts was used. The parts of Rotterdam are namely Centrum, Charlois, Delfshaven, Feijenoord, Hillegersberg-Schiebroek, Hoogvliet, Hook of Holland, IJsselmonde, Kralingen-Crooswijk, Noord, Overschie, Pernis, Prins Alexander and Rozenburg. On the map is also shown main roads and this is quit the same as in Prague, the circle roads, called Ring Rotterdam. Ring Rotterdam is significant connection among the port of Rotterdam and the city. From the pictures of map is obvious that the city high connected with the water.

Map 4: Rotterdam,



Source: google map, own creation

As the example was selected the area of Delfshaven. This part of Rotterdam has a good location near the centre. There is quiet the same situation as on the previous example of Legerova street, place is also influence by the pollution. Concentration is not that high as in Prague, but still it is not optimal.

4.10.1 Comparison of real estate market in the Czech Republic and the Netherlands and future development

The number of apartments per capita in the Czech Republic is still slightly behind most European countries. Based on indicators of the number of apartments per 1000 inhabitants in the Czech Republic, the figures are below the average compared to European countries; the housing fund reaches 85% of the EU average. Under the assumptions, the better situation is in countries of Western Europe. It is estimated that in absolute terms, in the Czech Republic, there were more than 4.6 million apartments in 2008 whereas the Netherlands had around 6.9 million apartments. As is evident from the statistics, in the Czech Republic there still exists space for new construction on the property market.

Compared to the rest of the European Union, the Czech Republic has the lowest percentage of apartments in private ownership per 1,000 inhabitants. Even though in the last 15 years the percentage of apartments in private ownership has significantly increased, the proportion of owned apartments in total housing stock in the Czech Republic is 25% lower than in the Netherlands.

Czech people prefer to live in apartments. For every 1,000 people, there are 200 households living in an apartment and only 156 households living in family houses. Recently, there have been significant changes caused by people moving from inner cities to houses located on the outskirts of large cities. Prague is a large agglomeration, and many people live on the outskirts of Prague. Moving to the edge of major cities is popular in most countries. The advantages are lower prices of real estate than in the cities as well as other factors such as less pollution, less noise, and generally a more quiet environment than in the city center. The biggest reason for living on the edge of towns in the Netherlands is the price, especially in expensive cities as the capital Amsterdam and Rotterdam.

For better orientation on the real estate market, ratios are used that describe the development of the property market. The most important indicator is the ratio between the price of real estate and income of residents, which is called the “price to income ratio”. Another indicator is the ratio between the price of real estate and renting, which is called the “price to rent ratio”.

Table 21: Important Computations of real estate market

Indexes	Prague	Rotterdam
Price to Income Ratio	12.67	5.01
Price to Rent Ratio (Center)	24.97	13.97
Price to Rent Ratio (Outside of Center)	23.34	12.15
Mortgage as percentage of Income %	92.14	38.05
Loan Affordability Index	1.09	2.63
Gross Rental Yield (Center) %	4.01	7.16
Gross Rental Yield (Outside of Center) %	4.28	8.23

Source: Numbeo.com

Price to income is a ratio that provides basic information about the availability of the property due to income. The high price-to-income ratio indicates that the cost of buying real estate is relatively high compared to the possibility of their funding from income; at the same time, the given interest rate and the proportion of LTV (loan-to-value) makes it more difficult to repay any debt arising from the purchase of real estate.

5 Conclusion

The objective of the diploma thesis is to compare the real estate market in the Czech Republic and the Netherlands with a more detailed focus on Prague and Rotterdam. Analysis of the thesis is based on a comparison of factors affecting the real estate market. Among the most important factors is the price of the property, which is influenced by the location, appearance of properties and other surrounding influences. Among other aspects affecting the price of the property are for example access to employment, public transport, cultural life and social security in the surroundings of the property.

The average most expensive housing in the Czech Republic is located in Prague and this is mainly due to the richness of this area, employment opportunities, regional gross domestic product and a generally higher standard of living of the population. Macroeconomic indicators in Prague are so different that it cannot be compared with the whole of the country. The combination of these factors, together with the higher average gross monthly wages, contributes to the fact that Prague is the most expensive location in the Czech Republic and is comparable to other Western European countries.

In the Netherlands, the most expensive location is the capital Amsterdam. There is so much difference between the cities of Amsterdam and Prague that for the purposes of comparison it was better to choose the second most important city, Rotterdam. Average prices of apartments in Prague and Rotterdam are not that much different. The average price of apartment in Prague is EUR 160,000 whereas the average price in Rotterdam is EUR 155,000. The main differences between parts of the cities are shown in the table analysing selected apartments. This analysis is also transferred to the virtual maps, where it is possible to see the location for better orientation. The average price is shown for better orientation, which is the reason why this map was created.

A significant difference between Prague and Rotterdam is the one concerning apartment rental. The price for renting a three-room apartment in the city center of Prague is

around EUR 980 whereas in Rotterdam the price is EUR 1500 for an apartment of the same size. This fact also shows the policy of the state. The Dutch government has a policy of enabling everyone to live in their own property; therefore rent is so expensive. There are a lot of factors affecting the real estate market and everyone is more or less influenced by different factors. In the evaluation of the situation on the property market is important to know the economic situation of the country, than there are other important aspects such as land policy, legislation and government. It is difficult to assess the future development of the property market situation. At present, the situation is more preferable for the buyers. This is caused by the current economic situations and also great influence in this time also has a favorable situation in the mortgage market. Average interest rates are historically low, so the buyers are in good position to finance their house of apartments with a mortgage.

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8 Appendices

8.1 Table used in Maps

Table of the Maps 1: Prague 1

Area Prague 1	554 Ha
Inhabitants	30,002
Density	5,420 (people per km ²)
Houses	1,960
Flats	10,019
Crime rate	834 index
Concentration NO ₂	-
Average annual concentration of PM ₁₀	30 [µg/m ³]
Ozone O ₃	8 [µg/m ³]

Source: own table

Table of the Maps 2: Prague 2

Area Prague 2	418 Ha
Inhabitants	49,193
Density	11,755 (people per km ²)
Houses	2,177
Flats	18,174
Crime rate	695 index
Concentration NO ₂	70 [µg/m ³]
Average annual concentration of PM ₁₀	27 [µg/m ³]
Ozone O ₃	13 [µg/m ³]

Source: own table

Table of the Maps 3: Prague 3

Area Prague 3	648 Ha
Inhabitants	73,587
Density	11,353 (people per km ²)
Houses	2,936
Flats	30,671
Crime rate	429 index
Concentration NO ₂	-
Average annual concentration of PM ₁₀	-
Ozone O ₃	-

Source: own table

Table of the Maps 4: Prague 4

Area Prague 4	2,420 Ha
Inhabitants	128,431
Density	5,308 (people per km ²)
Houses	8,607
Flats	56,710
Crime rate	532 index
Concentration NO ₂	30 [µg/m ³]
Average annual concentration of PM ₁₀	27 [µg/m ³]
Ozone O ₃	20 [µg/m ³]

Source: own table

Table of the Maps 5: Prague 5

Area Prague 5	2,750 Ha
Inhabitants	84,103
Density	3,058 (people per km ²)
Houses	5,990
Flats	32,394
Crime rate	695 Index
Concentration NO ₂	48 [µg/m ³]
Average annual concentration of PM ₁₀	36 [µg/m ³]
Ozone O ₃	14 [µg/m ³]

Source: own table

Table of the Maps 6: Prague 6

Area Prague 6	4,152 Ha
Inhabitants	101,574
Density	2,446 (people per km ²)
Houses	8,739
Flats	41,814
Crime rate	834 Index
Concentration NO ₂	30 [µg/m ³]
Average annual concentration of PM ₁₀	32 [µg/m ³]
Ozone O ₃	28 [µg/m ³]

Source: own table

Table of the Maps 7: Prague 7

Area Prague 7	710 Ha
Inhabitants	42,200
Density	5,948 (people per km ²)
Houses	1,411
Flats	16,618
Crime rate	834 Index
Concentration NO ₂	-
Average annual concentration of PM ₁₀	-
Ozone O ₃	-

Source: own table

Table of the Maps 8: Prague 8

Area Prague 8	2,180 Ha
Inhabitants	103,508
Density	4,748 (people per km ²)
Houses	5,605
Flats	42,594
Crime rate	429 Index
Concentration NO ₂	30 [µg/m ³]
Average annual concentration of PM ₁₀	27 [µg/m ³]
Ozone O ₃	18 [µg/m ³]

Source: own table

Table of the Maps 9: Prague 9

Area Prague 9	1,331 Ha
Inhabitants	53,972
Density	4,055 (people per km ²)
Houses	2,198
Flats	22,244
Crime rate	429 Index
Concentration NO ₂	40 [µg/m ³]
Average annual concentration of PM ₁₀	28 [µg/m ³]
Ozone O ₃	3 [µg/m ³]

Source: own table

Table of the Maps 10: Prague 10

Area Prague 10	1,860 Ha
Inhabitants	110,971
Density	5,968 (people per km ²)
Houses	6,645
Flats	49,375
Crime rate	532 Index
Concentration NO ₂	35 [µg/m ³]
Average annual concentration of PM ₁₀	30 [µg/m ³]
Ozone O ₃	-

Source: own table

Table of the Maps 11: Charlois

Area Charlois	1,208 ha
Inhabitants	63,820
Density	5,608 (people per km ²)
Houses	33,600
Parts	<ul style="list-style-type: none"> - Carnisse, Heijplaat, Oud-Charlois, - Pendrecht, Tarwewijk, Wielewaal, - Zuidwijk
Public transport	<ul style="list-style-type: none"> - Maashaven (metrostation) - Zuidplein (metrostation) - Slinge (metrostation)
Average price of apartment EUR	119,000
Concentration of NO ₂	43.0 [µg/m ³]
Average annual concentration of PM ₁₀	33.0 [µg/m ³]

Source: own table

Table of the Maps 12: Delfshaven

Area Delfshaven	570 km ²
Inhabitants	73,430
Parts	<ul style="list-style-type: none"> - Delfshaven/Schiemondd, <li style="padding-left: 20px;">Bospolder/Tussendijken, - Spangen, Oud-Mathenesse, Mathenesse, - Nieuwe Westen, Middelland
Public transport	<ul style="list-style-type: none"> - Delfshaven (metrostation)
Houses	33,800
Density	14,590 (people per km ²)
Average price of apartment EUR	118,000
Concentration of NO ₂	40.7 – 43.1 [µg/m ³]

Average annual concentration of PM ₁₀	29.2 [µg/m ³]
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Source: own table

Table of the Maps 13: Feijnoord

Area Feijnoord	789 ha
Inhabitants	70,140
Parts	- Afrikaanderwijk, Bloemhof, Feijnoord, - Hillesluis, Katendrecht, Noordereiland, - Vreewijk, Kop van Zuid
Houses	32,805
Density	11,039 (people per km ²)
Average price of apartment EUR	111,000
Concentration of NO ₂	38.6 – 38.9 [µg/m ³]
Average annual concentration of PM ₁₀	29.0 [µg/m ³]

Source: own table

Table of the Maps 14: Hillegersberg

Area Hillegersberg	1,327 ha
Inhabitants	42,555
Parts	- Oud-Hillegersberg, Morgen, - Kleiwegkwartier, Molenlaankwartier, - Terbregge, Schiebroek
Houses	20,115
Density	3.630 (people per km ²)
Average price of apartment EUR	166,000
Concentration of NO ₂	38.6 – 39.3 [µg/m ³]
Average annual concentration of PM ₁₀	

Source: own table

Table of the Maps 15: Hoogvliet

Area Hoogvliet	1,073 ha
Inhabitants	34,050
Parts	- Middengebied, Boomgaardshoek, Oudeland, - NieuwEngeland, Tussenwater, Westpunt, - Zalmplaat, Meeuwenplaat, Gadering
Houses	16,355
Density	3,472
Average price of apartment EUR	145,000
Concentration of NO ₂	33.9 [µg/m ³]
Average annual concentration of PM ₁₀	23.9 [µg/m ³]

Source: own table

Table of the Maps 16: Hoek of Holland

Area Hoek of Holland	1,745 ha
Inhabitants	9,665
Houses	4,500
Density	692 (people per km ²)
Average price of apartments EUR	237,000

Source: own table

Table of the Maps 17: IJsselmonde

Area IJsselmonde	1,310 ha
Inhabitants	58,425
Parts	- Oud-IJsselmonde, Groot-IJsselmonde, - Beverwaard, Lombardijen,

	<ul style="list-style-type: none"> - Homerusbuurt, Karl Marxbuurt, - Molièrebuurt, Smeetsland, Zenobuurt
Houses	27,575
Density	4,952 (people per km ²)
Average price of apartment EUR	219,000
Concentration of NO ₂	34.0 [µg/m ³]
Average annual concentration of PM ₁₀	27.1 [µg/m ³]

Source: own table

Table of the Maps 18: Kralingen

Area Kralingen	1,277 ha
Inhabitants	49,995
Parts	<ul style="list-style-type: none"> - Struisenburg, De Esch, Kralingen West, - Kralingen East
Public transport	<ul style="list-style-type: none"> - Maashaven (metrostation) - Zuidplein (metrostation) - Slinge (metrostation)
Houses	25,375
Density	4,780 (people per km ²)
Average price of apartment EUR	411,000
Concentration of NO ₂	40.2
Average annual concentration of PM ₁₀	29.4

Source: own table

Table of the Maps 19: Noord

Area Noord	537 ha
Inhabitants	50,340
Houses	26,520
Density	9,776 (people per km ²)
Average price for apartment EUR	146,000
Concentration of NO ₂	38.6 - 40[μg/m ³]
Average annual concentration of PM ₁₀	32.3 – 32.5 [μg/m ³]

Source: own table

Table of the Maps 20: Overschie

Area Overschie	1580 ha
Inhabitants	15,950
Parts	- Kleinpolder, Landzicht, Zweth, - Kandelaar, - Zestienhoven
Houses	7,805
Density	1,054 (people per km ²)
Average price of apartment EUR	172,000
Concentration of NO ₂	38.6 – 40.0 [μg/m ³]
Average annual concentration of PM ₁₀	32.3 – 32.5 [μg/m ³]

Source: own table

Table of the Maps 21: Pernis

Area Pernis	160 ha
Inhabitants	4,790
Public transport	-

Houses	2,180
Density	3,065
Average price of apartment EUR	161,000
Concentration of NO ₂	37.1 [µg/m ³]
Average annual concentration of PM ₁₀	28.0 [µg/m ³]

Source: own table

Table of the Maps 22: Prins Alexander

Area Prins Alexander	2,023 ha
Inhabitants	92,650
Parts	- Kralingseveer, Het Lage Land, - Nesselande, Ommoord, - Oosterflank, Prinsenland, - Zevenkamp
Houses	43,325
Density	5,170 (people per km ²)
Average price of apartment EUR	142,000
Concentration of NO ₂	-
Average annual concentration of PM ₁₀	-

Source: own table

Table of the Maps 23: Rozenburg

Area Rozenburg	- 650 ha - 4,51 km ² land - 1,86 km ² water
Inhabitants	12,505
Houses	5,715

Density	2,766 (people per km ²)
Average price of apartment EUR	132,000
Concentration of NO ₂	35.7 [µg/m ³]
Average annual concentration of PM ₁₀	26.2 [µg/m ³]

Source: own table

Table of the Maps 24: Centrum

Area Centrum	557 ha
Inhabitants	31,860
Public transport	-Rotterdam Central station
Houses	17,970
Density	7,275 (people per km ²)
Average price of apartment EUR	220,000
Concentration of NO ₂	39.8 – 40.2 [µg/m ³]
Average annual concentration of PM ₁₀	29.3 [µg/m ³]

Source: own table

8.2 Pictures

Pictures 1: Architecture



Source: own picture

Pictures 2: Rotterdam, White Bridge



Source: own picture

Pictures 3: Rotterdam, Cubic houses



Source: own picture

Pictures 4: Rotterdam, Euromast Tower



Source: own picture

Pictures 5: Rotterdam, view from Euromas Tower



Source: own picture

Pictures 6: Rotterdam, river, view from Euromast Tower



Source: own picture

Pictures 7: Amsterdam



Source: own picture

Pictures 8: Amsterdam



Source: own picture