Czech University of Life Sciences Prague

Faculty of Economics and Management

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Diploma Thesis

Leasehold vs. Freehold
Financial Analysis and Comparison
of Industrial Real Estate in Brno

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CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

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DIPLOMA THESIS ASSIGNMENT

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Leasehold vs. Freehold – Financial Analysis and Comparison of Industrial Real Estate in Brno

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Objectives of thesis

The aim of this thesis is to evaluate and compare the situation when an investor makes a decision whether to lease an industrial property or to invest in the purchase of the property for the operation of his business. The case is situated in the Czech Republic in Brno region. A practical part of the thesis focuses on comparative analysis with the aim to obtain outcomes in economic and financial terms. Economic indicators are selected in relationships to the industrial real estate market, such as gross domestic product, inflation rate and others related to this market. This part includes an overview of the possible costs, risks, and benefits of both scenarios. The main aim is to emphasize the comparison of costs analysis and also other indicators that may influence the investor´s decision-making process of choosing the right strategy.

Methodology

Final thesis is divided into two main parts theoretical and practical part.

In the theoretical part methods such as synthesis, extraction of the information, induction, and deductions are used.

The practical part of the thesis proceeds comparative analysis and financial analysis of both cases of freehold and leasehold. Data collection same as qualitative and quantitative methods are implemented. The economic analysis defines important indicators of the real estate market and rent levels in the Czech Republic. Financial analysis and costs analysis present data from a case study in the selected region of Brno. The comparative methods are used with the aim to obtain a concrete result and recommendation to the investor.

The proposed extent of the thesis
60 pages

Keywords
Industrial Real Estate, Freehold, Leasehold, Financial Analyses, Comparison, Cost Analyses, Demand, Supply, Leasing, Level of Rents

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Declaration

I declare that I have worked on my diploma thesis titled " Leasehold vs. Freehold – Financial Analysis and Comparison of Industrial Real Estate in Brno " by myself and I have used only the sources mentioned at the end of the thesis. As the author of the diploma thesis, I declare that the thesis does not break copyrights of any their person.

In Prague on 28.3. _____

Anna Jůzová

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Leasehold vs. Freehold
Financial Analysis and Comparison
of Industrial Real Estate in Brno

Abstract

The subject of the thesis is Leasehold vs. Freehold, financial analysis and comparison of industrial real estate in Brno. The thesis is divided into two parts.

The theoretical part focuses on information about the commercial real estate market and about the basic properties of the industrial real estate market in Europe. Furthermore, the market environment is described and the most desirable locations in Europe are listed. Also, the principles and differences in rental the property or owning the property are mentioned.

The practical part provides in the numbers an up-to-date overview of the industrial market in the Czech Republic, including level of rents, available warehouse spaces, and current demand. In addition, this section includes calculations of the following financial methods - cost analysis of both options, net present value, internal rate of return, return on investment, payback period and property depreciation.

The aim of this thesis is to evaluate the results of the financial analysis, the outputs from the comparison, and to find the answer to the question, which of the options is more suitable for the company or investor.

Pronájem vs. vlastnictví
Finanční analýza a porovnání
Industriální nemovitosti v Brně

Abstrakt

Předmětem diplomové práce je finanční analýza a porovnání – pronájmu vs. vlastnictví industriální nemovitosti v lokalitě Brna. Diplomová práce je rozdělena na dvě osnovní části.

V teoretické části jsou zpracovány informace o komerčním trhu nemovitostí a o základních vlastnostech industriálního realitiního trhu v Evropě. Dále je zde přiblíženo tržní prostředí a nejžádanější lokality Evropy z hlediska umístění nemovitosti. Jsou zde také teoreticky vysvětleny principy a rozdíly v pronájmu a vlastnictví nemovitosti.

Praktická část poskytuje v číslech aktuální přehled industriálního trhu v České Republice včetně výšky nájmu, dostupných skladových prostor a aktuální poptávky. Dále se tato část zabývá zpracováním následujících finančních metod – analýza nákladů obou variant, čistá současná hodnota, vnitřní míra návratnosti, výnostnost investice, doba návratnosti a odepisování nemovitosti.

Cílem této práce je zhodnotit výsledky finační analýzy, výstupy z porovnání, a najít odpověď na otázku, která z variant je pro firmu či investora výhodnější.

Klíčová slova: Trh nemovitostí, Industriální nemovitosti, finanční pronájem, operativní pronájem, finanční analýza, porovnání, analýza nákladů, poptávka, nabídka, pronájem, výšky nájmů

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1 Introduction

Nowadays, the real estate market in the most developed economies has a common feature. This common feature is the size and value which is significant in the national economy. In the Czech real estate market, the most spread is commercial real estate presenting office complexes, retail buildings, and storage buildings. The other most represented is the residential real estate market including undeveloped lands and condominiums houses. Industrial real estate is also strongly represents and stands for a significant part of GDP.

In general, any company that sells goods and does not perform any service or activity needs to store their goods somewhere. Industrial halls or logistics are built for this purpose and are necessary for business operation.

Nowadays, it is common on the outskirts of bigger towns are located industrial parks at every exit from the city. The growing demand for warehouses causes a lack of available spaces near to the capital city. Investors need to consider also the second most popular locations such as Moravia region. This thesis emphasizes the position of the Brno region in the real estate market. Today, the Brno locality is slowly coming to terms with Prague growing by its attractivity.

Even though the company is logistics type or not, it will have to deal with transportation and allocation. The company will deal with this situation by concluding a contract with a logistics company and storing their goods within their warehouse with and its logistics employees. And another option is to rent a hall and logistics plus storage services handle by themselves. And another desired option is to build a warehouse from own expense. To illustrate the importance and the size of the market to global and local economies, comparison of different locations will be demonstrated.

This study provides an up-to-date overview and properties of the real estate market focusing on logistics and industrial halls within the Czech Republic, vacant premises and level of current rents of premises.

The theoretical part characterizes factors affecting supply and demand for industrial halls and mainly highlights the importance and differences in leasehold and freehold of the property.

The aim of this study is to evaluate whether it is worthwhile for the customer to rent the property or to decide to purchase land and build a hall on its own.

2 Objectives and Methodology

2.1 Goals of the Diploma Thesis

This thesis deals with the real estate market with a focus on industrial parks and specifically on logistic halls. The aim of this thesis is to evaluate and compare the situation when an investor makes a decision whether to lease an industrial property or to invest in the purchase of the property for the operation of his business. This thesis and particular case study, is placed in the Brno region within the Czech Republic.

The goal of the theoretical part is to provide a basic explanation of the terms used and to describe the main characteristics of the real estate industrial market in Europe, with a subsequent focus on the characteristics of the Brno location. The main drives of the industrial market are mentioned and described. Also the most desirable locations in Europe as well as demand and supply drives are discussed in this section. Another target is to explain clearly the differences in terms of leasehold and freehold.

A practical part of the thesis, focuses on a comparative analysis with the aim to obtain specific and detailed outcomes in economic and financial terms. Economic indicators are selected in relationship to the industrial real estate market, such as gross domestic product, inflation rate and other related factors within this market. This part includes an overview of the possible costs, risks, and benefits of both scenarios.

The purpose is to proceed and point out significant changes in the market and coming trend that influence evolution of its direction. The main aim is to emphasize the comparison of costs analysis and also other key indicators that may influence the investor´s decision-making process of choosing the right strategy.

2.2 Methodology

The final thesis is divided into two main parts, the theoretical and the practical part.

In the theoretical part methods such as synthesis, extraction of the information required, induction and deductions are used.

The practical part of thesis proceeds with a comparative analysis and a financial analysis of both standpoints of freehold and leasehold. Data collection, as with qualitative and quantitative methods, are implemented. The economic analysis defines the important indicators of the real estate market and rent levels within the Czech Republic. The financial analysis and the costs analysis, represents data from the case study in the selected region of Brno.

Different methods of comparison have been used to find out financial outcomes and possible returns. Using methods, such as, cost analysis of both cases, payback period, internal rate of return and return of investments. The comparative methods are used with the aim to obtain concrete results and positive and negative recommendations for the investor to agree on a resolution. Furthermore, also other soft factors were studied that could influence future decision-making processes.

3 Literature Review

3.1 Definition of the Terms

Real Estate

Real estate represents property made up of anything immovable such as building or land including its fauna and flora. The right of usage and enjoyment is connected to the real property and its other improvements. The real estate market can be divided into three main categories according to their use. (Investopedia, 2019)

- Commercial real estate – can present as office complexes, retail buildings, store buildings
- Residential real estate – for instance includes undeveloped lands, condominiums houses.
- Industrial real estate – stands for industrial factories, warehouses and mines for example.

Market

The market can be defined as a place where supply and demand meets. In other words, a place where seller and buyer meet in order to exchange goods, services or information. The market can be virtual or physical of the kind. Usually, there are more than a single seller and buyer within the market. The purchase price of the exchanged item is always based on the relationship between supply and demand at the moment. (Farooq, 2019)

Property

Property is anything that can own by an entity of person. In legal terms, there are two types of property - personal property and real property. The law makes the following distinguish these two types. The personal property is something what it movable, anything that could be subject to ownership, besides lands. Personal property includes both, tangible and intangible items. Tangible personal property represents office furniture, vehicle for business, goods and equipment of a company. For the business, intangible personal property includes for instance, financial capital, bonds, intellectual property and stocks.

On the other hand, real property is immovable kind. It could be land and things attached to it permanently, such as buildings and lands. (Study.com, 2019) In this thesis the term property acts and is mentioned as a building for storage or logistics. This type of property has approximately 10 - 20 years of lifetime. After the duration of the period of time, the shell of the building and other components require renovation and also a replacement.

3.2   Importance of Commercial Real Estate Market

What is the importance of real estate market? In most mature economies, real estate markets have one common property. This feature is its significant value and size in the economy of the state.

The value of the commercial real estate market would not reach the present levels without the willingness of firms to sign long-term lease agreements. (Balaz, 2014)
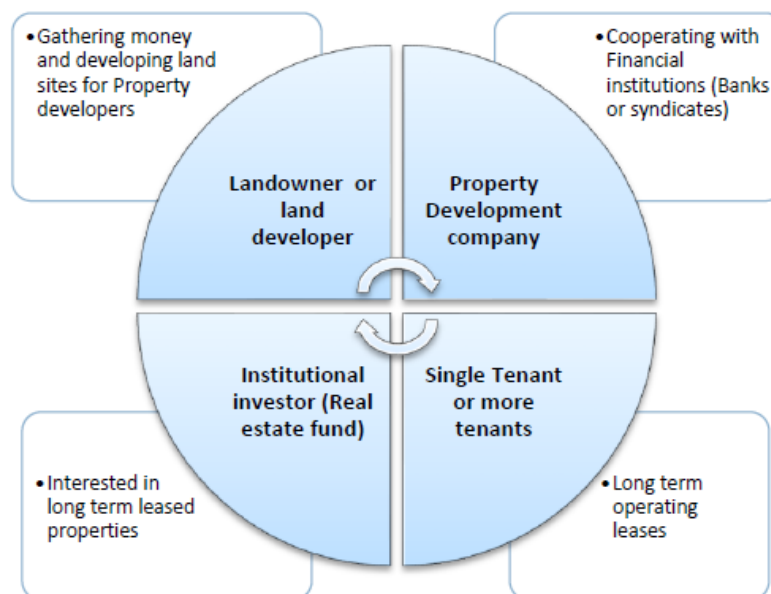
Figure 1 Operating Leases, (Source : Balaz, 2014)

The figure above describes a circle of actions of the landowner, a property development company, single tenant and institutional investor.

3.3 The Main Features of Industrial Real Estate in Europe

The industrial sector with properties has proven to have a strong asset position which provide solid risk and return profile. This sector is characterize by low volatility and risk. Industrial real estate investments are increasing and investors are willing to invest more due to its fast liquidity. Prologis (2019)

3.3.1 High Total Returns

Industry is the second best performing sector right behind retail and has been making an annual return 7.3% in the last years.
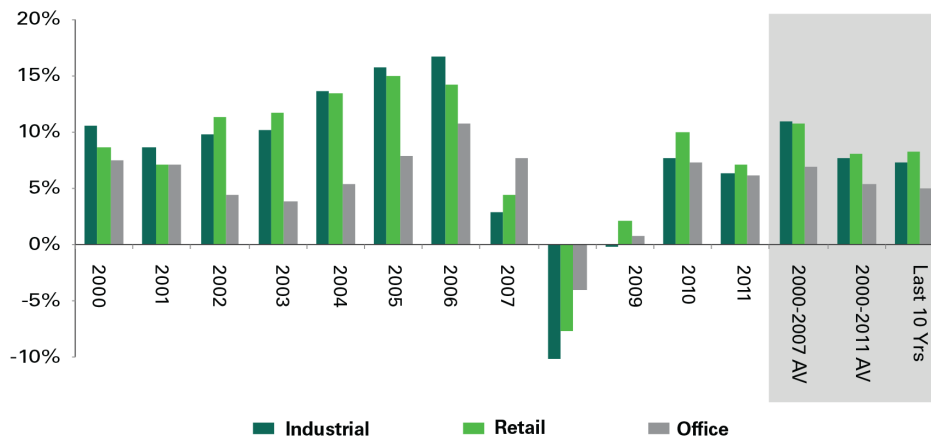
Figure 2Annualized total returns in Europe 2000-20012. Source: Prologis.com. (2019)

High Return on income

Logistics real estate in term of asset class is attractive mostly in high return of income. Investment in industrial real estate is typical by its stability in returns which are interesting mainly for investors with matching mandates. Based on CBRE research, Based on CBRE research, logistics sector generated 7.6% direct return in last 10 years. Picture below represents 240 basis points above direct return and 200 point of retail and offices. (Prologis.com 2019)
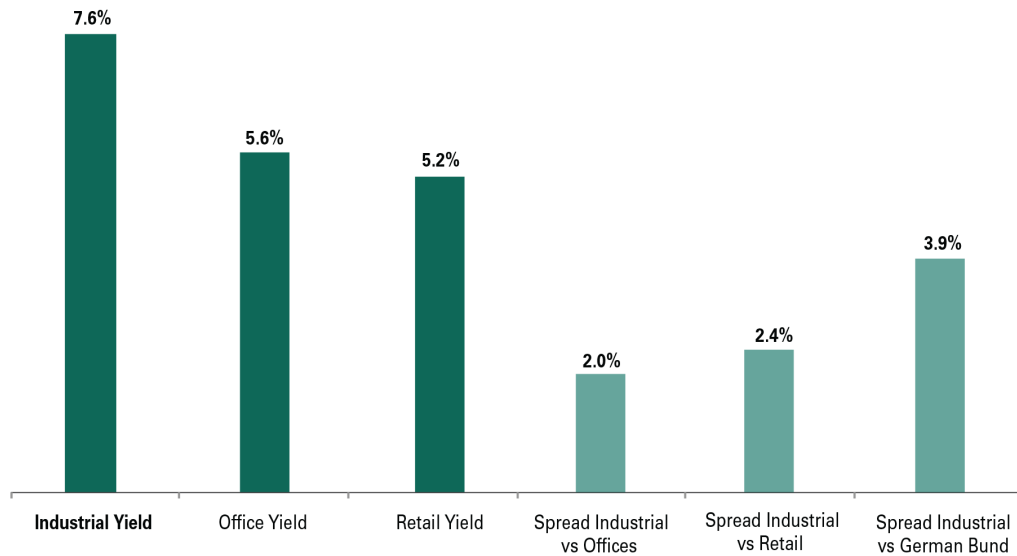
Figure 3 10-Year average and yield spreads 2002-2011, (Source: Prologis.com 2019)

Low volatility

With respect to volatility, logistics has very low range of volatility with regard to standard deviation in growth of rent. Findings confirm that industrial real estate volatility is one of the main drivers of market volatility over twenty time period. (Chee Seng Cheong, Anna Olshansky, Ralf Zurbruegg, 2011) A different indicator are possible to use to extent analysis of performance of real estate sector in Europe. In general there are a broad classification based on the differences between direct and indirect market measurement, such as periodical evaluation of physical asset and backed assessment of the performance. (Mattarocci, G. and Pekdemir, D. 2015)

Opportunity of Diversification

Nowadays real estate represents opportunity for investors to invest in mixed asset portfolio. Studies shows that European countries experiences different property and economic cycle which makes it suitable sector for diversification. Benefits of diversifications are for instance relevant differences in return and risk profile and low rate of correlation according to each country.

3.3.2   Demand Drivers of Industrial Real Estate

Drivers of industrial real estate can be divided into the following categories:

- Structural Drivers
  - Trade
  - Consumption
  - Gross domestic product
- Macroeconomic Drivers

In the real estate market structural driver prevail over cyclical and therefore he most important demand influencer is trade and supply in Europe.

3.3.2.1 Trade

The worldwide trade is splitting into blocs which trade and negotiate with each other on international level. One of these blocs is the European Union generating highest gross domestic product and therefore create the biggest blocs of trade. Due to huge sum of population (ca. 504 million) within the EU a low GDP per capita occurs. However, European population covers only 8% of world´s total population, it stands for approximately 38% (USD 13.45 trillion) goods imports and exports. The largest exporter and importer in the world are five of the European countries. Large emerging economies such as China, Russia and India have the European Union as the largest trading partner. Trade between these economies is helping to grow well and also in the eurozone. The forecasted growth in imports and exports means constantly increasing level of trade.

The picture below shows the period 2012 to 2016 and the transposition of the average growth of trade in Europe. The following increases are based on IMF information, it is assumed that in Southern Europe there will be an annual average increase in exports of around 3%, by 3.4% in the North and by 5.6% in Central Eastern Europe. The highest growth in exports is expected in Hungary over the five-year period, an average increase of 6.9%, in Poland 5.8% in Slovakia of 5.6%, and in France 2.9%. (Prologis.2019)
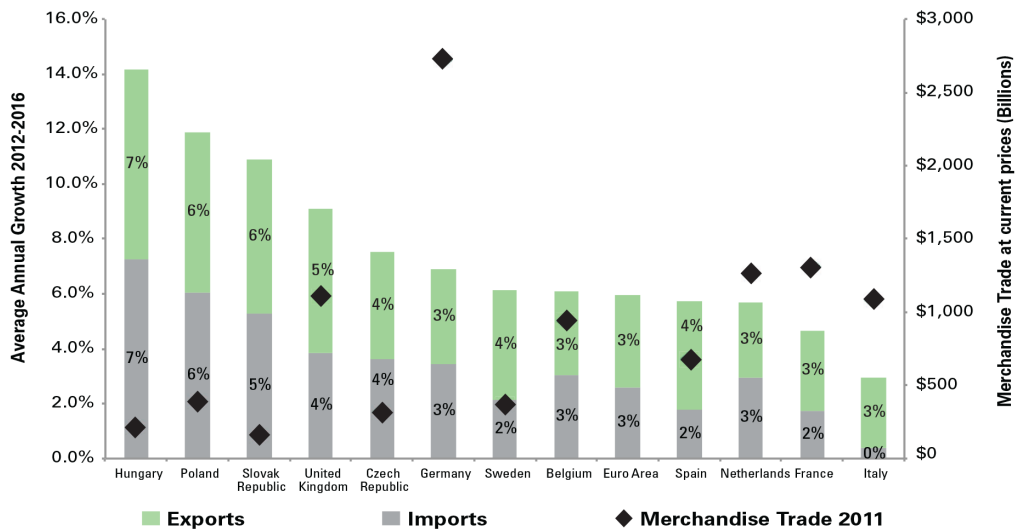
Figure 4 Trade growth by Country, Source: Prologis,2019)

3.3.2.2 Consumption – Macroeconomic Driver

Consumption accounts for around 58% of GDP in the euro area and is the largest component of GDP. It is obvious that due to the high unemployment rate and the high debt of the population, consumption will not increase in the near future. The higher savings rate increased by 0.4 percentage points quarter-on-quarter to 9.8%. this rise is caused by faster growth of households incomes than their expenditures comparing the previous quarter in 2018. (Czso.cz, 2019)

3.3.2.3 GDP – Macroeconomic driver

Gross Domestic Product (GDP) express the overall performance of the economy in a certain area or country. GDP counts for the total value of goods and services produced in a given period. Year-on-year growth is 2.9 %, fourth quarter of 2018. According to CSU publication on 15.02.2019. (Czso.cz, 2019)

When analyzing the expected demand for industrial space, it is mostly an important factor in the GDP demand of the region and the expected consumption. Year-on-year GDP growth in the third quarter of 2018 was 2.4%, which is 0.3 percentage point less than anticipated by the Czech National Bank. Economists generally expected a similar scenario and even welcomed the slowdown in economic growth. The driver of GDP growth, as in

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previous quarters, was the demand of households. Czechs are not afraid to increase purchases, so household consumption is rising by approximately 3.1% year on year. Investments in the volume of 9.4%, the companies have invested heavily in their construction and modernization of technology and machines. Last year, the Czech Republic belonged to more active players, while eastern neighbors in Europe were more successful this year. In Central Europe, the largest GDP growth in Poland was recorded by a 5.7% year-on-year increase. Followed by Slovakia with an increase of 4.6%, followed by Hungary with an increase of 4.8% and Germany with an increase of 0.2% of GDP. (Finance.cz, 2019)

3.3.3 Development of the Industrial Real Estate in Europe and Future Outlook

In the past, exists higher supply meaning more industrial facilities were available for customers. In comparison to this year, there is a very small percentage of available space in the Czech Republic. Although it could be surprising compared with nowadays in the past were implemented higher rents. This changed with the crisis in the year 2008 causing a lack of demand, which has also caused a rent decrease. Back then it was difficult to rent premises after the crisis due to a high vacancy. This meant that landlords had to support leasing activities, for example, by providing rent-free periods or making financial contributions to the client in terms to improve its premises.

Industrial real estate market constantly develop. This chapter confers about nowadays and trend which may occur in the future and influence this development. What are the vision of industrial real estate? The following trends could effects logistics real estate in next decade.

- **Retail**
  The future of retail is connected to the modern shopping habits of customers. It depends mainly on new technology and immediacy to synchronize commerce.
- **Supply chains**
  Similarly, the future of supply chains, which depend on increasing the efficiency and performance of technologies. This includes using of alternative fuel, development of automation and robotics.

- **Future of city**

  Increased urbanization will affect the future of cities as well as growing infrastructure, growing congestion and a shift in demographic trends.

Level of rents in the world's major markets have doubled in the last five years. And it is estimated that the increase will continue within the future. (Prologis, 2019)

This paragraph addresses the topic of trends that affect logistics real estate such as transport innovation, automation, and globalization while changing customer expectations meaning, faster delivery of goods and wider choice with lower costs.
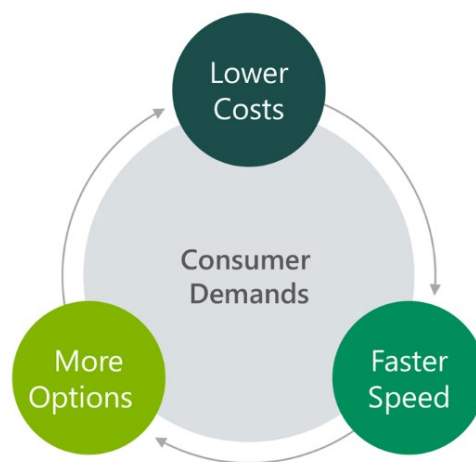
Figure 5 Cycle of consumer demands, (Source: Prologis, 2019)

The costs of the supply chain are expected to impact on logistics real estate market. The transport of goods to the customer represents the highest cost of the supply chain. These costs are the driver's time and especially the consumption of fuel. New technologies allow the use of alternative fuels. This can stabilize prices in the future and reduce costs in the long time frame. Decreasing storage costs contributes to the production of new types of energy such as solar panels or storing of energy through batteries. These technologies will increasingly be implemented into operation within the next 10 years. (Prologis 2019) Due to the compliance with emission standards, transportation is preferred over short distances.

Another change will be by contributing to automated cars. Now, this technology is limited to cruise control and a sufficient distance on the road. In the near future, however, the adoption of this technology, costs, and regulation will be challenging. On the other hand, it could reduce fuel consumption and increase driver safety. Nowadays it is difficult to find a workforce and that means large costs. Robotics and automatization in most cases

take over and replace human power. There exist various types of equipment such as racking systems, forklifts, sorting equipment, and equipment that delivers goods throughout the warehouse. In general, the entire economy in logistics sector will be changed by technology development. which is invariably coming.

3.4 Market Environment - Europe

Europe has a larger population and a higher combined gross domestic product (GDP) than the US, yet it has 4.5 times less class-A logistics spaces. The reconfiguration of the European supply chain and the growth of e-commerce mean, in this context, a significant development potential for modern, efficient distribution facilities throughout the regions.

The questions faced by developers, owners, firms and their customers are: "Where can be found the best strategic logistics sites in Europe and what are the indicators?"

Company Eyefortransport (EFT), a global leader in business intelligence and C-level networking for the transport, logistics and supply chain industry, has helped to explore the industry's perceptions of the most demanding logistics locations in Europe and quantify indicators that influence selection of sites. Demand is equally important as supply for investors, as markets with limited supply and higher entry barriers generally outperform markets with lower supply and demand dynamics.

Based on the survey results, there are three of the most important criteria that affect the need for logistics location and therefore the decision to choose a place. 1) closeness to economic networks and a strategic transport approach; 2) closeness to customers; and 3) availability and flexibility of labor. The three most desired locations were found in Belgium and the Netherlands : Venlo, Antwerp-Brussels and Rotterdam. With the exception of two markets, Madrid and Pan-regional Romania The ten most popular places are in continental Western Europe.

It is likely that in 2018 location of Venlo will remain the most popular place, although its considerable lead over the other four places will decrease. The results also show that locations in Central and Eastern Europe become more attractive in the European logistics area. Logistics continue to consolidate their operations in larger and more efficient A-class distribution centers and plan to operate in larger networks.

Top 10 locations in Europe

2013	2018
1. Venlo	Venlo
2. Antwerp-Brussels	Rotterdam
3. Rotterdam	Antwerp-Brussels
4. Rhein-Ruhr	Rhein-Ruhr
5. Madrid	Pan-Regional Romania
6. Liège	Ile-de-France
7. Central Germany	Madrid
8. Pan Regional Romania	Liège
9. Ile-de-France	Frankfurt am Main
10. Düsseldorf	Central Germany

Figure 6 Top 10 locations in Europe, (Source: Prologis Research)

3.4.1 Europe´s Most Desirable Logistics Location

Locations are determined on the basis of these criteria grouped into four categories; 1) proximity of suppliers and customers, 2) government and labor, 3) real estate and 4) infrastructure.

Among the wider 100 locations, there are common findings between each quartet. Beyond the top ten it includes the first quarter Frankfurt, Prague, central Poland and Schiphol airport. The second includes Munich, Hamburg, West Midlands, Barcelona, Warsaw and Upper Silesia. The third includes Stuttgart, Lyon, Wales and the West of England. Places in the fourth are located on the periphery of Europe and do not play an important role in the European logistics network.

Heatmap: Europe's most desirable logistics locations
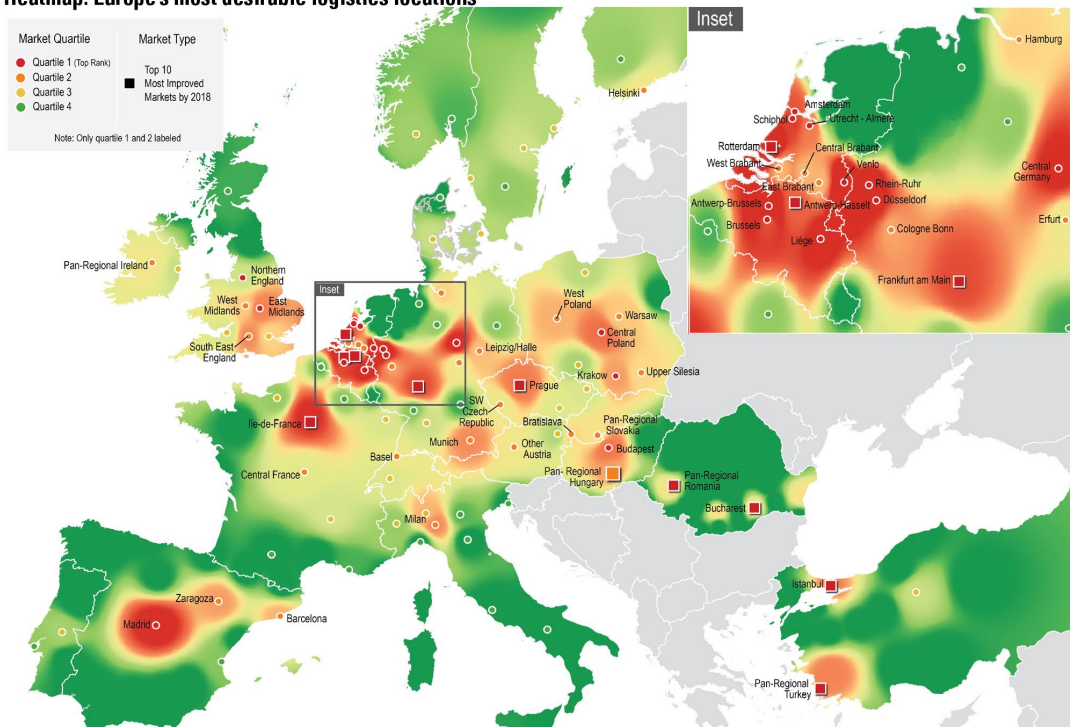
Figure 7 Heatmap: Europe´s most desirable locations, (Source: Prologis Research)

Top 10 most popular locations in 2018

Region	Change vs. 2013
1. Venlo	stable
2. Rotterdam	(+1)
3. Antwerp-Brussels	(-1)
4. Rhein-Ruhr	stable
5. Pan Regional Romania	(+3)
6. Ile-de-France	(+3)
7. Madrid	(-2)
8. Liège	(-2)
9. Frankfurt	(+3)
10. Central Germany	(-3)

Figure 8 Changes in top 10 popular locations in 2018, (Source: Prologis)

3.4.1.1 Key Logistics' Demand Drivers

Factors from economic and structural point of view are constantly change. Firms must therefore continually evaluate and optimize the distribution strategy to ensure the highest level of service at the lowest level of costs. Range of these changes and the need for consolidation differ between different types of logistics operations (such as slow movements vs. fast movements) and products. According to the growth in the shipment size or the number of warehouses a balancing act takes place between transport costs and warehousing costs.

Total logistics costs trade-off [4]
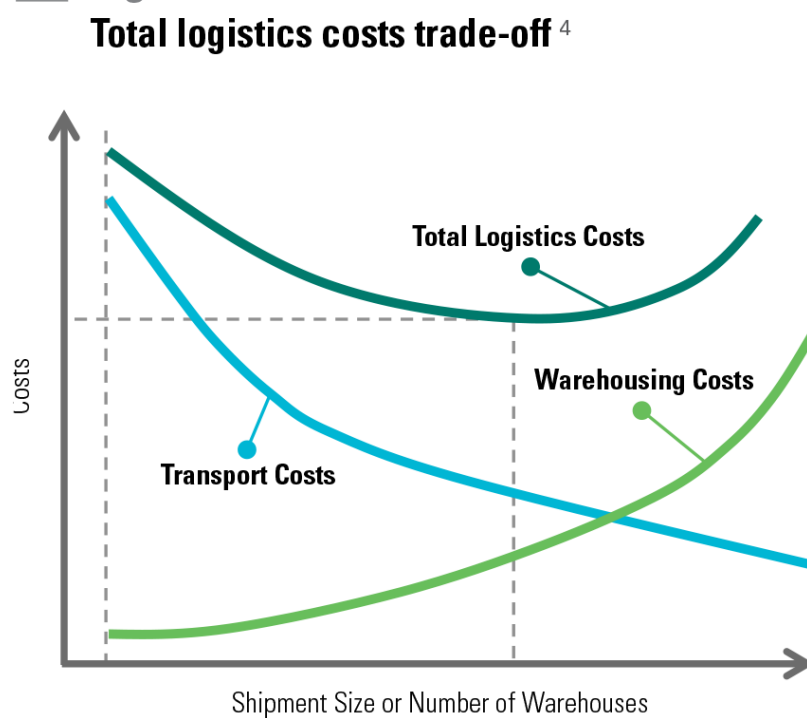
Figure 9 Total Logistics Costs, (Source: Prologis Research)

On the graph is a cutting point which represents the lowest total logistics costs, meaning ideal shipment size or sum of logistics facilities for a specific distribution system. It is a common goal to find this balance in logistics operation.

The figure below shows the factors affecting the European distribution networks and their strategies. The following figure shows the factors affecting the European distribution

networks and their strategies. As can be seen in the picture, the global drivers of change, including global trade, outsourcing and globalization, will be stronger than cyclical drivers such as consumption and economic development. the biggest impact on the distribution network over the next five years will be driven by higher fuel prices. The largest cost item for warehouse operators is transport costs which lies for approximately 50-60%.

Key drivers of change by 2018

Figure 10 Key drivers of change by 2018, (Source: Prologis,2019)

The second important driver is the availability of skilled workers, this varies according to country and location. Due to increasing unemployment in Europe more staff is available, and still it is difficult to find skilled labor force with experiences. This problem is located in the northwest of Europe where the unemployment rate is low compared to Central, Eastern and Southern Europe. Improving Infrastructure, the third driver of change, will greatly influence market change in the eastern and central part of Europe, where infrastructure is rapidly improving.

3.4.1.2 Importance of E-commerce

E-commerce is another driver influencing demand growth, as growth varies by industry. In the coming five years is it, the vertical retailers assume that continuous

increase of the e-commerce is the second most important driver of changes. Retailers view available labor force and improving of infrastructure as the other critical key drivers for supporting the e-commerce growth. In practice, improvements in infrastructure will result in an increase in the quality of retailer services and will give customers a faster delivery of the shipment, even on the same day. Key role plays the location of e-commerce centers. the aim is to have easy access to regional distribution, labor pools, post offices and to be situated close to residential centers. Being near to these centers helps to minimize cost of transport.
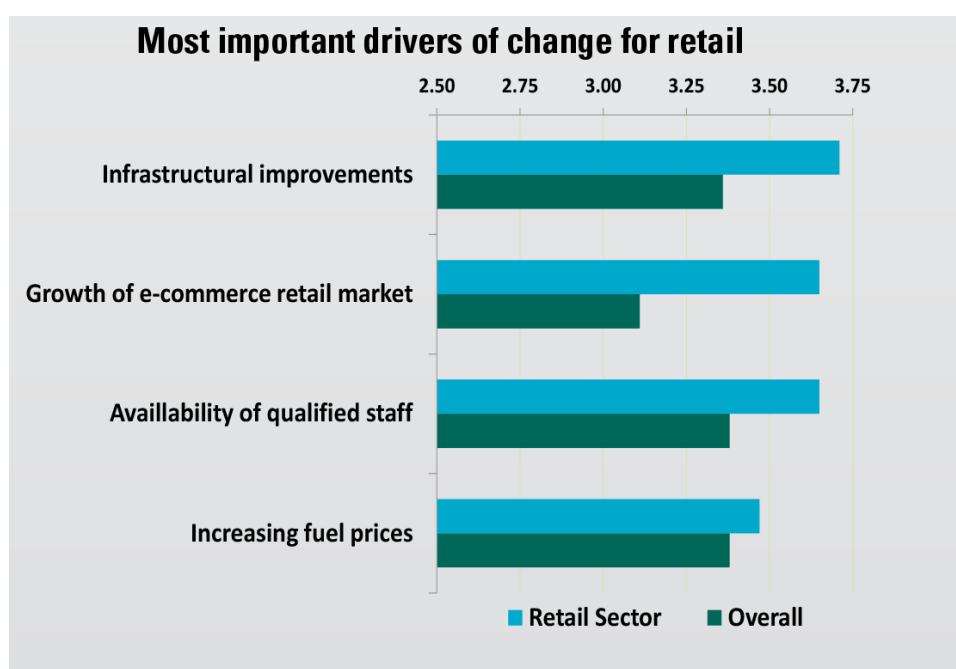
Figure 11 Most important drivers of change for retail, (Source: Prologis Research)

On the picture above are the most important drivers of change from retail point of view and overall. The leading driver is infrastructural improvements follow by growth of e-commerce retail market, availability of qualified staff and increase fuel prices.

3.5 The Real Estate Market in Czech Republic with Focus on Brno Submarket

Major location in the Czech Republic real estate sector includes Prague region, Pilsen region and Brno region. In particular, the Czech Republic is getting closer to Western Europe in the interest of the location. The upcoming trend may be that the Brno

region will cope with the Prague region in about half a year approximately. Companies finds Brno region as a very interesting location for its position. It is in the middle of center Europe with great access to Austria, Slovakia, Poland and is still close to Germany and Hungary. Rents in this area have risen to the similar level as in Prague region. Many of manufacturing companies as well as logistics are located in the vicinity of Brno. This region surely has potential for the future.

3.5.1   Supply

Demand for warehouse space has risen surpassing new supply, caused increase occupancy rates, and thus strengthening increase in net effective rents in Europe. Occupancy rates in global improved by 60 basis points in the second quarter of 2012 to 89.1% compared to the fourth quarter in 2011.

3.5.2   Availability of Industrial Spaces in Czech Republic

Availability of industrial premises is decreasing due to lack of land for purchase. The following table describes market trends in industrial real estate in Czech Republic.

Figure 12 Czech Republic industrial market trend, (Source:Prologis)

In Q4 2018 only about 12% of all completed building were available and vacant for rent. Logistics companies took for almost 40% of net demand within this time period. There was about 53%.

3.5.3 Rents of Industrial Real Estate

Level of rents in industrial real estate varies according to a region and specific location. There is on the real estate market a range of rental rates that competitors (developers) adhere to. In the situation that a lessor would provide very low rents would disadvantage other competitors. Unfortunately, these cases are also happening in practice, but at least not too often. The lease agreement is a contract specifying the conditions under which lessor agrees to lease a facility to a lessee. In most cases, the deal breaker is usually the rental price. In practice, the landlord does not have fixed prices for all cases and clients. but it is usually the subject of negotiations. Once the two parties agree on the terms of the lease, the lease agreement shall be written and any amendments and extensions shall be dealt with by the addendum.

The rent is calculated as sum of following items:

- **Rent of warehouse space** – represents price in euro per square meter per one month multiple by total amount of square meters of warehouse premises in the leased building.

- **Rent of office space** - represents price in euro per square meter per one month multiple by total amount of square meters of office premises

- **Service charges** – express price of services provided by lessor, usually in CZK per square meter per month. This price includes for instance, general repairs and maintenance of the estate, cleaning facades, roofs and window exteriors, waste removal resulting from cleaning of the common areas of the estate (snow etc.), security of the common areas, electric fire protection system (EPS) for the building, Maintenance of the proper functioning of common telephone, data and communication facilities etc. Service charges can be sets as fixed amount for the whole time of lease period of be paid as down payment and at the end of the year be subject to reconciliation.

- **Management fee** – management fee is represented in percentage of rent, usually it is about 3 % from monthly rent. It includes activities of landlord and his stuff taking care of tenant. Management and operation of the Estate.

- **Property tax** – is in CZK per square meter, paid monthly and it is given price from municipality.
- **Utilities –** stands for the actual consumption caused by the tenant, that is, electricity, water and gas consumption. It is collected at the end of the year and is also paid in advance

Almost all of the listed items are indexed each following year. Indexation could be fixed and follow some kind of average or set up according to actual HICP index. In the Euro area the inflation is being measured by the Harmonized Index of Customer Price. Index measure changes in price over some time period. (Bank E., 2019) Nowadays, average HICP inflation in the year 2019 reaches 2.01 %.

The graph below represents the changes in inflation during the year 2018. The average harmonized inflation for 2018 in Czech Republic was 1.96 %. (Media T., 2019)
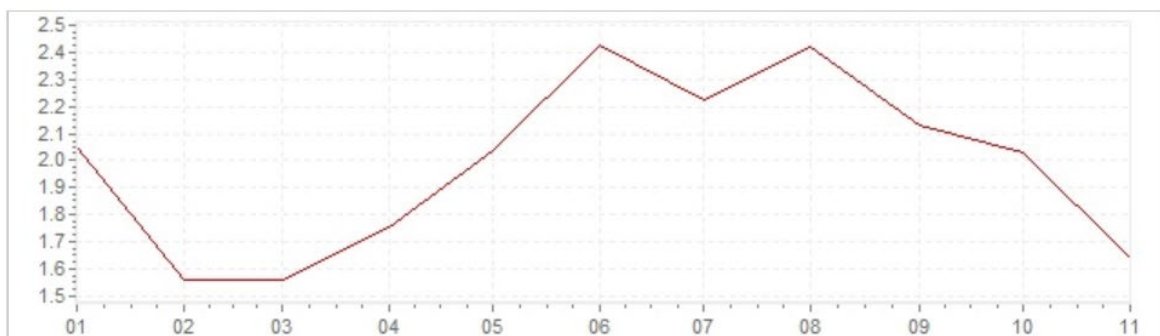
Figure 13 Inflation in 2018, (Source: Inflation EU)

3.6   Freehold vs. Leasehold

Freehold is a term which stands for a permanent and absolute tenure of land or property with freedom to dispose of it at will. Owning a freehold means ownership of the entire building as well as land at all times. In the land register there is the owner's name -

freeholder. Freehold is usually the preferred choice for households, usually through scheme of share ownerships. A buyer of freehold is always responsible for property maintaining and must contemplate financial budget for connected possible costs. There are various benefits such as freeholder is not responsible for sustaining fabric of leased building, does not have to care about running out leases as he is an outright owner. Owners do not have to negotiate with landlords and pay rents, services charge or management fee to the landlord. (Homeowners Alliance, 2019)

The term leasehold represents the relationship between tenant and freeholder (also called a landlord) where tenant lease from a freeholder specific premises for an exact time of period. Therefore the lease agreement is created to cover all conditions of the lease. When the lease expires, the lessee returns the rented space to the lessor if the lease terms are not extended. (Moneyadviceservice.org.uk, 2019) A lease represents a loan in kind whereby a lessee promised to lessor to make regular payments in order to require the right of using the asset. (Herst, A. 1984)

In the industrial real estate the responsibilities of freeholders and leaseholders are divided. In most cases, it is freeholders duty to maintain operation of the whole park. On the other hand, it is the tenant's responsibility to keep the warehouse in operation and repair the damaged parts of the warehouse if they have occurred during the warehouse operation. If company may utilize the building for more than ten year and more, the freehold is in general cost-effective than leasehold scenario. The ownership of the property provides the company with depreciation tax benefits and interest of the property. Corcoran J. (1996)

A lessee is obliged to pay monthly rent, service charges, management fees, a share of insurance of the building and annual property tax. In any situation where the tenant wants to perform some major works on the building it is necessary to obtain permission from the landlord. (Homeowners Alliance, 2019)

3.6.1   Operating Leasing

A contract of operating lease consent to only use certain asset but not to own it. This kind of lease consent to not record a huge amount of liabilities and assets on a firms balance sheet because it represents off-balance sheet financing. This type of financing is

suitable for real estate, aircraft and long-life assets. From an accounting point of view, to determine whether an operating lease or a capital has occurred, the following criteria are needed to be fulfilled. The company accounting department records this action by crediting receivables account and debiting an account of rent expenses. (Investopedia, 2019)

Diagrams represented below, published by Joe Corcoran in 1996 show properties of an operating and financial lease of a property.
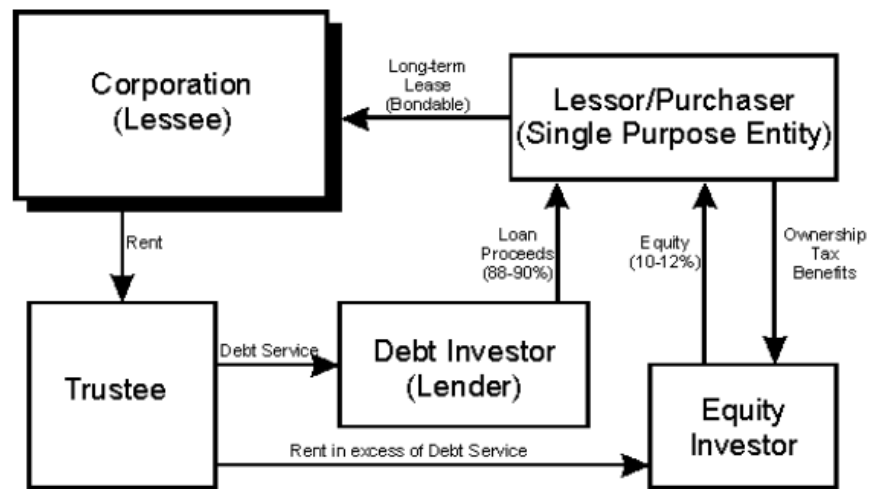
Figure 14 Operating Lease Diagram , (Source: Joe Corcoran 1996)

The graph above demonstrates the operating lease cycle, which is extended by one segment - equity provider. In most situations, the landlord is also a provider of equity and may therefore take advantage of the leasing of property to the lessee. (Balaz, 2014)
For tax purposes in operating leases, regular payments are deducted from taxable income, thereby reducing tax liabilities.

Gross vs. Net Leases

Gross leasing is a form of leasing where the lessor is responsible for all costs incurred during the lease, all associated with the building, excluding utilities and the lessee's insurance. This type of lease applies primarily to residential rentals. There are three types of net leases – triple, double and single net. Real estate insurance, shared space maintenance and property tax are net rent. If it was the single net lease, the tenant would

paid one of the items, if double net lease two items would be paid. In Triple rent tenants covers all three items. (The Balance Small Business, 2019)

Triple Net Lease (NNN)

In practice, triple net rent means for the tenant that all three categories of costs are added to the basic rent level. For example, in the retail space, multiple tenants may have common spaces, and this means that they will be charged according to the portion of the lease premises. For example, if tenant own 300 sqm of premises, only a portion of 0.003% of the maintenance costs is paid, count for 10000 sqm building. (The Balance Small Business, 2019)

3.6.1.1 The Main Characteristics of the Leasing Agreement

The lease agreement stipulates and explains the legal rights and obligations of both parties. The agreement varies with the lessor but is based on the same legal principles. In the course of the lease negotiations, the customer will withdraw the lease agreement and the lawyers of both parties will discuss its final wording. A lessee is a company or a person who rents a property from a lessor. The lease contract is usually concluded for a longer lease term, which is preferred by both parties. There are also exceptions that companies need to store goods for a short period of time, but this then raises the rent per square meter per month. In most cases, the rental period for industrial halls is for three, five and ten years in most cases. Before the end of the lease period, it will usually begin negotiations of the lease renewal.

The agreement contains of following sections :
- Definition and interpretation
- Definitions & Interpretation
- Commencement Date
- Grant of Lease and Use of the Leased Property
- Financial Obligations of Tenant and Security
- Insurance, Restoration, Alterations, Repairing Obligations and Signage
- Surrender and Holding Over
- Events of Default and Remedies

- Landlord's Rights and Obligations

- Other Provisions

- The First Schedule Service Charge and Utility Payments

- The Third Schedule Landlord's Works, Access Works, Measurement Method, Access Protocol

- Schedule Parent Company Guarantee

- Annexes with Plans, layouts and VAT Certificate of Tenant

3.6.2 Financial Leasing

A capital lease is a situation when the lessor will transfer leased asset to lessee after the lease agreement terminates. A capital lease or so-called financial lease is non-cancellable in nature and long term. (The Economic Times, 2019)

This means that if the capital is leased, it is assumed that the asset was acquired through a mortgage or loan. The company records its assets on the balance sheet and also recognizes the lease as a liability. As each capital asset gradually amortizes and also liability decreases by regularly paying the leases. Due to tax purpose, most of the firms elect using of the capital lease because depreciation is accelerated allowing them asset expansion. The more popular form of leasing is operational because of its simpler conditions and easier accounting methods. If the tenant only leases assets, it protects him against the possession of the property. Therefore, this mode of leasing is suitable for companies that buy newer technologies and replace obsolete assets for new ones. (BusinessDictionary.com, 2019)
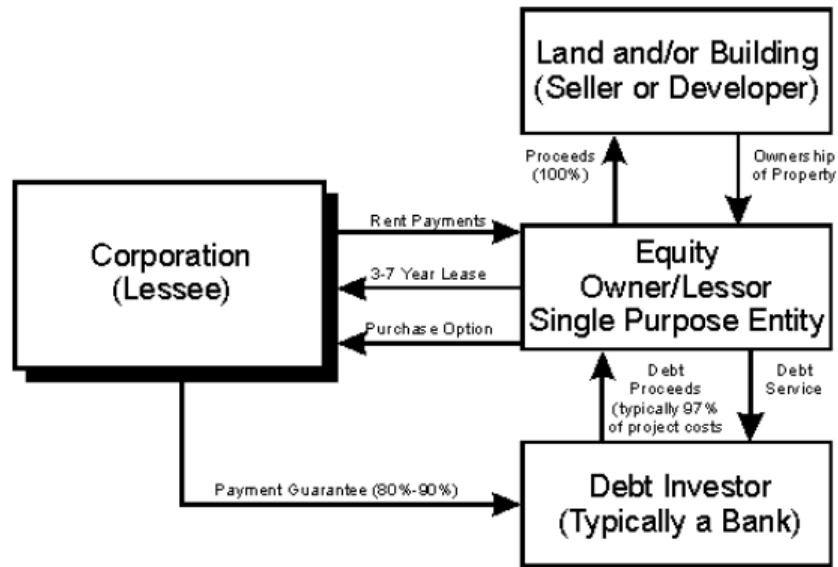
Figure 15 Financial Lease Diagram, (Source: Joe Corcoran 1996)

In the situation where the lessee chooses to proceed a lease through a finance lease, he/she intends to purchase the facility at the end of the lease term. The facility has already been paid by regular installments for the whole leasing period and therefore it is a purchase low below market value. (Balaz, 2014)

Based on GAAP (generally accepted accounting principles) conditions, capital leasing occurs when,

- o After the lease termination, the property is transferred to the lessee.
- o Lease terms permit the subsequent sale of real estate.
- o The lease term exceeds 75% of the economic life of the property.
- o The current rental payment exceeds more than 90% of the real market price.

The phases of development, from lessor point of view : Site acquisition, leasing the property, market planning, property management operations, architecture engineering construction, cost planning, financial planning, project timing and scheduling, community approval and zoning and documentation. (Peca, S. P.,2009)

3.7 Financial Methods Used for Evaluation

For financial comparison of both scenarios, the following methods are used in the practical part - net present value, internal return of investment and payback period analysis.

Net Present Value

It is a financial metric which determine and helps to real estate investor decide whether the investment would generate a certain return. The basic idea is that the present value of money is currently higher than it will be in the future. The investor decides about investment based on the obtained result, if the result is positive, then the investment is profitable. On the other hand, if the result is negative the investment is unprofitable.

Formula of NPV :

$$NPV = -C_0 + \frac{Cash\ Flow}{(1+i)^1} + \frac{Cash\ Flow}{(1+i)^2} + \frac{Cash\ Flow}{(1+i)^3} + \cdots + \frac{Cash\ Flow}{(1+i)^t}$$

- $-C_0$ - represents Initial Investment
- I - represents Discount Rate/desired target yield
- t – represents each time period

Return of Investment

The return of investment, also, investment productivity, return on invested capital or profitability of long-term invested capital, usually only the acronym ROI is used to denote total profit from investing. It is one of the basic indicators of measuring the return and efficiency of investments, used to assess economic centers or investment projects. Not always is the result countable and expressed by direct financial means by ROI. The benefits of some investments can have an indirectly measurable positive effect. For instance, a positive image of the company on the job market or higher employee satisfaction and loyalty. (ManagementMania.com,2019). The effects of a range of investments can be poorly measured because they are spread over a very long time frame.

Formula of ROI:

$$ROI = \frac{Total\ Revenue - Total\ Cost}{Total\ Cost} * 100$$

The calculation comes out as a percentage, so it is multiplied by a hundred.

Internal Rate of Return

Internal rate of return is a metric used for estimation of the profitability of potential investment. It also represents the discount rate that equal net present value to zero. It tells us, in fact, how much percent we will earn in a project evaluated if we consider the time value of money. In other words, it is such a ROI, which, however, counts on a discounted cashflow. At the same time, the IRR is such a discount for which NPV = 0 is used for substituting for a net present value, which is a mathematical rather than an economic definition. (Businessvize.cz, 2019) However, unlike the NPV, IRR is no longer so versatile. This method of evaluating investments can only be used, due to the mathematical patterns used for the calculation, when negative cash flows occur at the beginning of the investment being evaluated.

Formula for IRR:

$$IRR = NPV = \sum_{t=1}^{T} \frac{C_t}{(1+r)^t} - C_0 = 0$$

- C_t = net cash inflow during the period t
- C_0 = total initial investment costs
- r = the discount rate, and
- t = the number of time periods

Payback Period Analysis

The payback period is the time it takes to pay for the initial investment. This return on investment or project will express how many years the investment will return and help the investor in the decision making process. (Investopedia, 2019) Unlike methods such as NPV and IR, and a discreet cash flow, the payback time will instruct TVM's time value.

Formula for PP:

$$PP = \frac{Costs\ of\ Project/Investment}{Annual\ Cash\ Inflows}$$

By dividing the denominator and the numerator, the investor gets the result in years.

4 Practical Part

4.1 Financial Analysis and Comparison

The aim of practical part of this thesis is to proceed financial analyses and compare freehold and leasehold from different points of views. The structure and composition of analysis is described in a following chapter.

4.1.1 Scope of the Comparison Analysis

- Stock and Supply in Czech industrial market
- Demand for industrial premises
- Vacancy and availability in Brno region
- Rents in Czech Republic
- Financial aspects and calculations
  - Costs analysis of freehold and leasehold
  - Net present value
  - Return of investment
  - Internal rate of return
  - Method of payback period
  - Depreciation of the property
- The four European Trends in Logistics Real Estate
- Factor influencing decision making process

4.1.2 Significance of the analysis

The aim of this study is to evaluate the results of the financial analysis based on a comparison of freehold and leasehold in industrial real estate sector. The goal is to find an answer to the question, whether the investor should invest in purchase of premises or lease premises. This kind of comparison enable companies to identify and organize their business plans connected to freight and storing.

4.2 Stock and Supply in Czech industrial market

This paragraph describes stock and supply of industrial real estate in Q4 in 2018. Terms like speculative and non-speculative construction are mentioned. A speculative type of construction is the one where a developer decides to construct a building without having a pre-lease agreement with any client. The second type is non-speculative development meaning construction for specific purposes and according to particular requirements of the client. Nowadays non-speculative construction prevails speculative on the real estate market because it represents a lower risk for investors.

At the end of the fourth quarter in 2018, the total volume of modern class A industrial estate properties designed to rent a total of 7.73 million square meters. The largest part of the market is located in Prague and its surroundings, with 39% of all industrial spaces. This is followed by the Plzen Region with a 15% share and the South Moravian Region with a 13% share of the total premises.

In total during Q4 2018, 172100 m2 of industrial premises were completed, representing a quarter-on-quarter decline of 5% and a year-on-year increase of 19%. For the Q4 in the year 2018, a total area of 735,800 square meters of industrial space was leased on the market. Which represents a year-on-year increase of 14%, with the best result ever since the year 2008. Most of the space that appeared on the market during this period was already pre-leased before construction was completed. Speculative constructions accounted for roughly 13% of the new offer. Most projects were done on the Prague market and the surrounding area which covers 26%, the Ústí region with 19% and the South Moravian Region with16%.

Activity in the construction of premises remains high throughout the Czech Republic. Although, when we compare Q4 2018, the total number of 431,000 square meters of buildings with data from the previous year, when it was under construction, was by 120000 m2 less. During the first quarter of 2019, it is planned to complete approximately 20,6,600 square meters of spaces that are now under construction. At present, 36 different projects are under construction. The largest industrial hall that was started building in the fourth quarter of 2018, is the new building in Prologis Park Brno with a total area of 39900 m2 and is built speculatively from the beginning. the share of speculative construction rose from around 30 percent in the fourth quarter of 2018 to the present value of 52 percent compared to the fourth quarter of 2017.
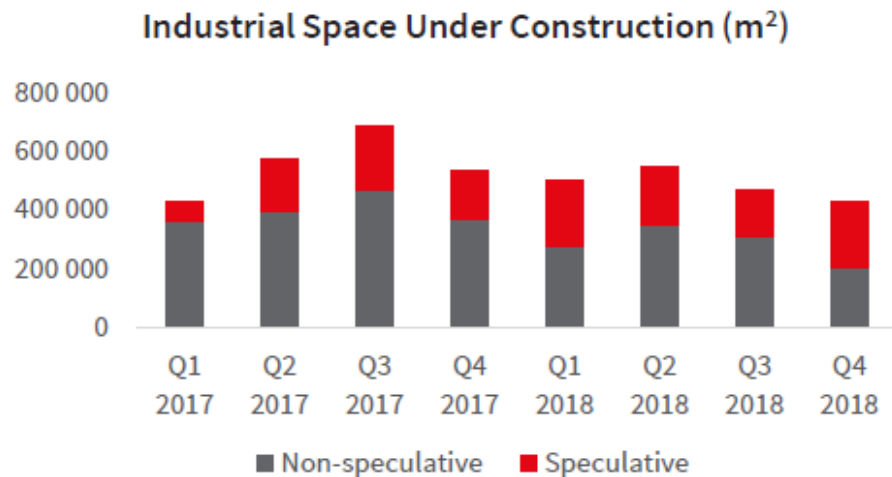
Figure 16 Industrial Space Under Construction, (Source:JLL Industrial Research Forum,2018)

The figure above shows the overview of industrial premises under construction from first quarter of 2017 until the fourth quarter of 2018. Accordingly, nowadays is more likely to start development of speculative construction.

4.3 Demand for Industrial Premises

Gross realized demand amounted to 297,400 square meters during the fourth quarter of 218. This figure represents a 11% drop between quarters and a 24% decline year-on-year. In total, 52% of gross demand was realized in Prague. Followed by the Plzeň Region with 15% and the Olomouc Region with 11%. This means that the total gross realized demand amounted to 1 355 500 m2, which corresponds to the values of the previous year.

The net realized demand in the fourth quarter amounted to 175,600 m2 and recorded a year-on-year change of -27% and -1% quarter-on-quarter. The most active and most requested location was Prague and its surrounding area with 49%, followed by Pilsen region with 23% and Olomouc region with 11%. In regard to the whole of 2018, net realized demand was 794,200 m2. Year-on-year, this means a fall in demand of about 17%.

The most active players on the market were logistics companies during the year 2018, which carried out 44% of the gross demand. Followed by manufacturing companies with 38%, while net demand was the most active sector by 42%, followed by companies in the logistics sector with 35% of the market.

Net Take-up by Sector in 2018

8%

15%

42%

35%

■ Producer ■ Logistics ■ Distribution ■ Other
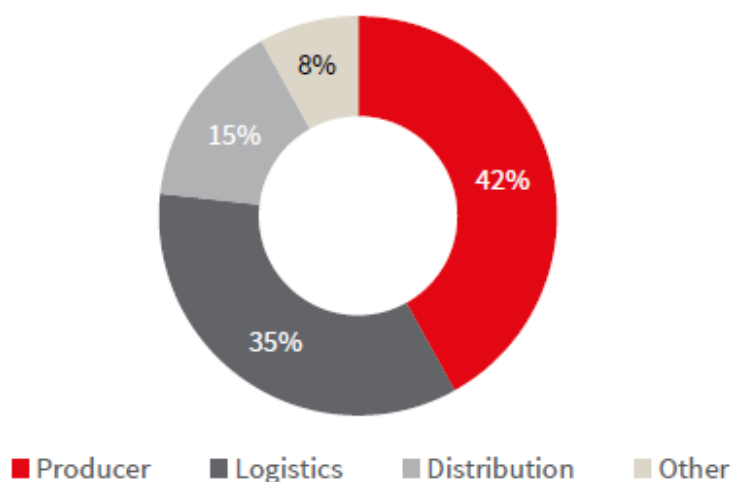
Figure 17 Net Take-up by Sector in 2018 Source: (JLL Industrial research forum, 2018)

4.4 Vacancy and Availability of the premises

the average vacancy rate in the Czech Republic increased to 4.4% in the fourth quarter, an increase of 22 basis points inter-class. In year-on-year comparison, this is an increase of 30 basis points. At the end of Q4 in 2018, the vacancy rate in Prague was 3.9%. This is a year-on-year increase of 39 basis points. While inter-volatile vacancy declined by 29 basis points. at the end of the quarter there was a zero vacancy rate in the South Bohemian, Liberec and Zlín, Pardubice and Karlovy Vary regions

Net Absorption

Net absorption is the difference between the area of tenants who leased premises or expanded and the area of the lessees who have terminated the rent or have decreased their rented premises, this is always the same period of time. In the fourth quarter of 2018, a net absorption of 157,400 square meters was achieved, representing a 18% quarter-on-quarter increase. Net absorption amounted to approximately 664,000 m2 for the whole of 2018. This finding represents a slight decrease by 5% compared to the previous year. This is the third highest absorption value since 2007.

Investment focus - A low industrial volume of investment in Q1 was caused by the lack and shortage of investment opportunities. This situation was compensated by

significant transactions in Q2 resulting in total annual growth. Yield compression will by probably see A class premises in core locations with long term contracts. (JLL,2018)

Industrial Real estate in Brno Overview

This chapter focuses on developer´s projects and specific available units within the Brno region. These are parks in A-class type, meaning newest standard on the market or premises with a maximum 5 years usage. Since this thesis study only parks in A-class standard, only these are listed for Q1 2019. In comments are detailed information about the facility, either it is immediately vacant, planned to build in future, a site with building permit or fully leased property.

Name of the Park	Units / Size in SQM	Comments About Property
CTP Park Brno	Units 10 000, 2 000, 2 500	Immediately for rent
CTP Park Blucina	9 000	Planned BTS
CTP Park Brno Pohorelice	5 600	Immediately for rent
CTP Park Modrice	Units 5 600, 1600, 10 000, 4 200	9/2019,7/2019,10/2019, now
CTP Park Holubice	9 000	Planned BTS
VGP Park Rajhrad	0	Fully leased

Panattoni Park Brno	32 000	Planned/permit
Industrial Park West	10 000	Immediately for rent
Prologis Park Brno	11 739	Immediately for rent
Prologis Park Brno	39 413	In Q3 2019

Table 1 Availability of premises in Brno region, (Source: Author)

The data listed above were obtained from brokers from firms such as Colliers, Cushman and Wakefield, JLL, these are the biggest players on the Czech market of real estate sector.

4.5 Level of Rents in the Czech Republic

Rents in the most demanded locations in Prague during the fourth quarter of 2018 stabilized at levels between EUR 4.00-4.50 / m2 / month. The level of rent in Pilsen and its surrounding reached approximately EUR 3.65-3.80 / m2 / month. Regarding the South Moravian Region including Brno region, rent levels reach EUR 3.90-4.30 / m2 / month. For built to suit construction projects in locations with low competition, higher rental rates can be expected. (JLL,2019)

Rent in the Czech Republic is calculated as a sum of headline rents, service charges for the building, management fee, property tax, utilities and multiple by sum of leased square meters. The calculation depends on contract term which supposed to be nowadays always fixed.

Rent calculation of leased premises:

Contract Term	Number of years
Rent Warehouse	€ x.xx / sqm / month
Rent Office	€ x.xx / sqm / month
Service Charges	x.xx CZK / sqm / month
Management Fee	€ x.xx / sqm / month
Property Tax	x.xx CZK / sqm / month
Utilities	x.xx CZK / sqm / month
Monthly Rent	Sum * 30 days
Annual Rent	Sum of monthly rent * 12 months
Rent during lease term	Monthly rent * total months of lease

Table 2 Rent calculation, (Source: Author)

Table above shows two types of currency. The reason is that lessor have contracted its Czech suppliers and they are used to commonly charge in Czech currency.

4.6 Cost Analysis and Comparison

This chapter covers the financial analysis from the costs point of view. The aim is to perform a cost analysis and compare results of both cases.

The analysis consists of costs consists of a detailed analysis of all the costs associated with the lease of the property in the first case and the construction of the property in the second case. To evaluate the costs and other expenditures more efficiently, this part focus on real case study from practice. The parameters and size of the building solution is the same for both variants and are described below. The case describing the situation where customer is looking for logistics building totals approximately 39 125 square meters of warehouse and 2 322 square meters of office area. Building totals 41 447 sqm of premises.

Project Data Sheet

Submarket Location:	Brno
Building Type	Warehouse/Distribution
Site Area	87. 355 m2
Warehouse	39.125 m2
Office Area	2.322 m2
Total Building Size:	41.477 m2
External Parking and Roads Areas	29.391 m2
Green Areas	18.839 m2
FAR	47.4 %
Office	2.6 %
Clear High	10 m
Column Spacing	39.4 x 78.7 m

Table 3 Project data sheet, (Source: Author)

Table above interprets a specific description of the data project sheet. The shortcut FAR stands for floor area ration, meaning the ratio of buildings total floor area to area of land upon which is property built. There are certain limits on such ration through zoning. As a formula FAR = (gross floor area) / (area of the plot). Accordingly to the newest standard building is built with a clear high of ten meters.

Units of measurements:

CONVERSIONS			
Currency	EUR	**1.200**	1 EUR = 1.2 USD
Building Unit of Measurement	SQM	10.7639	1 sq m = 10.7639104 sq ft
Land Area Unit of Measurement	SQM	0.0002	1 sq m = 0.000247105 acre
Length/Height Unit of Measurement	M	3.2808	1 m = 3.28084 ft

Table 4 Conversions, (Source: Author,Prologis)

4.6.1 Leasehold Cost Analyses

As mentioned in the previous section, the lease is a form of contract between the lessee who pays the lessor a regular fee for the use of the property. Monthly invoicing does not only include clean rentals, but also other charges such as service fees, site management fees and actual energy consumption. The reasons why companies are looking for rent are explained further.

Summary of leasehold case:

NUMBER OF MONTHS	120.0	10Y
VAT 2018	21%	%
Exchange rate 1 EUR	25.72	CZK
Service Charges	13.20	CZK
Management Fee	3.00%	%
Utilities	10.00	CZK

Table 5 Summary of leasehold case,(Source: Author)

Composition of Rent Calculation

	RENT	SQM	Comments
Rent Warehouse Space	4.00	39125	In EUR
Rent Office Space	8.50	2322	In EUR
Service Charges	0.51	41 447	In EUR

Management Fee	3%	41 447	From annual rent
Property Tax	2CZK/m2	41 447	CZK per sqm
Utilities	10.00 CZK/m2	41 447	CZK per sqm

Table 6 Composition of rent calculation,(Source: Author)

Rents are charged in euro because this demand for this size would be processed and built by a corporate developer who operates with the euro due to its multinational firm structure. Rent of warehouse space 4.40 EUR/sqm/month is set according to average prices in the Brno region. Level of office rent is usually similar for new development in range 8.50-9.00 EUR/sqm/month.

Service charges can be issued as a fixed amount for the whole lease term with a monthly payment. The other option is to charge average prepayment to the lessor and at the end of the year proceeds service charge reconciliation and pay the arrears.

Management fee stands for amount of 3% of the monthly rent. The number of percentages can vary according to internal framework from the lessor. In this case, 3% is used because it is used most commonly.

Property tax and its level is setup by local authorities once a year for the following year. Tax can increase and decrease each year according to the decision of responsible municipalities. And for this region it is known to be 2 CZK per square meter per month. The tax is paid annually.

Utilities are record as real consumption of water, electricity and gas. It counts as average consumption per square meter and tenant pays prepayments every months. The average is used from previous data of the previous tenant of the building. In the case of new development it is based on assumptions from practice so the above 10.00 CZK per square meters is assumed. At the end of the year, the utilities reconciliation is made by the lessor.

Equations of Rent Calculation

	Warehouse	**Office**
Size SQM	39 125.00	2 322.00
Headline Rent sqm/month	4.00	8.50
Service Charges EUR	0.51	0.51

Management fee 3%	5164.5	626.94
Utilities Costs	15211.90	902.80
Total sum	212 606.10	23 619.43
Total incl. VAT	257 253.38	285 79.52
Total Rent	257 253.4	28 579.5
Total in EUR per 1 month		285 832.90

Table 7 Equations of rent calculation,(Source:Author)

The table above covers separated amount of charges for warehouse area and office area. Furthermore, the total amount of rent is calculated 285 832.90 EUR.

Breakdown of Rent Schedule

Time Schedule	Amount	Currency
Total rent per 1 month	240 778 675	EUR
Annual rent	2 889 344	EUR
Rent for 10 year period	**28 893 441**	**EUR**

Table 8 Breakdown of rent schedule,(Source: Author)

The table above realized breakdown of rent schedule calculation. There are listed three important amounts. The first column expresses the amount of rent per one month, calculated by multiplication of total square meters and corresponding price. The second column expresses monthly rent multiple by twelve months. And the last column presents rent for the whole time of rent of ten years, resulting the number 28 893 441 EUR.

4.6.2 Freehold Cost Analysis

This part of the study focus on analysis of freehold and its properties. The aim is to gather all possible costs connected to the construction process of development. The same measurement of the building are applied in this section.

Key Description of the Project and Dates

- Construction Period: 15.10.2018 – 17.5.2019

- Handover hall: 17.5.2019
- Handover office: 17.5.2019
- Valid Occupancy Permit: 17.5.2019

Total Development Costs

Further in this section, all costs associated with the construction of the storage hall are described and broken down.

The costs of development includes following items :

o Land Acquisition Costs

o Land Development Costs

o Hard Costs

o Soft Costs

o Finance Costs

Breakdown of Total Development Costs

Type of Cost		Today´s Market Value	Per SQM
Land Acquisition Costs	Land	4.995.225	126.74
	Ground Lease	-	-
	Acquisition / Closing Costs	-	-
	Land Pursuit Capitalized	-	-
	Land G&A	51.471	1.31
	Acquisition / Closing Costs (RETT and Registration)	-	-
	Sub-total Land Acquisition Costs (EUR)	5.046.696	128.05
Land Development Costs	Offside Improvements	-	-
	Earthworks / Site Improvements	125.842	3.19
	Sub-total Land Development Costs(EUR)	125.842	3.19
Hard Costs	Shell	16.090.645	399.41
	Standard Tenant Improvements	849.320	21.55
	Above Standard Tenant Improvements	-	-
	Hard Cost Inflation	-	-
	Hard Shell Contingency 2%	321.813	7.99

	Sub-total Hard Costs (EUR)	17.261.778	428.48
Soft Costs	Architectural and Engineering	60.000	1.52
	Permit and Impact Fees	144.000	3.65
	Marketing	25.000	0.63
	Testing	95.000	2.41
	Legal	41.000	1.04
	Property Tax	59.120	1.50
	Insurance	19.312	0.49
	CAM	157.653	4.00
	Overhead/Development Fees	814.539	20.67
	Title Insurance Fee	-	-
	Soft Cost Contingency 2%	33.701	0.86
	Sub-total Soft Costs (EUR)	1.449.326	36.77
Finance Costs	Land Carry	62.426	1.58
Total Costs		**23 946.341**	**594.41**

Table 9 Brekadown of total developoment costs, (Source: Author,Prologis)

The table above briefly describes all types of costs associated with building a hall. in the right column is written the total price and in the second column on the right is the price per m2. For example, from the total land price of 4,995,225 EUR means 45 EUR per m2 for land in Brno. Land G&A costs (General And Administrative) includes management expenses in term of wages of employees of lessor. Offside improvements are in this case some demolitions, outside the building. Earthwork or Site Improvement stands for rough landscaping or land leveling. The shell expresses only the sum of the costs on the building itself. Hard Shell Contingency 2% - budget "range" contingency of costs, means to have some reserve in case of possible of founding archaeological territory, or finding of cable system under the soil. Permits includes planning perming, followed by building permit and occupancy permit for operation within the warehouse. Insurance is set according to types of sprinklers system in the building. if there are no sprinklers (fire safety system) the insurance would be higher priced. CAM (common area maintenance) are service charge costs of the buildings. Land carry means that the interest will pay for the time it is built. Usually it is 2.50%. This scenario counts with amount of 1.24% because it is being built for half a year, otherwise, the percentage is higher.

Property Tax

Property Tax is given by local authorities in amount of 2 CZK / m2. For whole building totals 41 447 sqm, the property tax equal to 82 894 CZK/ m2/month. For 120 month the property tax counts for 9 947 280 CZK / 38 675 EUR.

Breakdown of the Hard Costs /Construction costs

Description of Item	Amount	Currency in EURO
Outline building with common areas	39 125	9,507,375
Office inbuilt 2 storey	2 232	1,358,544
Building permit modification	1	60,000
Agriculture land fund fee	1	80,000
Cut and Fill	1	395,000
Top soil removal in average 80 cm incl off site transport - 5km	1	285,000
Camera system for barriers	1	27,000
Public road - connection to existing roundabout	1	12,000
Open retention basin - only connection	1	17,000
Oil Separator	1	40,000
External foul water connection pipe	1	17,000
External gas connection - only connection	1	15,000
External water connection pipe	1	15,000
Smart metering	1	27,500
Transformer station incl 800 kVA transformer	1	120,000
LED external lights	39	60,000
Sprinkler tank - only connection	1	10,000
Fencing - entire plot	1,175	52,875
Entrance gate and barriers	1	35,000
More docks above standard	37	323,750

Additional truck yard	2,745	134,505
Car parking and foot path	3,171	149,037
Landscaping	18,839	122,454
BREEAM very good	1	64,000
Shelter for bicycles	1	14,700
Porterhouse	1	28,000
Canopy above porterhouse	1	36,000
Radon - medium risk + additional 250000	1	359,000
Clear column grid 24x24, 30kg/m2 live loading	1	510,000
Additional skylights strips 39 pcs	1	166,000
Office façade	1	35,000
Insulated concrete socke	1	11,000
Extra cost for façade 120mm sandwich panels	1	118,000
Roof drainage insulation	1	28,000
Roof insulation 140 mm instead of 80 mm	1	220,000
Heating up to 15 degree C	1	115,000
LED lights, 70% racking - 200 lux	1	280,000
Central battery for emergency lighting	1	47,500
Asphalt roads	1	135,000
Concrete truck yard	1	215,000
Galvanised dock wheel guides	75	32,000
Fire walls	8,484	551,460
Fire gates - sliding	10	65,000
Floor slab jointless with 10mm gax - max	1	110,000
External sunblinds	525	70,000
Thicker dock levellers plates	1	15,000
Additional fire alarm control panels- 6 pcs	1	27,000
Testing, services	1	95,000

In Total EUR		16 090 645

Table 10 Breakdown of the construction cost,(Source: Author, Prologis)

The table breaks down all the costs that may arise during construction and shows what is included in hard costs of 16 090 645 EUR. For each load, the number of uses in the project and the corresponding price is assigned.

4.7 Net Present Value Calculation

Used formula for NPV of Freehold:

$$NPV = -Initial\ Investment + \frac{Cash\ Flow}{(1+i)^1} + \frac{Cash\ Flow}{(1+i)^2} + \frac{Cash\ Flow}{(1+i)^3} + \cdots$$
$$+ \frac{Cash\ Flow}{(1+i)^t}$$

- $-C_0$ - represents Initial Investment
- I - represents Discount Rate/desired target yield
- t – represents each time period

Cash Flow Stream Detail

Period	Cash Flow	Present Value
0	-23,946,341.00	-23,946,341.00
1	2,721,731.00	2,720,370.81
2	2,778,887.00	2,776,110.20
3	2,837,244.00	2,832,992.39
4	2,896,826.00	2,891,039.58
5	2,954,762.00	2,947,386.16
6	3,016,813.00	3,007,778.38
7	3,080,166.00	3,069,406.95

8	3,144,849.00	3,132,297.86
9	3,210,981.00	3,196,567.64
10	3,278,319.00	3,261,972.39
	Total :	**5,889,581.36**

<center>**Table 11 Cash flow stream detail,(Source: CalculatorSoup, 2019Author)**</center>

Initial investment in this case are the total cost of freehold 23,946,341 EUR.Total cash flow from 12 month : in amount of 70 00 2912 CZK / 2 721731 EUR is used in formula and on the each cash flow each year is used indexation 2.1 %. The table above shows net present value for the cash flow series with a discount rate of 0.5% for a time period of 10 years. The total net present value results in 5,889,581.36 EUR.

4.8 Internal Rate of Return

Internal rate of return is a metric used for estimation of the profitability of potential investment. It also represents the discount rate that equal net present value to zero.

Formula for IRR of Freehold :

$$IRR = NPV = \sum_{t=1}^{T} \frac{C_t}{(1+r)^t} - C_0 = 0$$

The amount of the rate of return was calculated by calculator for internal rate of return with 10 year period and results 4.130 %.

4.9 Return of Investments

The return of investments calculation is compute based on amount of total returns and total costs. Mostly, as in this case, the amounts per year.

Total costs are calculated based on sum of costs of leasehold in the first case and sum of costs per construction for freehold for the second case. The sum of total revenues are obtained from calculation of income for each three scenarios where price is divergent.

Price of pallet per day is charged in CZK because of Czech accounting system which is used. In this thesis euro currency is used, that is why also exchange price in euro is listed further. Price levels of one pallet per day was used based on communication with firm who operates logistics warehouses and has real information from the market operation. Around 3-5 CZK/ pallet per day is some kind of average charged in this area in Moravia region.

When calculating the usable storage area, it is also necessary to take into account the handling areas needed for operation. Another area occupies office space. As a result, about 40% of the total area of the hall will be used for handling and the remaining amount of approximately 60% will be used for shelf/racking system of storing. For specification, it refers to a storage area of 22,832 sqm, and loading and handling areas occupy approximately 16,581 sqm. In general, the average high of one pallet is 0.8 m and due to clear high it is possible to stack pallets on three floors. This cause possibility of storing of 2.4 level of pallet multiple by square meters 22 832. Therefore, the total number of the stored pallet can reach approximately 54 796 pieces per day.

Formula used for ROI:

$$ROI = \frac{Total\ Revenue - Total\ Cost}{Total\ Cost} * 100$$

Calculation of ROI for Leasehold case :

Calculation of Return of investment is proceed in three scenarios according to level of price per one pallet per day. The table below shows predicted findings.

1. **Total revenues from 12 month** : in amount of 70 00 2912 CZK / 2 721731 EUR
   Total cost : annual price of rent/lease - 2 626 922 EUR

2. **Total revenues from 12 month** : in amount of 72 001 944 CZK/ 2 799 454 EUR
   Total cost : annual price of rent/lease - 2 626 922 EUR

3. **Total revenues from 12 month** : in amount of 100 002 700 CZK / 3 888 129 EUR
   Total cost : annual price of rent/lease - 2 626 922EUR

The breakdown of calculation :

	Option 1	Option 2	Option 3
Number of pallets	54 796 psc	54 796 psc	54 796 psc
Price of pallet per day	3.50 CZK	3.60 CZK	5.00 CZK
Price of income per one day	191 789 CZK	197 266 CZK	273 980 CZK
Income from 1 month of rent	5 833 576 CZK	6 000 162 CZK	8 333 558 CZK
Income from 12 moth of rent	70 002912 CZK	72 001944 CZK	100 002 700 CZK
Income from 12 moth of rent	2 721731 EUR	2 799454 EUR	3 888 129 EUR
Total annual costs	2 626 922 EUR	2 626 922 EUR	2 626 922 EUR
ROI	3.60 %	6.57 %	48.00 %

Table 12 The breakdown of ROI Leasehold calculation,(Source: Author)

In the table above are listed three scenarios. Each scenario has different price strategy and charge differs in price per one pallet per day. The first option sets the price of 3,50 CZK/pallet per day. The number of the pallet is the same for each option. By multiplication the income per 1 month and the income per 12 months are determined. Exchange rate 25,72 EUR/CZK is used to transfer the amount of money to the euro. Total costs are calculated from ten years lease term by division per one year. The amount of annual costs remains same for each scenarios. The return of investment of the first option equal to 3.60 % in the first year. Following with the second option charging 3.50

CZK/pallet per day with return of investment with 6.57 % and the third option with higher number of return 48.00 % due to biggest price (5 CZK) per pallet per day.

Calculation of ROI for Freehold case

The same principle for calculation of return of investment for freehold is used, except total cost of lease are replaced for costs for construction of the property, the amount of total revenues remains the same for computation.

Three options:

1. **Total revenues** from 12 month : in amount of 70 00 2912 CZK / 2 721731 EUR
   Total cost of construction: 23 946 41 EUR
   Calculated annual price of costs is 2 394 634 EUR

2. **Total revenues** from 12 month : in amount of 72 001 944 CZK / 2 799 454 EUR
   Total cost Total cost of construction: 23.946.341 EUR
   Calculated annual price of costs is 2 394 634 EUR

3. **Total revenues** from 12 month : in amount of 100 002 700 CZK / 3 888 129 EUR
   Total cost of construction: 23.946.341 EUR
   Calculated annual price of costs is 2 394 634 EUR

Formula used for ROI calculation:

$$ROI = \frac{Total\ Revenue - Total\ Cost}{Total\ Cost} * 100$$

The breakdown of calculation :

	Option 1	Option 2	Option 3
Number of pallets	54 796 psc	54 796 psc	54 796 psc

Price of pallet per day	3.50 CZK	3.60 CZK	5.00 CZK
Price of income per one day	191 789 CZK	197 266 CZK	273 980 CZK
Income from 1 month of rent	5 833 576 CZK	6 000 162 CZK	8 333 558 CZK
Income from 12 moth of rent	70 002912 CZK	72 001944 CZK	100 002 700 CZK
Income from 12 moth of rent	2 721731 EUR	2 799454 EUR	3 888 129 EUR
Total annual costs	2 394 634 EUR	2 394 634 EUR	2 394 634 EUR
ROI	13.66 %	16.90 %	62.36 %

Table 13 The reakdown of ROI Freehold calculation,(Source: Author)

This case is computed in the same way as the previous calculation with three scenarios. The number of rented pallets remains the same as prices per pallet day. Total annual costs are from the construction of building divided by 10, which is, in this case, predicted number of a lifetime of the building. Return of investment for the first option is determined as 13,66 %. The calculated value of the return of investment for the second option is 16,90 % and follows by the third option with the return of 62,36 %. it is understood that the price for pallet per day rapidly influences the result of return. The costs in both cases are not so varied. Different prices strategy was implemented to show that the final result will differ. Furthermore, a more realistic scenario is the first option with the price of 3,50 CZK per pallet per day because it is closest to the average price. On the other hand, it depends on the company what level of price they want to charge for their services.

4.10 Payback Period Calculation

In this case, it is used naturally for investment evaluation. indicates the number of years that are needed to accumulate income to match the investment, that is, the time for which the investment will return. (ManagementMania.com,2019). The payback period ignores the time value of money (TVM). This method is used rather as a supplement, its disadvantage is that it does not take into account the financial flows resulting from the investment after the return period.

Applied formula in Payback Period:

$$PP = \frac{Costs\ of\ Project/Investment}{Annual\ Cash\ Inflows}$$

Calculation of Payback Period of Leasehold

Costs of investment in property, meaning leasing costs = 28 893 441 EUR

1. Annual Cash Inflows -70 002912 CZK / 2 721 731EUR

2. Annual Cash Inflows - 72 001944 CZK/ 2 799 454 EUR

3. Annual Cash Inflows - 100 002 700 CZK / 3 888 129 EUR

Breakdown of PP:

	Option 1	Option 2	Option 3
Number of pallets	54 796 psc	54 796 psc	54 796 psc
Price of pallet per day	3.50 CZK	3.60 CZK	5.00 CZK
Price of income per one day	191789 CZK	197 266 CZK	273 980 CZK
Income from 1 month of rent	5833576 CZK	6 000 162 CZK	8 333 558 CZK

Income from 12 moth of rent	2 721731 EUR	2 799454 EUR	3 888 129 EUR
Cost of Project	28 893 441 EUR	28 893 441 EUR	28 893 441 EUR
PP in YRS	10.62	10.32	7.43

Table 14 Payback Period of Leasehold,(Source: Author)

The table above describes the situation with three possible options in leasehold. Payback period is calculated as a division of costs of the project 28 893 441, which is used in all options, and annual cash inflows. The annual cash inflows are once more compute as earnings from stored pallets. The first option stands for condition with incomes 2 721731 EUR and payback period equals to 10.62 years, meaning the period of time that take to recover the cost of initial investment. The second is based on incomes 2 799454 EUR and result payback period 10.32 years. The last option calculate with highest income due to price. The payback period base od income 3 888 129 EUR is 7.43 years.

Calculation of Payback Period of Freehold

Costs of investment in property, meaning construction costs = 23 946 341 EUR

1. Annual Cash Inflows -70 002912 CZK / 2 721 731EUR

2. Annual Cash Inflows - 72 001944 CZK / 2 799 454 EUR

3. Annual Cash Inflows - 100 002 700 CZK / 3 888 129 EUR

Breakdown of PP:

	Option 1	Option 2	Option 3
Number of pallets	54 796 psc	54 796 psc	54 796 psc

Price of pallet per day	3.50 CZK	3.60 CZK	5.00 CZK
Price of income per one day	191789 CZK	197 266 CZK	273 980 CZK
Income from 1 month of rent	5 833 576 CZK	6 000 162 CZK	8 333 558 CZK
Income from 12 moth of rent	2 721731 EUR	2 799454 EUR	3 888 129 EUR
Cost of Project	23 946 341 EUR	23 946 341 EUR	23 946 341 EUR
PP in YRS	8.80	8.55	6.15

Table 15 Payback Period of Freehold Calculation,(Source: Author)

The table above presents the same scenarios as in the previous calculation of leasehold but in this case, it focuses on freehold and its connected costs. The costs of the project are exactly the same for each option in the amount of 23 946 341 EUR. In the first instance, are the incomes 2 721731 EUR and payback period results 8.80 years. The second case counts with incomes in the amount of 2 799454 EUR and payback period equals to 8.55 years. Lastly, the third option with incomes 3 888 129 EUR results as 6.15 years payback period.

4.11 Depreciation of the Property

A depreciation of fixed assets is important for companies because they are resources for the reproduction of company assets. Since assets, in this case property, are expected to be used for a longer period of time, it is logical that the cost of a one-time asset cannot be included in the initial cost. The price of the property is spread throughout the use and life of the property. This principle should be fully respected in determining the accounting depreciation that is within the jurisdiction of the entity under specific conditions. (Dashofer, V.,2019)

This is the case when investors or company have cash capital in hand and do not have to take a loan to purchase a property. According to the accounting principles, this kind of industrial property is in group number five. Each group has the individual time of the depreciation process. In this case, the time is assumed to be thirty years. The initial price of the property is an amount of 23 946 341 EUR.

Breakdown of Depreciation Calculation

➢ Depreciation group : 5 group
➢ Time period of depreciation : 30 years
➢ Type of depreciation : regular
➢ Year of acquisition : 2019

Year	Residual Price	Annual Depreciation	Calculation	Total Depreciation
2019	23 611 092	**335 249**	(23 946 341 * 1.4) / 100	335 249
2020	22 796 916	**814 176**	(23 946 341 * 3.4) / 100	1 149 425
2021	21 982 740	**814 176**	(23 946 341 * 3.4) / 100	1 963 601
2022	21 168 564	**814 176**	(23 946 341 * 3.4) / 100	2 777 777
2023	20 354 388	**814 176**	(23 946 341 * 3.4) / 100	3 591 953
2024	19 540 212	**814 176**	(23 946 341 * 3.4) / 100	4 406 129
2025	18 726 036	**814 176**	(23 946 341 * 3.4) / 100	5 220 305
2026	17 911 860	**814 176**	(23 946 341 * 3.4) / 100	6 034 481
2027	17 097 684	**814 176**	(23 946 341 * 3.4) / 100	6 848 657
2028	16 283 508	**814 176**	(23 946 341 * 3.4) / 100	7 662 833
2029	15 469 332	**814 176**	(23 946 341 * 3.4) / 100	8 477 009
2030	14 655 156	**814 176**	(23 946 341 * 3.4) / 100	9 291 185
2031	13 840 980	**814 176**	(23 946 341 * 3.4) / 100	10 105 361
2032	13 026 804	**814 176**	(23 946 341 * 3.4) / 100	10 919 537
2033	12 212 628	**814 176**	(23 946 341 * 3.4) / 100	11 733 713
2034	11 398 452	**814 176**	(23 946 341 * 3.4) / 100	12 547 889

2035	10 584 276	**814 176**	(23 946 341 * 3.4) / 100	13 362 065
2036	9 770 100	**814 176**	(23 946 341 * 3.4) / 100	14 176 241
2037	8 955 924	**814 176**	(23 946 341 * 3.4) / 100	14 990 417
2038	8 141 748	**814 176**	(23 946 341 * 3.4) / 100	15 804 593
2039	7 327 572	**814 176**	(23 946 341 * 3.4) / 100	16 618 769
2040	6 513 396	**814 176**	(23 946 341 * 3.4) / 100	17 432 945
2041	5 699 220	**814 176**	(23 946 341 * 3.4) / 100	18 247 121
2042	4 885 044	**814 176**	(23 946 341 * 3.4) / 100	19 061 297
2043	4 070 868	**814 176**	(23 946 341 * 3.4) / 100	19 875 473
2044	3 256 692	**814 176**	(23 946 341 * 3.4) / 100	20 689 649
2045	2 442 516	**814 176**	(23 946 341 * 3.4) / 100	21 503 825
2046	1 628 340	**814 176**	(23 946 341 * 3.4) / 100	22 318 001
2047	814 164	**814 176**	(23 946 341 * 3.4) / 100	23 132 177
2048	0	**814 175**	(23 946 341 * 3.4) / 100	23 946 341

Table 16 Depreciation Calculation,(Source: Author)

The table below shows calculation of linear depreciation. The compute is done through thirty years period of time. This is the time of usage and lifetime of the property. In the first year of depreciation the index 1.4 used for multiplication. Rest of the years of depreciation are calculated with index 3.4 until the result equals zero.

4.12 The four European Trends in Logistics Real Estate

There are possible trends that can move the logistics real estate market in this and future years. It is difficult to predict how the real estate market will evolve and how its conditions will be changed. There is a possibility that another crisis will come and change the principles and current trends. For this reason, the issue and consequences are approached in a shorter time frame meaning until 2019. The next section covers four trends of the past and near future.

1. **Strong Momentum of real estate market**

The first trend is related to the movement of the market. The European logistics real estate markets built strong momentum in the year 2018.This effect would cause a positive condition for more expansion in 2019.

This trend is linked to the growth of rents.
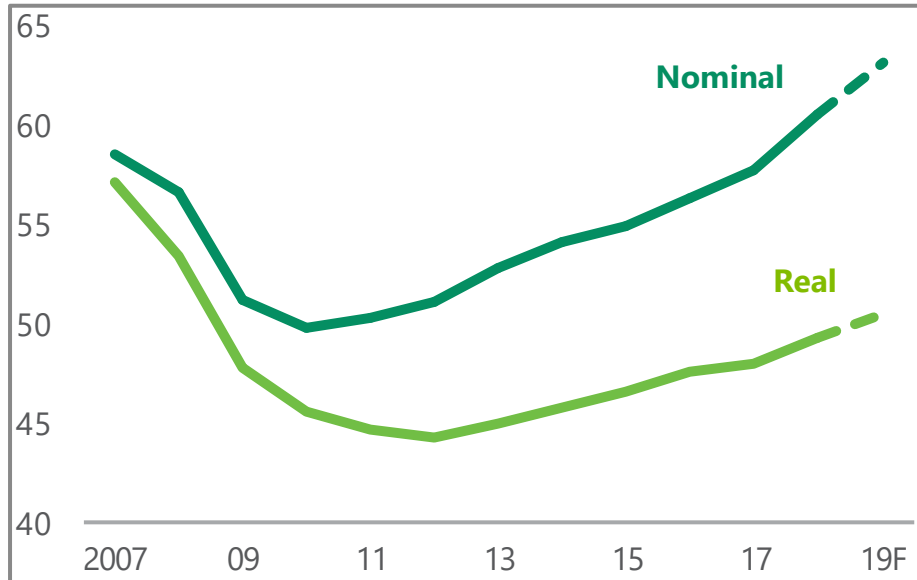
Figure 18 Development of rent in Europe,(Source: IMF,Author)

The graph display the development of rents in Europe from 2007 to 2018 and predicts developments next year. There are visible nominal and real prices. The x-axis shows years and the y-axis represents the value in euros per square meters per year. in 2007 and 2008 there was a significant drop and the curve went down. This meant very low rents and great vacancy. Over the time, from 2011 onwards, the curve continues to grow. Prices are expected to grow further also in following year.

Headline rental rate growth in Europe in %
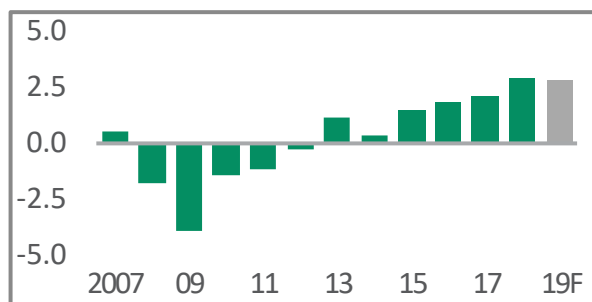
Figure 19 Headline rental rate growth in Europe, (Source: IMF,Author)

Headline rent refers to the rent level from which the price is derived and any discounts on the rent are deducted. The x-axis evidences the rent growth in percentages, the y-axis shows the comparative time of period from 2007 and indicate a condition for 2019. Due to crisis there is a huge decrease in rents in the year 2009. The situation is gradually changing and turning since 2013.

2. **Multiple Drivers Lifting the Markets Higher**

Logistics market fundamentals and main markets, Europe in MSQM.
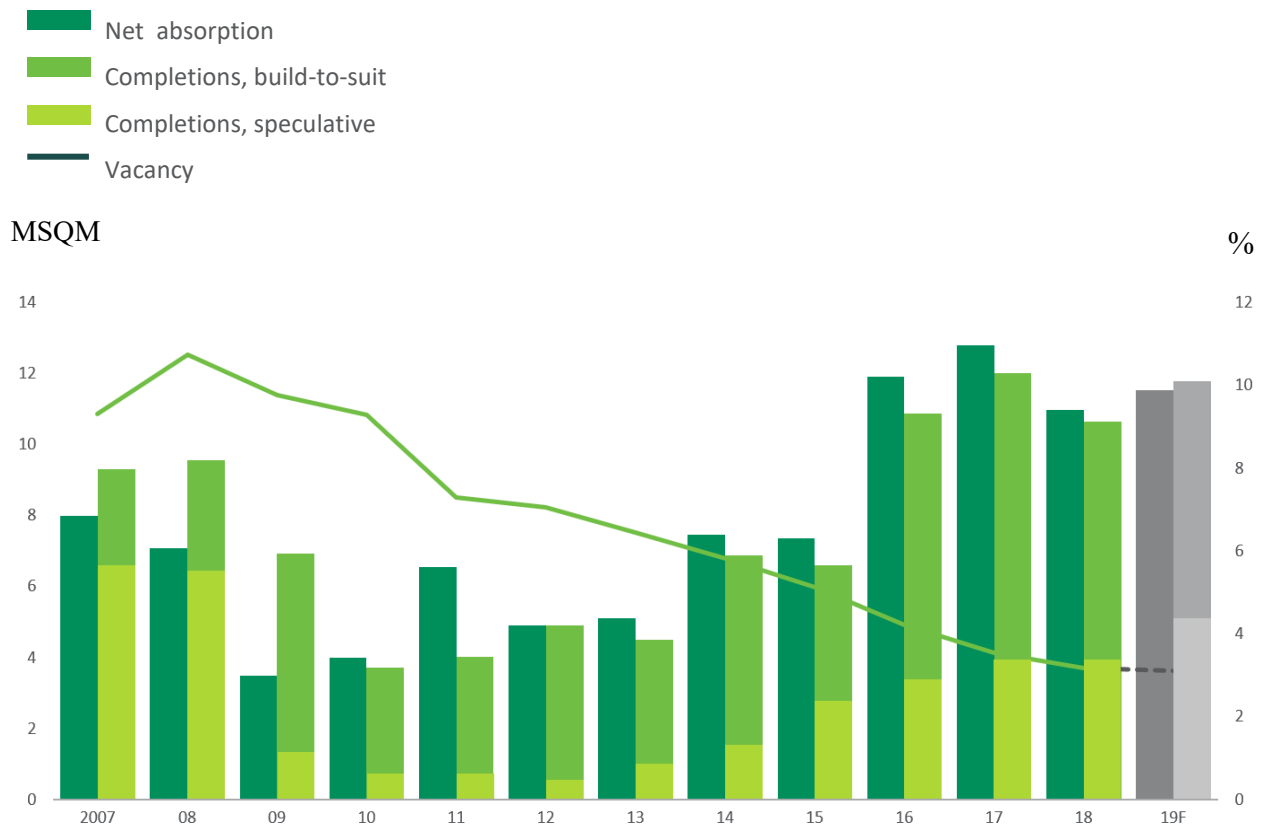
Figure 20 Logistics market fundamentals and main market in Europe,(Source: Oxford Economics, CBRE, JLL, C&W, Fraunhofer, Gerald Eve, Colliers, Prologis Research 2018)

The graph of market fundamentals interpret various market in the industrial sector in Europe, data are from the year 2018. Main Markets are among the largest 60 markets in Europe. These terms and explanations are given in the theoretical part of this study. these are net absorption, built to suit and speculative buildings in millions of square meters. There is an obvious decline in all directions during and after the crisis. After a period of crisis, more industrial buildings were built and rented again. Net absorption was at a record level in 2017. Speculative buildings were planned in greater numbers before the crisis. Due to information from developers in 2019, the number of speculative buildings will be higher than in the previous year. Built-to-suit buildings also called turn-key, declined in 2017 compared to 2017, and are expected to rise again in 2019 by a small percentage. Overall,

the vacancy rate has been decreasing since 2008 until present. Due to high occupancy and lack of lands, vacancy rates are expected to continuously decline.

Rising Development Costs

Over the time costs of developments and labor costs are increasing. The following section describes situation from 2007 to the present.

Logistics Real Estate Basket of Commodities, Europe

Index, 2007=100
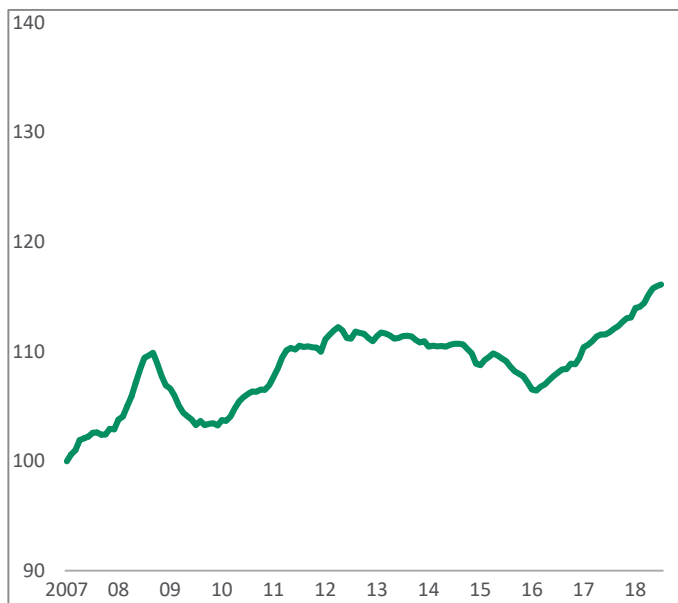
Figure 21 Logistics real estate basket of commodities in Europe,(Source: Eurostat, Prologis Research 2018)

Basket of Commodities includes, for instance, concrete, structural steel, roofing and paving, and fire protection pipe. Basket weights are 47.5% for concrete; 27.1% for structural steel, 17.0% for roofing and paving and 8.5% for fire protection pipe. A strong fluctuation and drops can be seen around the year 2008 and 2016 but given the growth in recent years, further growth is expected in the years ahead.

Labor costs construction sector, Europe

Index, 2007=100
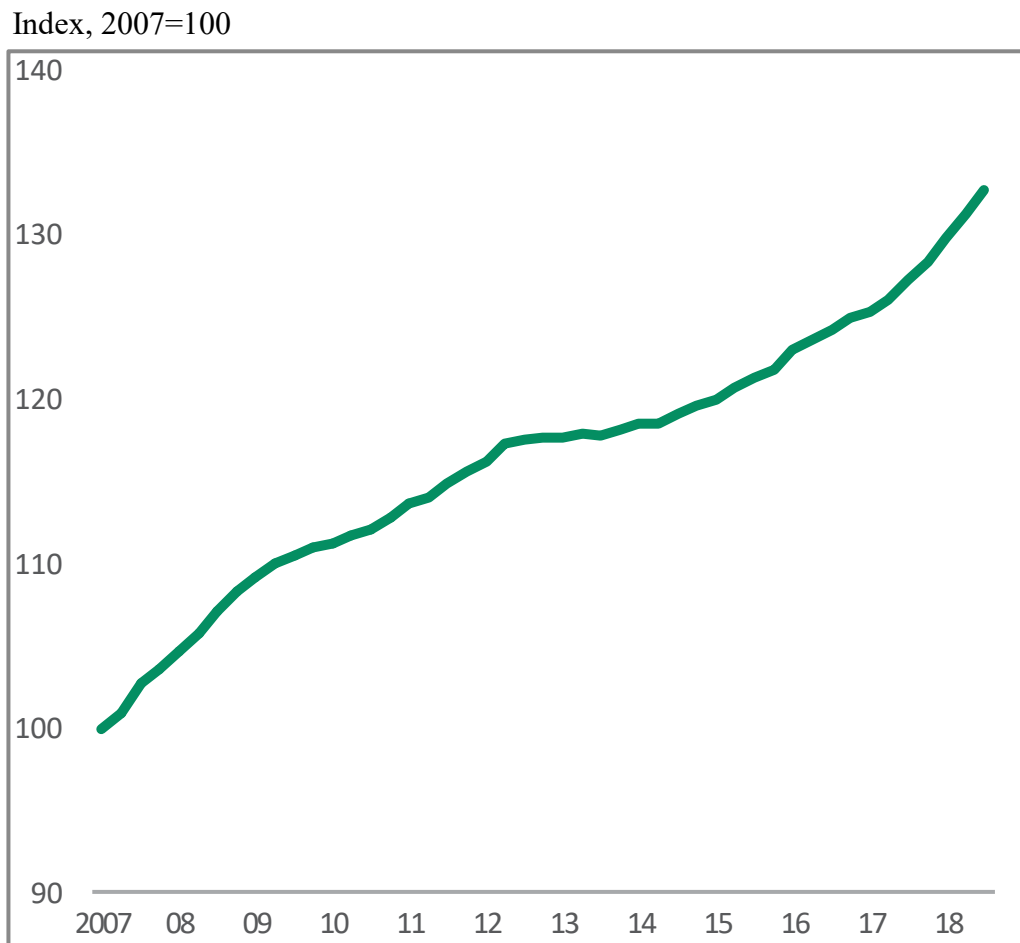
Figure 22 Labor costs construction sector in Europe, ,(Source: Eurostat, Prologis Research 2018)

In terms of labor construction costs, the graph above defines evolution of level of these cots. As is shown above, the curve is upward sloping from 2007 until last year. This case is similar to previous with the assumption of continuous rising in the upcoming future.

3. Growth is Spreading to the Continent

Diverse Rent Dynamics in 2019

- 🟢 Witnessed growth and stabilizing
- 🟢 Continued growth was driven by fundamentals
- 🟢 The initial phase of rent growth materialization
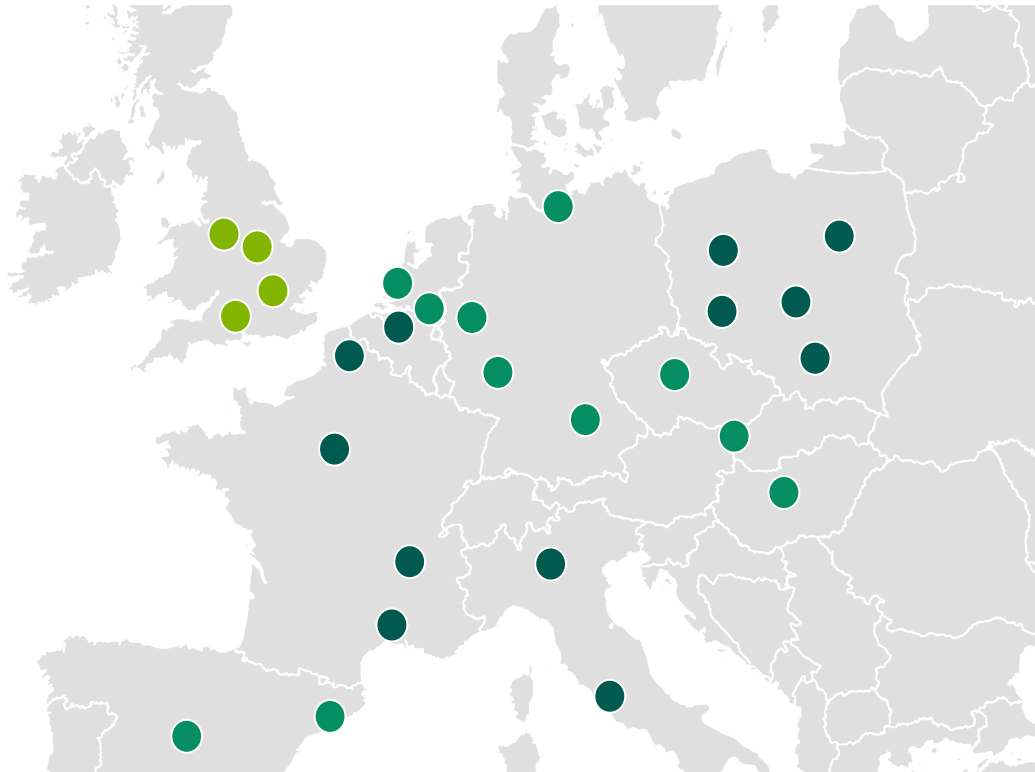
Figure Diverse Rent Dynamics in 2019 ,(Source: Eurostat, Prologis Research 2018)

The map above describes three different markets in Europe. The important markets has been selected to display its current stage. The first group of witnessed growth and stabilizing is mainly located in United Kingdom. There are rents higher than in the rest of European countries. The second group of Continued growth was driven by fundamentals can be found for instance in Spain, Germany, Czech Rebpulic, Slovakia and Hungary.

The third group of the initial phase of rent growth materialization is discovered to be in Poland, France, Belgium and Italy.

Growth Comparison Logistics vs. Economy, Europe

Index to 100 in 2007
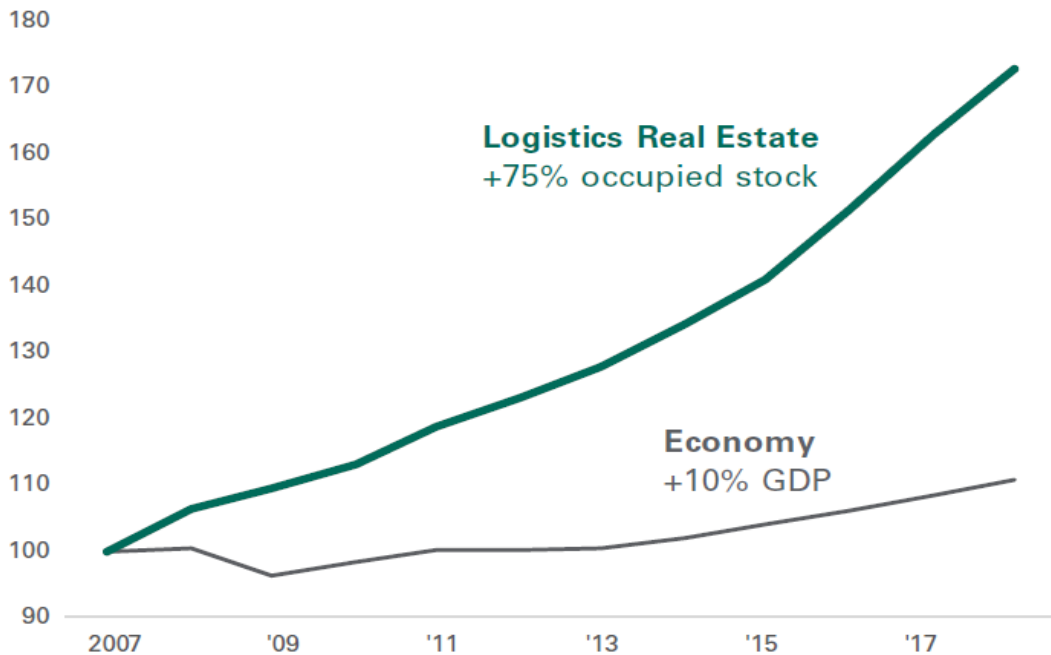
Figure 23 Growth comparison logistics vs. economy,(Source: Prologis Research, IMF, CBRE, JLL, Cushman and Wakefield, Colliers)

The graph above describes the following, in given time of period since 2007, the stock of industrial and logistics buildings has grown rapidly by 75%. Compared to this large increase, GDP increased by only 10 % in given time of period. This means that much of the DHP is basically shifting to warehouses. GDP is only gradually changing by 1% per year, while the number of warehouses is increasing enormously. In other words, retailers are moving to warehouses more than it was common in the past. Most of the companies have stored goods in their warehouse nowadays, and they no longer need a stony shop because they distribute directly from the warehouse.

4. The Logistics Sector Experts Growth Beyond 2019

Future Direction of Supply Chain Creates Opportunity

Distribution of Supply Chain Costs
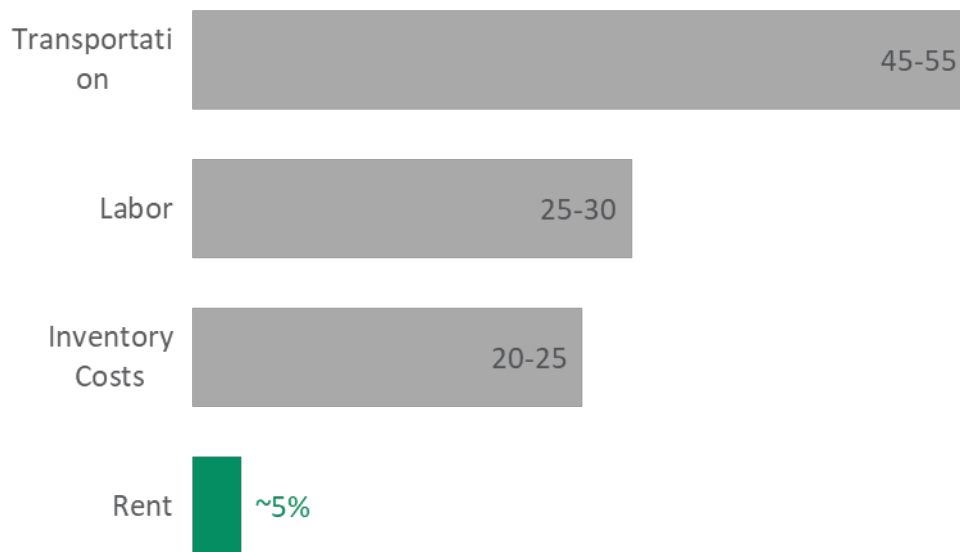
Figure 24 Distribution of supply chain costs (Source: Deloitte, IMS Worldwide, public company filings, Prologis Research 2018)

This chart deals with the division of company costs into main types. The largest cost of the company is transport, the second largest cost is labor, inventory cost and only a small part is rent. Only 5% of the cost is rental cost. Companies should concentrate mainly on transport, in practice it means 1% Cost savings in transportation or labor equals 15-20% spend on logistics real estate.

5   Results and Discussion

Following part of thesis includes deductions and calculated results, including comparisons from various factors.

5.1   Financial Results

The methods used contain cost analysis, net present value calculation, return on investment method and payback period of both scenarios.

Costs Analysis of Leasehold

Time Schedule	Leasehold	Currency
Total rent per 1 month	240 778 675	EUR
Annual rent	2 889 344	EUR
Rent for 10 year period	28 893 441	EUR

Figure 25 Costs analysis of leasehold,(Source: Author)

Based on set prices the total ten-year rent costs equals to 28 893 441 EUR.

Costs Analysis of Freehold

Type of Costs	Freehold	Currency
Sub-total Land Acquisition Costs	5.046.696	EUR
Sub-total Land Development Costs	125.842	EUR
Sub-total Hard Costs	17.261.778	EUR
Sub-total Soft Costs	1.449.326	EUR
Finance Costs	62.426	EUR
Total	23.946.341	EUR

Figure 26 Costs analysis of freehold,(Source: Author)

The cost of building the entire hall after the addition is 23 946 341 EUR. It is a initial and one time investment.

Net Present Value of Freehold

Period	Cash Flow In EUR	Present Value In EUR
0 - Initial Investment	-23 946 341.00	-23 946 341.00
1. year	2 721 731.00	2 720 370.81
10. year	3 278 319.00	3 261 972.39
Total :		5 889 581.36

Figure 27 Net present value of Freehold,(Source: Author)

Net present value is calculated only for freehold and based on cashflows from operation the hall and based on initial cost for construction the number 5 889 581 was obtained.

Internal Rate of Return of Freehold

NPV	0
Time Period	10 years
i	0.5 %
IRR	4.130 %

Figure 28 Internal rate of return of freehold,(Source: Author)

The internal rate of return of freehold was compute for 10 years' time period and results 4.130 %.

Return of Investment of Leasehold :

	Option 1	Option 2	Option 3
Price of pallet per day	3.50 CZK	3.60 CZK	5.00 CZK
Income from 12 moth of rent	2 721731 EUR	2 799454 EUR	3 888 129 EUR

Total annual costs	2 626 922 EUR	2 626 922 EUR	2 626 922 EUR
ROI	**3.60 %**	**6.57 %**	**48.00 %**

Figure 29 Return of investment of leasehold,(Source: Author)

The return of investment of leasehold covers three scenarios. Return of investment of the first option amounting to 3.60 %, the second option 6.57 % and the third option with the higher price per pallet amounting to 48 %.

Return of Investment of Freehold :

	Option 1	Option 2	Option 3
Price of pallet per day	3.50 CZK	3.60 CZK	5.00 CZK
Income from 12 moth of rent	2 721731 EUR	2 799454 EUR	3 888 129 EUR
Total annual costs	2 394 634 EUR	2 394 634 EUR	2 394 634 EUR
ROI	**13.66 %**	**16.90 %**	**62.36 %**

Figure 30 Return of investment of freehold,(Source: Author)

The first scenario of return of investment of freehold equals to 13.66 % , for the second option return is 16.90 % and the last option equals to 62.36 %.

Payback Period of Leasehold :

	Option 1	Option 2	Option 3
Price of pallet per day	3.50 CZK	3.60 CZK	5.00 CZK
Income from 12 moth of rent	2 721731 EUR	2 799454 EUR	3 888 129 EUR
Cost of Project	28 893 441 EUR	28 893 441 EUR	28 893 441 EUR
PP in YRS	10.62	10.32	7.43

The payback period of leasehold is determinate as following, the first option 10.62 years, the second option 10.32 years and the third option 7.43 years.

Payback Period of Freehold :

	Option 1	Option 2	Option 3
Price of pallet per day	3.50 CZK	3.60 CZK	5.00 CZK
Income from 12 moth of rent	2 721731 EUR	2 799454 EUR	3 888 129 EUR
Cost of Project	23 946 341 EUR	23 946 341 EUR	23 946 341 EUR
PP in YRS	8.80	8.55	6.15

Figure 32 Payback period of freehold,(Source: Author)

The payback period of leasehold results as following, the first option 8.80 years of payback period, the second option 8.55 years and the third option 6.15 years.

5.2 Factors influencing decision making process

There are various reasons that will encourage companies to make their way through rent or ownership. this section describes the different points of view from a business perspective. These decision-making processes vary considerably from renting or buying, for example, an apartment. When it comes to the decision of a person where to live, a person decides a lot according to the emotions and the overall feeling of the property. For instance, when a business is a logistics company, other factors are decisive, often very practical.

Location

Depending on preferences but site's location is probably the most important factor influencing decision making process. Other sub-factors are listed and explained below.

- Proximity to Customers & Suppliers – this is the key factor shaping location choice including proximity to economic centers which is connected to efficient infrastructure. Positioning to serve global routes which is important for firm´s business.

- Labor & Government – availability of the labor around and near the chosen location of warehouse, level of wages in neighborhood, it is also important to study some kind of regulation in the location.

- Real Estate – importance of tracking real estate costs within the area, also the most important indicator is availability of land and what are the possibilities

- Infrastructure – infrastructure is main factor for logistics firms, proximity to economic networks, connected transportation costs, road access to the hall and importance of proximity to different modalities.

The most desirable locations contains those within the Central, Eastern Europe and Benelux. Many of these locations oriented along international and global trade flows and they are near to European major consumer markets.

As for the location in the Czech Republic, the most sought after location is Prague followed by Brno. At the beginning of Q1 2018, the Prague region became comparable to Western Europe in terms of the importance of the site. The upcoming trend will be that the Brno region will cope with the Prague region in about half a year to a year. The market is becoming more and more attractive, and the rent and demand are starting to be equal to Prague region. The location of Brno is also attractive due to its strategic location in the middle of Austria, Austria, Slovakia, Poland, and is still close to Germany and Hungary.

Flexibility to move/relocation

The benefits of renting are, for example, that a building for rent is immediately available if it is exposed. There is a possibility of expansion in the rental, that is, if the tenant needs to increase the square and there is space available in the lobby, the lessee will arrange for the landlord to expand. another advantage is that the company does not have a building in possession. The rental period can also be influenced. if the client needs a contract for only three years, it is basically easy to agree with the landlord. While, when investor build a hall, he cannot decide after three years to leave the space and it would

have a financial impact on his business. Furthermore, it is also more convenient to be rented because the landlord is in charge of managing the entire premises and buildings.

6 Conclusion

The aim of this study was to compare two scenarios and help an investor to decide whether to rent an existing warehouse or purchase land and construct warehouse hall by himself. This particular case study were located in the region of Brno.

A different methods of comparison have been used to find out financial outcomes and possible returns. The cost analysis of leasehold and freehold was proceed, same as, payback period, internal rate of return and return of investment.

The financial analysis determine that more expensive is to rent the building than to construct it by themselves. The comparison of costs was done for a ten year period. The rent costs of the warehouse including office premises results, based on set prices, to 28 893 441 EUR. The second option was to used firms capital and invest it in purchasing land and then construct a warehouse hall. In cost analysis, the total costs are listed and detailed, in total amount of 23 946 341 EUR, meanings 594.41 EUR / square meters.

Net present value for freehold was calculated from cash flows coming only from the building. Cash flows were calculated based on number of pallet rented per day and based on set price. Int his case net present value corresponds to 5 889 581.36 EUR with the term of ten years. The internal rate of return of freehold was compute for 10 years' time period and results 4.130 %. The return of investment of leasehold and freehold covered three scenarios. Return of investment in general, resulted in favor of freehold, with higher rate of return in percentages. Since there are regular payments of rent in case of leasehold, payback period was calculated only for freehold scenario. The payback period of leasehold resulted as following, the first option 8.80 years of payback period, the second option 8.55 years and the third option 6.15 years.

When an investor makes a decision which option to choose, it is necessary to also consider soft factors apart from financial factors. These factors represents for instance location of the building. The location around Prague is heavily thickened and there are few

warehouse premises available. Most of the land is owned and the developer companies have their park fully leased. In general, users favor closeness to economic networks and focus on connected costs. Transportation costs are most important for automotive industry and logistics companies. On the other hand, retailers favors labor availability and proximity to customers.

Trends are rapidly changing, for instance, there are not as many stone shops as in the past. As e-commerce is growing and booming, businesses operate and sell their products online and then deliver straight to the customer's home. The customer's requirements grow and people are basically used having the order same day or next day delivered.

Another changing trend is the site selection strategy. Earlier about five years ago it was important to be close to the customer. Nowadays, the location of the hall is chosen, considering the available workforce in the area.

There are any rule in practise, but it follows from the logic of the case that if a company is creditworthy and has enough capital available immediately, it may use it to invest in the purchase of the building. On the other hand, tenants with small requirements of spaces and fewer pallets needed to store, do not manage to have such a financial burden. In the most cases, these firms cannot afford to take a loan and do not have immediate cash. Another reason is for short-term storage or seasonal goods. These types of companies prefer to rent because of possible flexibility. They can terminate the lease contract and, if necessary, ask the lessor for more space. It is difficult to predict the company's future growth and demands on storage spaces. Such companies should consider renting the premises.

The decision to choose freehold, also depends on the profitability of the company and the credit conditions it would receive from the bank. And whether the company can take the building into possession. Which option the company chooses depends on their exact preferences and needs. It cannot be said and precisely determined which path should a company take and what scenario prefer. In this cases an individual approach is necessary.

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7   Appendix

Rent schedule calculation

Time Schedule

Gantt chart: PR 0325 Prologis Brno DC1

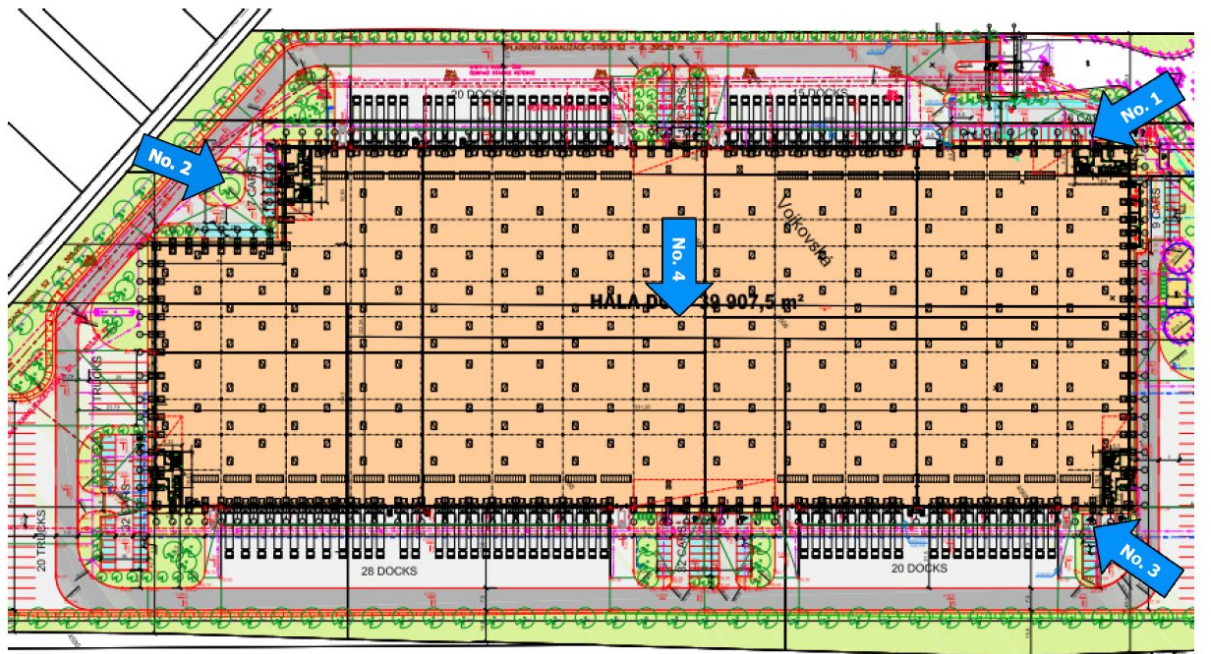| ID	Type	%	Begin	End
1	**Warehouse**	**57%**	**15.10. 18**	**8.5. 19**
2	Earthworks	100%	15.10. 18	21.12. 18
3	Concrete foundations	100%	12.11. 18	21.12. 18
4	Prefabricated concrete elements and steel roof structure	84%	7.1. 19	6.3. 19
5	Roof sheets and insulation + skylights	53%	28.1. 19	22.3. 19
6	Wall cladding	47%	28.1. 19	29.3. 19
7	Doors and dock levellers	12%	21.2. 19	27.3. 19
8	Floor Slab	0%	1.4. 19	26.4. 19
9	M&E Installation	31%	30.1. 19	8.5. 19
10	**Office**	**25%**	**21.1. 19**	**4.2. 19**
11	Shell	100%	21.1. 19	8.3. 19
12	Office fiting out	0%	4.3. 19	10.5. 19
13	M&E Installation	0%	11.3. 19	10.5. 19
14	Finishes	0%	8.5. 19	17.5. 19
15	**External works**	**30%**	**19.11. 18**	**17.5. 19**
16	Drainage and internal infrastructure - main pipes	70%	19.11. 18	25.1. 19
17	Stabilisation and construction layers	0%	11.3. 19	5.4. 19
18	Curbs and concrete pavers	0%	18.3. 19	17.5. 19

GOLDBECK

25.2. 19

Visualization

B./ PHOTOGRAPHIC REPORT

B.1/ LOCATION OF THE PICTURES

B.2/ PICTURE NO. 1 – STEEL CONSTRUCTION

B.2/ PICTURE NO. 2 – STEEL CONSTRUCTION, FACADE, ROOF INSULATION

B.2/   PICTURE NO. 3 – STABILIZATION, STEEL CONSTRUCTION

B.2/   PICTURE NO. 4 – ROOF INSULATION, STEEL CONSTRUCTION, ROOF SHEETS