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Crises in Stockholm's office market: Any signs today?

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Abstract

The office market in central Stockholm has since the financial crises in '08 showed remarkable growth and the current conditions are compared to the once under the previous crises. The commercial real estate market has had a substantial role in the last crises, as it is sensitive to cycles and has high indebtedness. The study aimed to evaluate the market today by comparing it with foremostly the crises in Sweden in the 90s and dotcom-era, but also the great recession in '08. Further, the perception of the market actors was analysed. The methodology was qualitative, as six professionals have been interviewed representing property companies, consultancy firms, bank, and institutional owners. The result shows more differences than similarities to the past crises, in both macro and micro level. Furthermore, consensus had an optimistic view of the future and the real estate market. Central Stockholm office market can be regarded as more professional and stable. However, there are uncertainties which were not present during the crises, such as coworking, market-financing and low-interest rate. The study suggests that the factor causing the next crisis is something the market does not know.

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Sammanfattning

Kontorsmarknaden i centrala Stockholm har sedan finanskrisen 2008 visat en stark tillväxt och de nuvarande förhållandena har jämförts med de som rådde under tidigare kriser. Kommersiella fastighetsmarknaden har haft en betydande roll i de senaste kriserna, eftersom den är känslig mot cykler och har hög skuldsättning. Studien syftade till att jämföra marknaden idag med främst kriserna i Sverige på 90-talet och dotcom, men också den stora finanskrisen 2008. Dessutom analyseras marknadsaktörernas uppfattning om riskerna för en kris i dagens kontorsmarknad. Metoden var kvalitativ då sex professionella intervjuades som representerade fastighetsbolag, konsultföretag, banker och institutionella ägare. Resultatet visar fler skillnader än likheterna med kriserna på både makro och mikronivå. Vidare hade konsensus en optimistisk syn på marknadens framtid. Centrala Stockholm kan betraktas som mer professionell och stabil. Det finns emellertid osäkerheter som inte var närvarande under kriserna, till exempel coworking, marknadsfinansiering och de låg räntorna. Studien tyder på att faktorn som kommer orsaka nästa kris är något okänt för marknaden idag.

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List of abbreviations

CBD - Central business district

CDO - Collateralized debt obligation

CPI - Consumer price index

GDP - Gross domestic product

ICT - Information and Computer Technology

IFRS - International financial reporting standards

IPO - Initial public offering

LTV ratio - Loan-to-value ratio.

MSCI - Morgan Stanley Capital Investment

NOI - Net operating income

REIT – Real Estate Investment Thrust

SCB - Statistiska centralbyrån

1. Introduction

1.1 Background

Today's market is characterized by historically low interest rates, aggressive monetary stimulus and a long-reaching economic cycle. The combination of these aspects, in addition to the increasing demand in contrast to limited supply for office spaces, has resulted in record low cap rates and high rents for commercial properties, particularly in Stockholm. Stockholm's current market condition raises questions regarding the sustainability of its fundamentals and valuations. Lundström and Nordlund (2019) draw similarities between today's market and the "real estate and bank crisis" of the 90s and point out that cap rates could be at unsustainable levels within specific segments in the current market.

Based on two reports from the consultancy firms JLL and Newsec (2019), the office market in Stockholm in 2017 experienced a rental growth of almost 13%, and rents are estimated to continue to exhibit one of the most substantial growth rates in Europe between 2019 to 2022. Hence, growth is already taking place from a high level, as Stockholm's office market has by far the highest prime rent in comparison to other Nordic and Baltic cities. However, the market is still witnessing an intensive and high liquidity flow, as foreign investors, private equity funds and institutional owners are allocating more capital towards the property sector as an investment alternative (Ohlsson, 2019).

Nonetheless, before the present state the office market in Stockholm has during recent decades experienced times of rapid decline in rent for offices, namely the financial crisis of the 90s and the dotcom bubble in 2000, to mention the most severe. The financial crisis of '08 also affected the market, although less severely, and the rents remained durable. The Riksbank (2017) concluded in a report that the commercial real estate sector held a significant role in these crises. The segment is known for its sensitivity to business cycles and financial changes, and the current conditions inspire the idea to examine whether the present real estate market might be in a threatened environment.

1.2 Purpose & Research questions

The purpose of the study is to evaluate the central Stockholm office market. This will be done by analyzing the perceptions of the involved market actors. Furthermore, the study aims to compare the market with previous crises, namely the property and bank crises of the early 90s, the dotcom era of 2000 and the global financial crisis of 2008. This comparison will be made by determining similarities and differences between the present market and the crises. To answer the study's objectives, the following research questions will be raised:

- What are the similarities and differences between today's office market and prior crises?
- What is the consensus among investors concerning the possibility of a downturn in today's market?

1.3 Expectation and delimitations

This study should contribute an updated view of the central Stockholm office market position. Hopefully, this will give readers an insight into how the market is prone to facing a situation similar to that of previous crises.

The study will focus on the office market in central Stockholm. Other property segments within the commercial real estate sector have been left out, as offices represent the most significant segment in central Stockholm. The geographical boundary was made as much of the total office market value consist within the market of central Stockholm. The study will furthermore be based on a few selected macro- and microeconomic factors. For example, the study has not brought up the gross earnings factor (bruttokapitaliseringsfaktorn), because of the similarities with the cap rate. Moreover, the selected candidates will be market participants, i.e., incumbent actors in the market of Stockholm.

2. Literature review

In this chapter previous research will be presented, covering theories and models, what characterises bubbles and how financial crises and real estate are interrelated.

2.1 Financial crises and the commercial real estate market

According to research, commercial real estate has played a significant role in major financial crises through history (Herring and Wachter, 1999; Mera and Renaud, 2000; Pugh and Dehesh, 2001), as real estate booms and banking crises often have been correlated (Herring and Wachter, 2003). Among real estate experts, consensus have agreed upon the positive feedback loop between real estate and credit lending, which creates systematic risks. The increasing property prices promotes more credit expansion from banks which further increases the prices, i.e., a feedback loop (Nabarro and Key, 2005). Likewise, the loop goes the other way around when property prices starts to fall, and borrowers struggle to repay the debt (Grover and Grover, 2014). In countries where focus is located towards bank-financing, the interplay between real estate and banking increases the risks for a country's economic growth (Herring and Wachter, 2003). Banks' capital will gain as real estate prices are rising, in the act of loan-to-value (LTV) ratios will start to decrease and banks will seem less risky. Thus, once the bubble burst, their capital will shrink and LTV-ratios to increase. This will affect the whole economy, and the real estate sector should be regarded as an important part of the entire economy as such (Grover and Grover, 2014).

Financial crises are often the result of bubbles in assets, i.e., when prices deviate from the fundamental value (Allen and Gale, 2000). The amount of leverage has a significant impact on the asset prices (Geanakoplos, 2010). Further suggested by Allen and Gale (2000), a financial crisis consists of three phases. The first one is financial liberation where the central banks decide to ease the credit lending. A prominent example is the financial crisis in '08, that started with the fall of the real estate market in US. The crisis root was from the overheated housing market after the ability to borrow had eased extensively (Crowe et al. 2013). The increased credit results in higher asset prices. This often continues for years and the asset prices inflates even more and turns into a bubble (Allen and Gale, 2000). The phenomena have been supported by Kindleberger and Aliber (2005), who suggested maniacs starts when government introduces credit easing which causes expansion of money. In the second phase, the bubble burst and asset prices start to decline rapidly, which often happens in a short time interval. In the third phase, defaults occur among firms and actors who have bought assets at the inflated prices (Allen and Gale, 2000). Bubbles in assets can occur for many reasons, but foremostly they're caused by credit easing that increases liquidity in the market (Allen et al. 2009; Allen and Gale, 2010). Furthermore, a study on six cities across Asia examined commercial real estate prices to investigate the impact of increased liquidity. The findings pointed to how liquidity increases commercial real estate values and the yields to decline (Kyung-min et al. 2018).

Research have additionally presented that the real estate market is highly sensitive towards increases in interest rates, both explicit and implicit, and which have triggered crises. The increases of the rates cause construction to pause, vacancy rates to increase, office rents to fall and not least financing to be limited (Mera and Renaud, 2000). When the bubble burst, the sharp decreases in prices threatens the financial stability. Thus, it is rarely the bubble itself that matters, but rather how the assets it is

funded as leveraged balance sheets are more sensitive to decreasing asset values (Crowe et al. 2011). This can be illustrated by the dotcom crisis, as it was not as severely on because of lower levels of leverage. Whereas in '08, the high leverages proved to have had a significant role in the price declines of the Real Estate Investment Trusts (REIT) prices (Sun et al. 2015). Therefore, crisis financed with lower leverage and less bank involvement becomes less economically severe (Crowe et al. 2011).

Inflated bubbles can also be created by market imperfections and psychological factors as such (Dilén and Sellin, 2016). Market imperfection can be noticed when investors benefit from investing in bubbles. The imperfection occurs partly of investors that invest with other's money, such as with credit or peoples' savings. This emphasize the investor to take riskier bets which can lead to large profits if their investments turn out well, or in the other cases, lose someone else's money, making them be less rational. The physiological mechanism strengthens the market imperfections, as investors might fear of missing out, or feel bad if their portfolios do not perform as well as others holding the inflated assets. A bubble's appearance is not easy to interpret and Dillen and Sellin (2016) point out that there is usually a positive and strong fundamental development that initially causes the asset prices to rise. Thus, investors in a booming economy is usually too optimistic, which in turn creates a bubble. Rosengren (2017) further strengthens the argument and expresses that for most asset categories, positive trends turn prices to increase outside the justified range, as optimistic investors in a booming market drive prices to diverge from the fundamental value and the risk of creating a bubble increase.

Lind and Lundström (2009) discussed how the volatility in real estate prices and bubbles are caused by the unrealistic market expectations and physiological factors. The price of an asset is driven by the future cash-flow and determined by the capitalization rate. Hence, Lind and Lundström outline the inefficient market due to the tendency of myopic thinking and flock mentality or herd behaviour. Myopic thinking concludes that the actors in the market find it difficult to understand and accept a future situation where the conditions depart from the temporarily market conditions. Flock mentality or herd behaviour assume that actors will act like others in the market. The behaviour is associated with the fact that no one wants to stand out and it is better to relate to what the market considers correct. Behaviours like these causes the market to become irrational and assets to deviate from its fundamental value (Lind and Lundström, 2009).

Another relevant factor that causes inflated real estate prices is the discrepancy between supply and demand. Compared to other assets, in short-term, the commercial real estate sector is known for having a fixed supply and it takes time before the prices are adjusted by additional supply (Herring and Wachter, 1999). The inelasticity of commercial real estate, in comparison to other property types, makes it more subject to bubbles as supply will not catch up with demand immediately (Grover and Grover, 2014).

2.2 Models of financial crises

Reinhart and Rogoff (2009) claim that financial crises are inevitable and recurring events. In periods of economic booms, investors and experts tend to believe that the financial crises are something in the past. And the market is now smarter, doing things better, and have learned from the past crises. Furthermore, investors and experts will argue how “this time is different” from the past crises, which became initiated as ‘this-time-is-different-syndrome’. Based on data from 66 countries, the authors instead showed how financial crises occur densely in short-time intervals and will keep recurring in the future. The essential themes among the crises are rising asset prices, stagnating real economy, and expanding credit which leads to high indebtedness (Reinhart and Rogoff, 2009). The high indebtedness creates systematic risks and countries becomes vulnerable to shocks. In summary, times may change, locations may change, actors may change, but human nature does not (Reinhart and Rogoff, 2009).

In the book *Maniacs, Panics and Crashes* by Kindleberger and Aliber (2005), a model of financial crises was presented. The model involved the following steps to describe how a crisis is built up and explaining what leads to the burst of the bubble;

The boom often starts with displacement, which is described as when new opportunities or new markets are created. This can be a result of new technology or financial liberation. Investors become opportunistic and start to profit from the euphoria, e.g. from assets such as stocks or real estate. Eventually, credit will be used to further profit from the increasing prices. And, the increasing prices will reward speculative behaviour by the investors which continue to inflate the bubble. In the euphoria, focus will be towards capital gains and not income returns from the assets. After all, the euphoria will eventually end as a result from increased interest rates or decreasing asset prices. This in turn causes distress among investors who have been speculative, as firms are starting to failure. On account of distressed investors that want to sell their investments, an oversupply of assets is created, which result in declining prices making the bubble to burst and the crisis is started (Kindleberger and Aliber 2005).

3. Theoretical Framework

The theoretical framework consists of models and concepts relevant for the study's aim. The first part consists of fundamental theory about the real estate sector and how it is affected by business cycles. In the later part, behavioral economics is presented which is relevant when studying crises.

3.1 Real estate market

Space market

The space market refers to the rental or usage market in which tenants and landlords exchange money for the service of leasing spaces. As with most markets, the space market is determined by supply and demand, which in turn influence the market rents and occupancy. The space market can be further divided into sub-markets, where similar premises may have different equilibrium rents. This occurs since the demand, i.e. tenants, requires specific types of spaces in particular locations which differ among sub-markets. Moreover, demand works as a function of population growth, GDP, rate levels and so on. The equilibrium between demand and supply determine rent levels, where all else being equal, a change in either supply or demand will alter the rent and vacancy levels (DiPasquale and Wheaton, 1992).

Asset market

The asset market refers to the transaction market, where one side exchanges money for the other side's asset, in this case property. The asset market competes with other asset classes, such as bonds and stocks. The value of an asset is dependent on the cap rate and willingness to pay, which in turn consists of three significant determinants. First, the 'opportunity cost of capital', which denotes alternative returns from other assets, often referred to as the risk-free rate on 10-year government bonds; second, the growth expectation of future cash flow from increasing rents; and third, the risk premium, which is the compensation for holding an asset and its risks. The risks, such as vacancy risk and liquidity premium, originate from both the space market and the capital market (DiPasquale and Wheaton, 1992).

The asset market is less segmented than the space market, since the return from different properties is still a return regardless of the location or type. That is to say, the prices for two properties with the same calculated risk, rents and expected cash flow would hold the same price, as the same return on investment, i.e. the cap rate, is required. Consequently, real estate is a capital good whereby the capital market determines the price. Likewise, for all markets, if everything else is held equal, an increase in demand increases the value, while an increase in supply decreases the value for properties (DiPasquale and Wheaton, 1992). The Swedish asset market can be separate into two main categories, residential- and commercial properties. This study will focus primarily on commercial properties and more specific on office buildings within the municipality of Stockholm.

The different real estate categories:

Residential

- *Multi-family*
- *Single-Family*

Commercial

- *Office*
- *Retail*
- *Logistic/industrial*
- *Hotels*
- *Public/Social*

More, almost 50 percent of Sweden's total market value, concerning all properties, is allocated in the Stockholm market. Further, of the total property stock, around 55 percent is offices, 20 percent is retail, and the rest spread between multi-family, industrial, and hotel properties (Riksbanken, 2011). The ownership for commercial real estate in Stockholm consists mainly of larger entities, such institutional and public companies, i.e., Vasakronan, AMF, AFA, Hufvudstaden, Fabege who owns a substantial part of the market (Nordlund and Lundström, 2011).

3.2 The different parts of the Real Estate market

To explain the market's various driving forces and how these previously mentioned markets are interrelated, the 'four quadrant model', shown in Figure 1, was introduced by DiPasquale and Wheaton. The models' quadrants represent the stock of available space, rent level, asset prices and the rate of new construction in the market, while the square in the center of the figure represents the long-run equilibrium (Geltner et al. 2006).

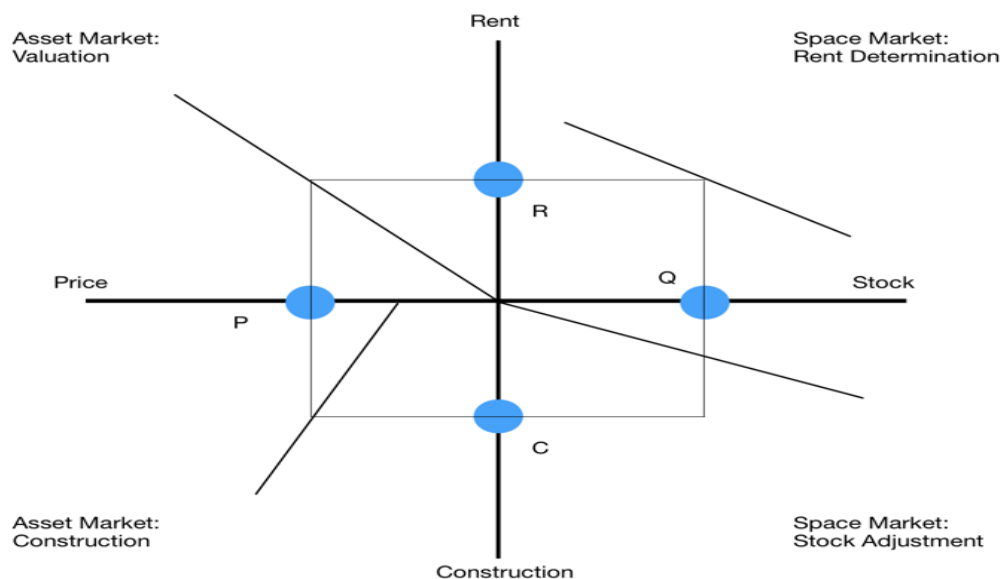


Figure 1: Four-quadrant model. Source: DiPasquale and Wheaton, 1992.

Following the famous four quadrant model, the model below, shown in Figure 2, is a development of the former. It attempts to display more clearly the impact of economic growth and the capital market on different markets, i.e., the cycle between the space market, asset market and construction market (Geltner et al. 2006).

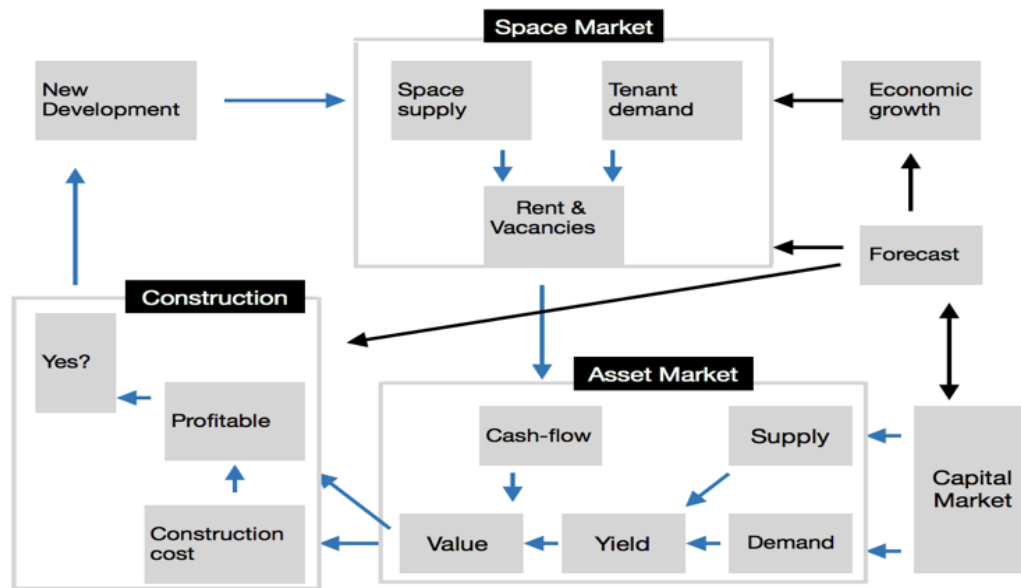


Figure 2: Model of the asset, space and construction markets.
Source: (Nordlund, B. Lundström, S. 2011: Geltner et al. 2006)

Asset market

The asset market in Figure 2 illustrates the relationship between the expected value derived from yield and cash flow. The yield is affected by the supply and demand from the capital market, which refers to the amount of assets available and amount of investor demanding it. Cash flow originating from the space market and the relation between supply and demand. This emphasises how the valuation and willingness to pay for a property is a matrix of micro- and macroeconomics (Geltner et al. 2006).

Space market

The space market can be seen as the 'market's mother', as the value of a property is generated primarily by cash flow and the expected growth rate of future rents. The space market plays the role of filling up spaces within the market. Demand comes from tenants who want to exchange money for the usage of space. A change in the demand will affect the rent levels and vacancy levels, which in return will affect the cash flow; the same law applies to the supply (Geltner et al. 2006).

Risk within the space- and asset market

A properties "total return" is determined on both the assets capital growth (cap rate) and the income return (cash-flow). That is, what matters for an investor is precisely two significant risks; cash-flow and cap rate. The cash-flow risk lies within the space market, that is the equilibrium between the supply and demand in the market. The second risk, cap rate, is founded in the asset market that causes changes in the opportunity cost of capital, "discount rate" or more specific "cap-rate" (Geltner et al. 2006).

The cap rate, C , is a measurement of how much investors are willing to pay for an investment. The term yield can also be used, but in this study, cap rate will be used. For commercial real estate, the cap rate is calculated by dividing the net operating income, NOI, with the market value, V .

The NOI can be defined as the rental income minus operating and maintenance costs (Clayton and Glass, 2009). Therefore, the cap rate can be calculated with the following formula which represents the amount of income per dollar paid for an asset (Geltner et al. 2006):

$$C = \text{NOI}/V$$

Theoretically, C , can be seen as the investor's weighted average required equity return and cost of debt. It can be regarded as a function of the discount rate(k) and expected future changes in the cash flow(g) (Clayton and Glass, 2009). $C=k-g$

The discount rate(k) can be further derived to the following formula:

$$C = (k_{rf} + RP) - g$$

- k_{rf} ; Yield on government bond
- RP ; *Real estate risk-premium*
- g ; *Property income growth expectations*

Construction market

The construction quadrant in Figure 2 visualises the relationship between valuation and level of construction for new developments. When the market value for a specific property type is sufficiently high, i.e., to cover the construction cost, there will be an incentive in the market to initiate construction of that type. This will eventually increase the supply and affect long-term rent levels to meet equilibrium (Geltner et al. 2006).

In Sweden the ‘planning and construction process’ that controls new developments often affects the progress of construction, which can take several years to finish. This inelastic process can cause issues, as experienced during the financial crises of the 90s. When the economy started to trend downwards, an additional supply of office spaces entered the market when the demand was already decreasing. This further increased the vacancy rates as the market could not absorb the new supply, which worsened the decreasing rent levels. The same tendency occurred during the dotcom era in 2000. What is notable is the time taken for the market to absorb spaces following crises (Nordlund and Lundström, 2011). Figure 3 illustrates the phenomena of misjudging supply and demand in a booming market.

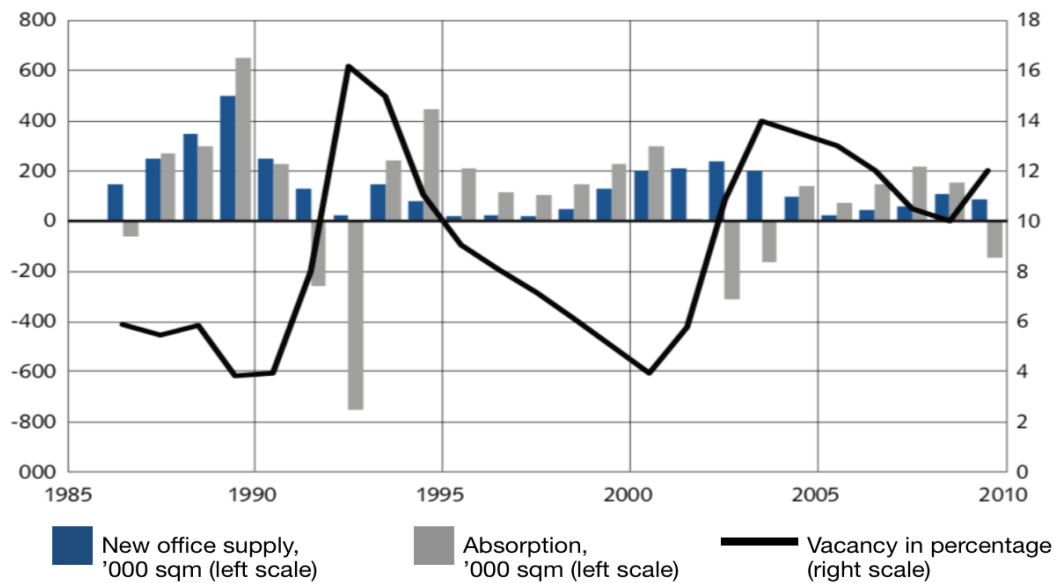


Figure 3: Graph over new development and demand for space. Source: (Nordlund Lundström 2011)

3.3 Market- and Real Estate Cycle

Figure 4 displays the interaction between the overall economy, credit, and the real estate market. According to the model of Barras (1994), booms and recessions in the real estate market are driven by the real and monetary economy. Typically, during an economic upturn the real economy creates demand for spaces, as shown in Figure 2. This, combined with stimulation from the credit market, increases the need for properties and the asset class. The shortage of supply increases the rent and lowers the yield. Thus, as the economy starts to crumble, the demand will decrease, and yields rise, which eventually causes the real estate market to fall or crash.

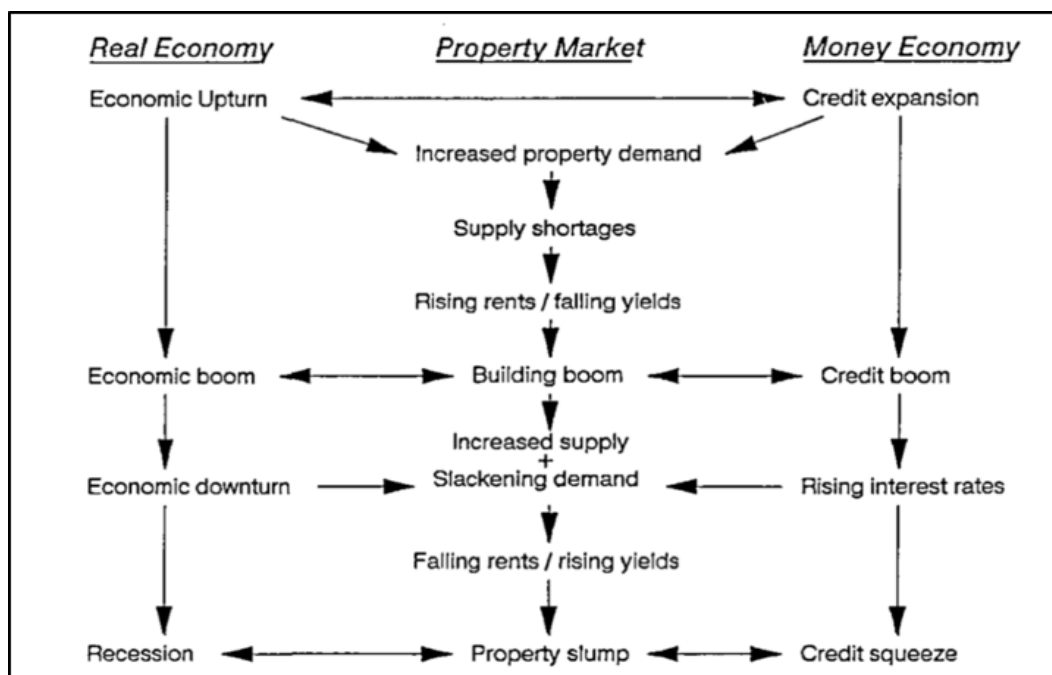


Figure 4: Scheme of the real and money economics connection to the real estate market. Source: (Barras, 1994)

To further explain a property market cycle, one can picture in Figure 5 an orbit and a linkage between increasing demand, which increases the liquidity in the market, and in turn produces a higher valuation. This further boosts the financial leverage of credit expansion from banks and investors (Clayton and Glass, 2009). A booming market often starts with a demand shock. In an up-trending market, one possible explanation for increasing demand is excessive trading among overconfident investors. Increasing liquidity in a market can occur with the presence of uninformed or over-enthusiastic investors, which causes divergence of the asset price from the fundamental price. Furthermore, if the price level increases, banks and mortgage lenders accept more lending as the loan-to-value (LTV) decreases and financial leverage rises. This, in turn, increases the demand further, which stimulates the liquidity; hence the loop is set into motion (Clayton and Glass, 2009).

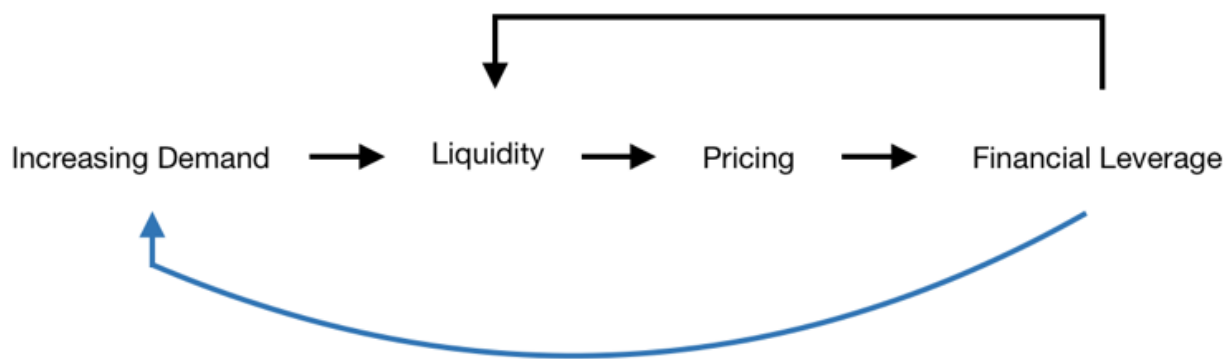


Figure 5: The relationship between demand and credit. Source: (Clayton and Glass, 2009)

Bubbles

Bubbles are referred to when an asset's price increases to unsustainable levels within a certain amount of time. What distinguishes the bubble is when the market price for the asset becomes disconnected from the fundamental, i.e., the asset's ability to generate operating cash flow to support its value (Geltner et al. 2006). What is noticeable in previous crises and bubbles is the overvaluation of the underlying asset, in either real estate or tech companies. The cap rate within the asset market can be a way to measure bubble tendencies since this implies the required return for invested capital (Fanning, 2014).

3.4 Cycles

In general, the real estate market can be considered as two separate sub-cycles, which adequately explains why these two markets, the asset and space markets, move separately at times (Fanning, 2014). The real asset market proceeds through both physical and financial cycles. Physical cycles are related to the supply and demand of spaces, which in turn affects rental growth rates. The financial cycle ensures capital flow to the real estate market, which affects prices for properties (Fanning, 2014). Although these markets are in a relationship they are not always entirely correlated.

The fundamental cycle can also be defined as the ‘long-term real estate cycle’, which is a function of changes in employment, population and income. The financial cycle can be called the ‘short-term real estate market cycle’. The primary driver of the asset market is the supply of cash for investment and demand for credit, and thus the level of interest rates. Therefore, the development and acquisition of real estate is highly sensitive to interest rates (Fanning, 2014). It is important not to consider the transaction market as being isolated but rather as part of the large capital market. Moreover, the return from an investment in real estate can come from rents of users, resale of property in the capital market, or both. Historically there has been divergence between the two markets, especially around times of bubbles.

The real estate cycle is considerably affected by the overall economic cycle. The economic cycle can be described as moving in four different stages. The first stage is expansion, where employment, production, income and prices are rising. Second comes the stage where employment and capacity are at their fullest and the cycle reaches a peak. At this stage economic growth is still positive but is slowing down, and inflation is rising. The next stage is contraction where employment, production and income are declining. Prices are stabilised, and signs of deflation can occur. The last stage of the cycle is recovery. The economy has bottomed, and employment and manufacturing capacity are supported. Once the bottom is reached the economy starts to recover, and the next expansion of the economy begins (Fanning, 2014). The fundamental real estate market follows a similar pattern to the overall economy, while the transaction market is affected by many other factors such as the cost of capital, alternative investment opportunities, taxes, foreign investors, and so on.

3.5 Behavioral economics

Herd behavior

Herd behavior is the tendency when investors are following or mimicking the action of other investors. The behavior occurs when one makes decisions and actions based on the belief that other investors have more or superior information. It provokes investors to make similar errors as they are following each other (Sharma and Bikhchandani, 2000). Also, this kind of behavior can happen when an investor fears that other ones will outperform him/her.

Herd behavior was prominent under the dotcom-bubble in 99- and 00s. Where both private and professional investors bought IT-stocks for massive amounts of money, mostly because they saw the stream of investors to the sector. A more prominent example could be the recent global financial crisis in 2008, that originated from the housing bubble, where part of the answer to why it occurred could be attributed to herd behavior of irrational house buyers.

The anchoring effect

In economics, values are estimated by starting with an initial value, and after that, adjustments are made to reach the final estimation. The anchoring effect demonstrates that humans tend to connect to the initial value, even though it does not provide any guidance to the final estimation. Besides, research has shown that these adjustments are often not sufficient, and people tend to ‘anchor’ to the first information being given (Tversky and Kahneman, 1974).

4. Background

In the background, the first part will present the studied crises. Afterward, graphs covering the studied macro and microeconomic will be outlined and defined. In the last part of the chapter, an explanation of structural factors concerning the office market will be presented.

4.1 Real Estate Crises

The Swedish financial crash of the 90s

One of the biggest crises witnessed by Sweden was the real estate and banking crisis in the 1990s. According to Bäckström (1998) there were several reasons behind the crisis, but it was built mainly on the impulsive expansion of capital supply and demand for credit.

During the 70s the Swedish economy ended up in a position where it stood and trampled. The economy of the 70s faced low growth, high unemployment and high inflation. In the late 70s and the early 80s, the Swedish krona was devalued a total of three times. As a result, exports became competitive with the outside world and the economy picked up. Unemployment fell, and companies entered positive growth. Furthermore, the number of official employees increased within both the private and government sectors, which led to a rise in demand for commercial properties throughout the 80s (Finanshistoria, 2010).

Before 1985 firming regulations were in place in the financial system, which meant among other things that commercial banks had distorted competition from financial companies. Thus, in 1985 the financial system became deregulated, and together with increased demand for credit a booming market for real estate was created (Bäckström, 1998). This deregulation meant that the banks had reduced security requirements, and as a consequence property could be borrowed at higher levels. As credit lending also became deregulated, banks began to lend to both real estate and finance companies. The finance companies, in turn, loaned money to real estate investments and began to compete with each other to take market shares. This ultimately resulted in extremely high mortgages among real estate companies, and commercial properties could have an LTV of over 100%. Since interest rates were high, negative cash flows were considered normal due to high inflation. Furthermore, new development and increasing supply started to enter the market as a result of the credit expansion and booming market (Finanshistoria, 2010).

In the early 90s, Sweden started to face difficulties because increases in wages and prices, in combination with a fixed exchange rate, weakened the Swedish export, as its prices could not compete with those of other countries. The economy started to slow down as industrial production started to fall, and unemployment rates began to rise. Furthermore, in the autumn of 1989 the exchange control was abolished, which enabled Swedish investors to invest in foreign countries. This resulted in capital flushing out from Sweden, and demand for real estate began to decrease. Short-term interest rates increased in an attempt to attract and retain capital. High interest rates and declining productivity caused property rents and real estate prices to fall rapidly during the 90s. Subsequently, banks began to suffer heavy credit losses since they had substantial capital allocations in the real estate sector (Bäckström, 1998).

During 1991 the Riksbank tried to defend the Swedish crown against the ecu (European Currency Unit) by increasing the interest rate even further. This act resulted in further credit losses as real estate could not meet credit obligations with falling rents and prices. The banks almost collapsed because of the risky credits in the real estate market, and the government had to help them out by lending rate-free loans and money from shareholders. In 1992 the Swedish krona was considered overvalued and even more capital was withdrawn from Sweden. The last attempt to save the Swedish krona was to increase the repo rate to 500%. Even so, this did not result in any improvements and the Riksbank had to release the fixed exchange rate against the ecun and change it to be variable. The aftermath of the crisis forced banks to take over extensive numbers of properties as many real estate companies went bankrupt (Bäckström, 1998).

The dotcom bubble: the recession of 2000-2002

After the crisis of the 90s, Sweden's economy recovered through the steady growth of the ICT industry (KI, 2001). From 1993 to 1999 the ICT industry went from representing 3.7% of the GDP in Sweden to 5.7%. Therefore, the industry was an essential factor for economic recovery during the 90s. In addition, the sector represented 30% of the total increase in employment from '93 to '00. Much of this growth was derived by consultancy and data service firms (KI, 2001). In the late 90s more people obtained access to the internet at home, and the dotcom boom became evident (Business insider, 2016). Subsequently, ICT companies lacking structural stability and barely making money could do IPOs, with valuations of hundreds of millions of dollars. During the 90s the Nasdaq index increased from 600 to 5,000, representing 700% growth over four years. During this time some economists started to speculate about a 'new economy' and posited that companies' profitability was becoming less relevant (EFN, 2017).

Concerning the real estate market, this era was especially significant for the space market, since productivity and the number of official jobs in Stockholm was increasing during the late 90s as a result of the booming ICT sector. Office rents started to grow in the market, and new supply was added to catch the boom. However, the economic slowdown in the US moved the Swedish economy into a downturn between 2000 to 2002 and triggered the bursting of the dotcom bubble (KI, 2001). In the years following, the Stockholm office market experienced an extensive decline in rents and high vacancy levels as an aftermath of speculative leasing and construction. During the highest peak under the dotcom boom, Stockholm had a prime office rent of approximately 6,000 sek/sqm (Fabège, 2018). Rents in Stockholm decline sharply during dotcom crash, and office rents finally recovered in 2005. The vacancy rate in Stockholm peaked at 14% in 2003 after the burst.

The dotcom crash did not have the same impact on the macro level as the crisis of the 90s or of '08, which is visible in the GDP gap shown in Figure 9, in chapter 3.2.1. Notably, however, this crisis did impact the real estate space market, as observed in the graphs shown in section 3.2.2 on micro-level indicators. From the figures in chapter 3.2.2, it can be seen that the period prior to the dotcom bubble was characterized by rising rents and low vacancy rates. Since the start of the recession, it can also be noted that rents decreased and vacancy rates reached the same levels as during the financial crisis in the '90s.

The financial crisis of 2008: the great recession

After the dotcom bubble, FED, the central bank of the US, lowered U.S. interest rates in order to stimulate the economy, which had been in recession since 2000. The beginning of the financial crisis in '08 originated from the late '90s, as during that time regulations of lending to homeowners had been erased. The combination of this and the low interest rates which followed the crisis produced a rapid price increase of homes in the US (Aktiespararna, 2008). As a result, financial instruments such as collateralised debt obligations (CDO) and credit default swaps (CDS) were created. These instruments helped homebuyers to afford housing but were also a large component of the financial meltdown. The underlying success of these instruments was the continuous increase in home prices. However, when the economy started to improve, the FED increased interest rates, and as a result home prices began to fall. The real financial crisis started when the instruments became worthless due to falling house prices, and large investment banks faced a problem. To save the banks the government had to step in and offer assistance with crisis packages (Aktiespararna, 2008).

The real estate market in Stockholm was affected by the crises in the form of decreasing rents, increasing cap rates and strained credits. Furthermore, as discussed in the macro (chapter 3.2.1), the financial crises severely affected Sweden and its economy. However, the GDP in Stockholm remained positive compared to the overall country (Faberge, 2019), as a result of underlying firm productivity in Stockholm and the demand for office spaces with respect to the low supply, which dampened adverse effects. When the recession hit Sweden, to stimulate the economy the Riksbank lowered the repo rate. Between October 2008 and July 2009, the repo rate was reduced by 4% and reached historically low levels of 0.25%. Moreover, the Riksbank offered to lend to the commercial banks in Sweden for liquidity. In 2009 the Riksbank wrote in their financial stability report that losses among commercial properties would be lower than in the '90s, as interest rates were lower (Riksbanken, 2009c). Finansinspektionen (FI), also reported that commercial real estate would benefit since the interest rates were lower (Finansinspektionen, 2009a). These statements held, and as predicted the effect on the real estate market was less severe. In 2009 rents and property prices started to increase again from the adjusted levels of 2008 (Riksbanken, 2010).

4.2 Market: Macro and Micro

“The macro-level cannot be separated from the micro-level. Macro-level decisions are ultimately implemented at the micro-level, and the quality of the macro-micro link is a key to long-run success in real estate investment.” – Geltner et al. (2006, p 522)

4.2.1 Macroeconomic overview - Sweden

Macroeconomics is the field within the economy that interpret all markets as it affects the overall nation. Macroeconomics impact on the real estate market is focused on the asset market, that in return, affect the cap rate, supply, demand for the asset, and valuation (Geltner et al. 2006). The following paragraphs cover the macro-factors studied to create a clearer understanding of how the market looked during the various crises and the current situation. According to the theory, aspects as GDP, rates, inflation, unemployment, and currency are parameters that are of great importance for the market. Therefore, these factors in particular, will be explained in more detailed below.

GDP

The diagram shown in Figure 6 displays the real GDP in Sweden from 1981-2019 (Q1). Economic growth, GDP, is considered to be an essential impacting factor concerning the overall space, asset, and construction development of a country (Riksbanken, 2010). Empirical studies performed by U.S. consultancies have proven a high correlation between the total return of commercial real estate and GDP. The study can be applied to other markets as they tend to behave in similar ways (Riksbanken, 2010). The graph presented in Figure 7 displays the total return from commercial properties (blue line) and GDP growth (grey line) for the U.S. market.

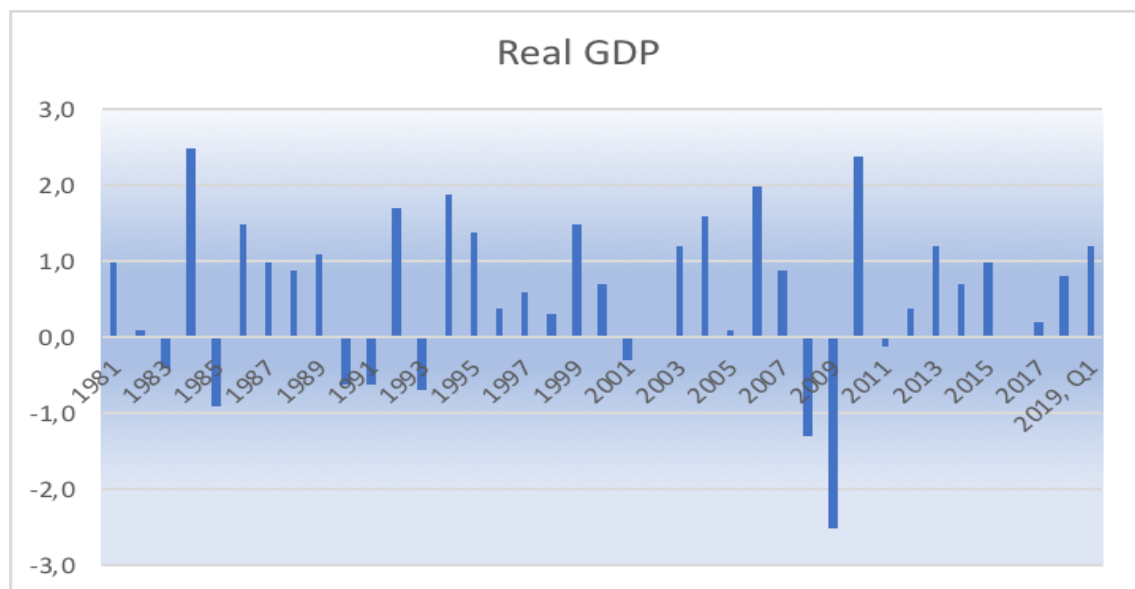


Figure 6: Macroeconomic indicators of development for 1981-2019.

Source: SCB, Riksbanken, ekonomifakta.

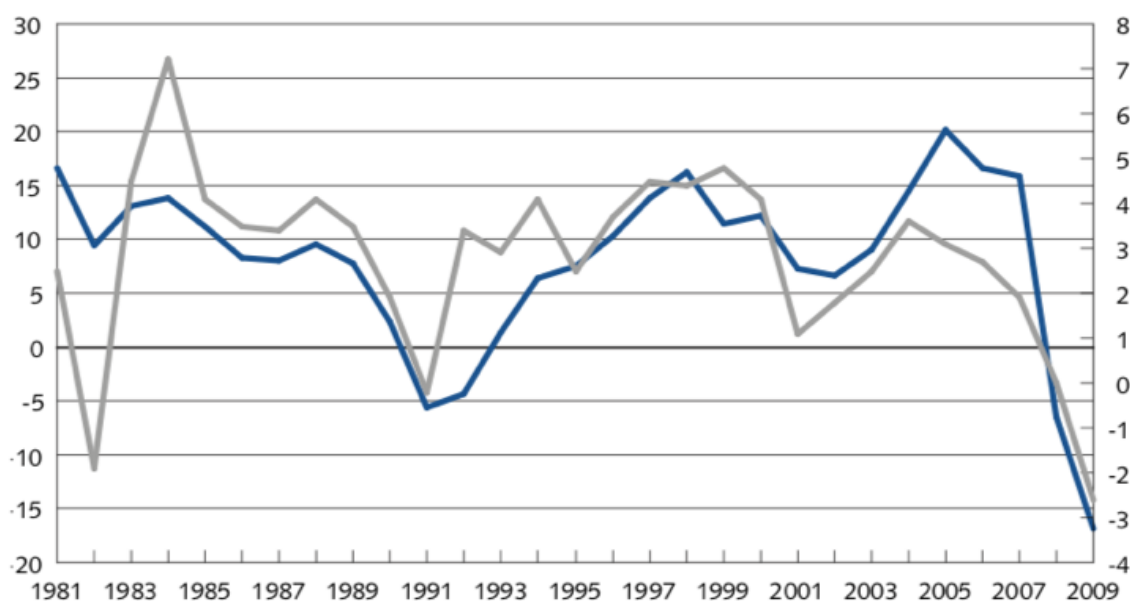


Figure 7: Changes in growth and return on total capital for commercial real estate in the US in 1981-2009. Source: Riksbanken (IPD).

Furthermore, the changes in return on total capital can be affected not only on a national level in terms of GDP, but also on a regional level concerning regional production, described by gross regional production (GRP), and employment rate. The employment rate has been shown to have a significant impact on the real estate market, which can be seen in Figure 8, where an increase in productivity growth (blue bars) and the employment rate (grey bars) within the region of Stockholm are seen to have a considerable impact on the return on total capital (black line). This event was remarkable both before and after the dotcom bubble in the '00s, when the regional growth and employment rate declined due to a rapid fall within the service and consultancy sectors as a result of the dotcom bubble (Riksbanken, 2010).

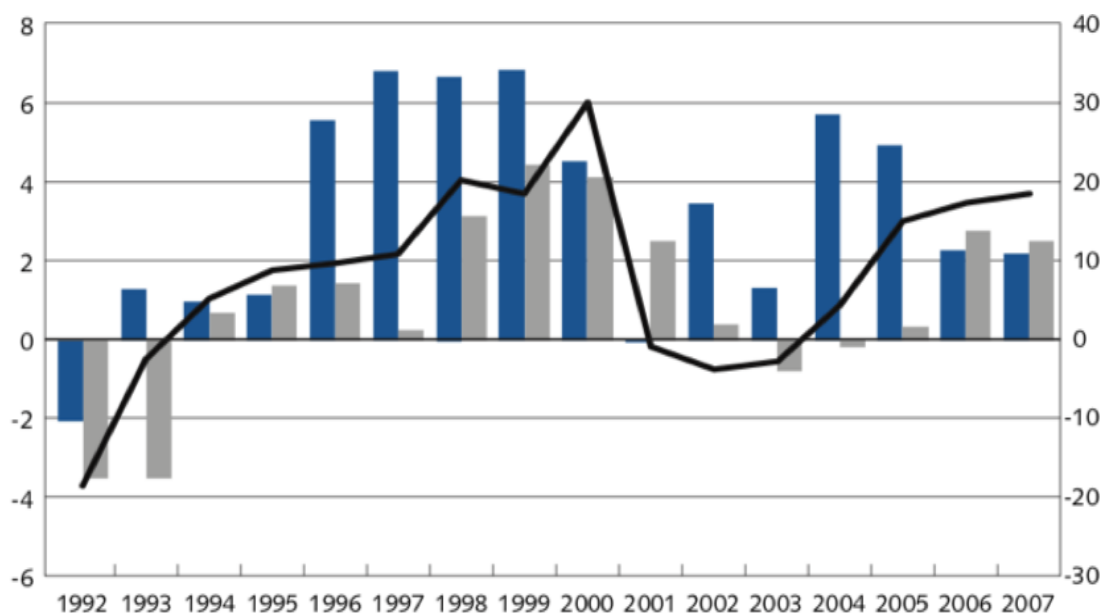


Figure 8: Changes in the GRP and employment in relationship to return on total capital for Stockholm in 1992-2007. Source: DTZ Sweden AB (Riksbanken).

Figure 9 illustrates the gap between the actual GDP in comparison to the theoretical or potential GDP without overstimulating the economy. The GDP gap indicates the utilisation of resources by a demographic, labour and productivity measurement between the GDP and potential GDP. The potential GDP does not describe the maximum level, but rather an equilibrium in the possible use of resources (Ekonomifakta, 2019). The GDP gap could be used to analyse the position of the economy in a business cycle. A negative gap demonstrates that the economy is facing a recession or downturn, and vice versa in the case of a positive gap. A negative GDP gap also indicates that the labour force and the real economy are under-utilised, which means that price development and production can increase without creating inflation. On the other hand, when actual GDP grows more quickly than equilibrium (potential GDP), the economy faces a cyclical upswing and boom, and could be at risk of an overheating economy with rapid inflation as a result (Ekonomifakta, 2019).

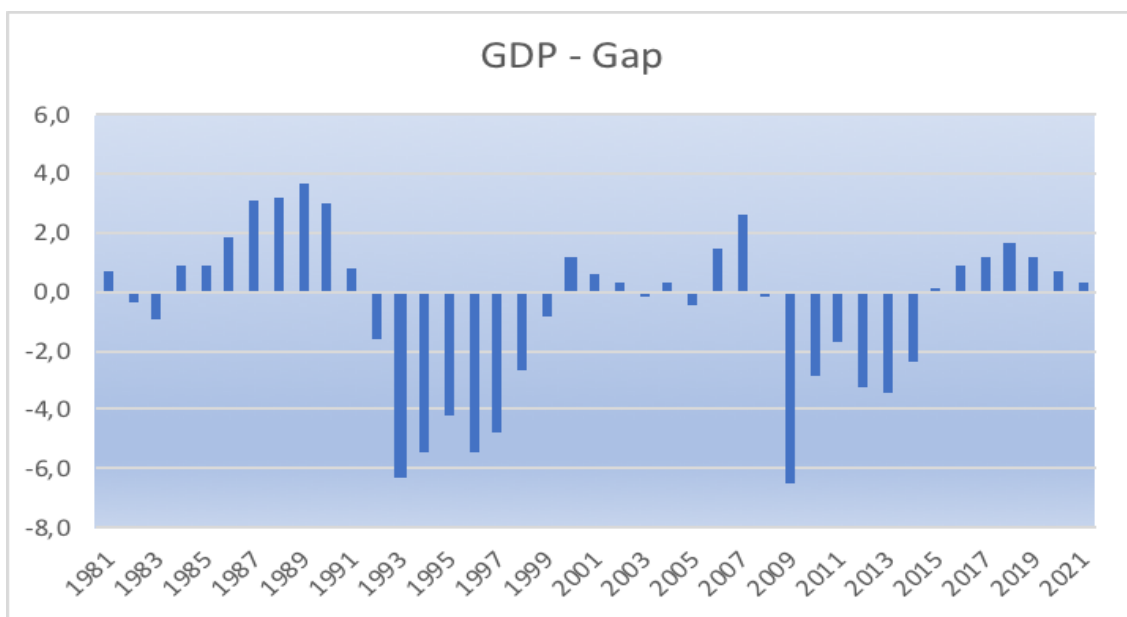


Figure 9: The GDP gap in Sweden from 1981 to a projected gap in 2021.

Source: Carlgren (2019)

Unemployment

Unemployment (UE) is defined as people who are actively looking for a job in the labour market but who are not working. There are three types of UE: frictional, which refers to people who are looking for a job, but who are unemployed; structural UE refers to people who are losing their jobs because they can be done more efficiently with robots or software, for example; and cyclical UE refers to a fall in demand for goods and services and thus a fall in demand for labour (Fanning, 2014). The population growth and employment of a city are crucial factors for the real estate market. Increased population in a region leads to a stronger labour market with more employees and higher real income. In turn, this increases demand for offices, retail and housing (Fanning, 2014).

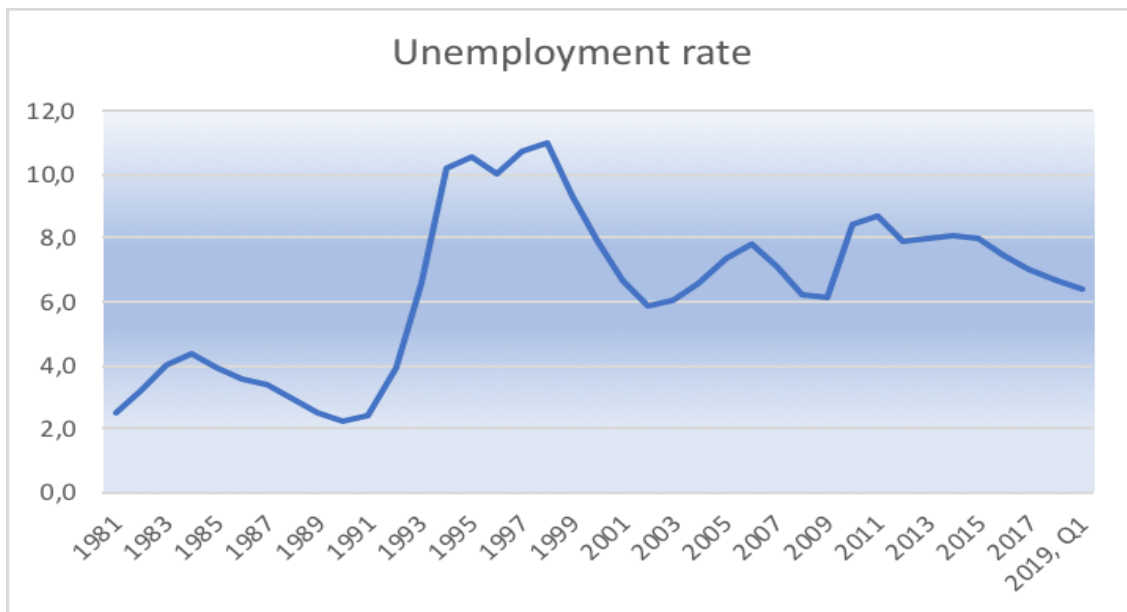


Figure 10: UE in Sweden between 1981–2019. Source: MSCI

Inflation: the consumer price index (CPI)

Inflation, referred to the consumer price index (CPI), is a measure of changes in the price levels of consumer goods and services. Inflation indicates the general level of higher prices, which reduces the ‘purchasing power’ of money. Inflation is a statistical estimate constructed of a sample of representative items to control for changes in prices. The goal established by the Riksbanken is to have a fixed 2% increase in inflation over time to create a smoothly growing economy (Riksbanken, 2011). Inflation indirectly affects the real estate market, as interest rates are used to control for inflation, which can in turn affect the cap rates for real estate. Furthermore, deviation between actual and expected inflation influences indebtedness in two ways: partly through changes in real interest costs, and through changes in real amortisation.

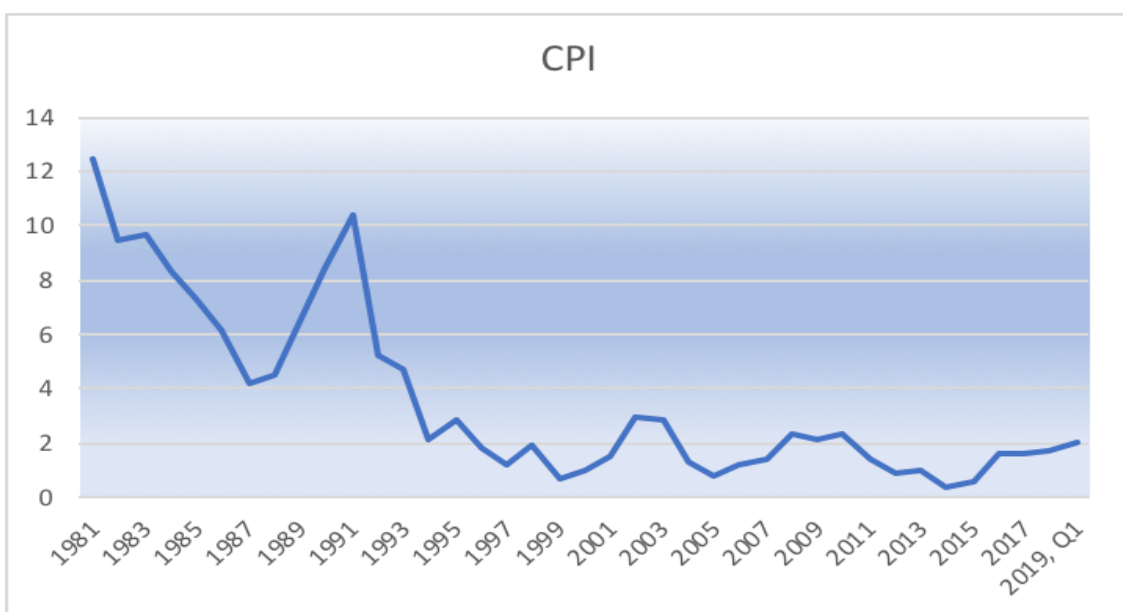


Figure 11: CPI in Sweden between 1991–2019. Source: MSCI

Rates

The repo rate is the central banks' key rate and acts like a mechanism to control for inflation, as it impacts the market rates at which commercial banks can borrow or lend. Generally, commercial banks can borrow for 75 basis points over the repo rate and lend for 75 basis points under the repo rate (Riksbanken, 2019). The Riksbank adjusts the repo rate to control inflation either by increasing or decreasing it, which in turn affects the economy. Decreased inflation impacts purchasing power and stimulates the economy as the cost of debt becomes attractive, while the opposite case holds for an increasing repo rate (Riksbanken, 2017). Accordingly, changes in the repo rate have a direct effect on commercial banks and their end user, i.e., real estate investors, as well as the real estate market. As discussed earlier, interest rates have a short-term effect on the capital markets and their demand for real estate, as developments and acquisitions for real estate are also susceptible to interest rates (Fanning, 2014).

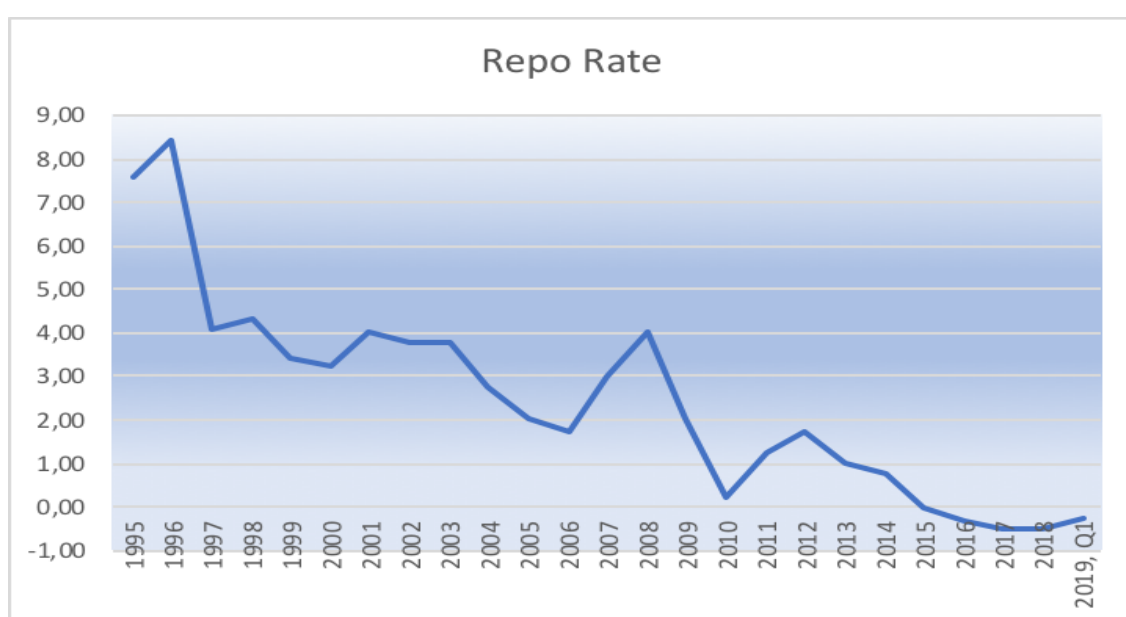


Figure 12: Repo rate in Sweden between 1991 – 2019. Source: MSCI

Market rate

The interest rate that a borrower must pay for a loan is called the market or interest rate. Supply and demand determine market rates. To understand this in more detail, these can be divided into short- and long-term market rates. Short-term market rates are the rates on debt exchanges used to finance the state's short-term debt and are considered to exist for less than one year. Long-term interest rates are interest rates that strengthen over more than one year, are usually associated with government bonds and apply for five or ten years. Short-term market interest rates are largely controlled by the Riksbank, which sets the repo rate; in turn, this controls the rate at which banks can borrow or lend. In turn, these short-term rates determine rates in the long term, together with the market's future expectations of inflation and the economic outlook. That is to say, if the market expects inflation or the future economic outlook to change, the long-term market rates either increase or decrease (Riksbanken, 2017).

Real rates

The real rate refers to the nominal market rate, adjusted for inflation, and measures what a borrower pays for debt or receives in return from an investment in real terms. Concerning real estate, one can derive the returns from the cap rate, which in turn is affected by inflation. Furthermore, rents are often adjusted with inflation, meaning that returns can be consistent over time and follow inflation, compared to other assets with only a growth component or a fixed return rate. This emphasises that real estate is more closely linked to the real rate of interest than to the nominal interest rate (CBRE, 2018).

Exchange rate

Figure 13 displays the exchange rate for the dollar and the euro against the Swedish krona. Several factors influence the exchange rate, including adjustments to the central banks' policies, the general stability of the country, the situation in the financial system and expectations of future economic development in the country (Carlgren, 2019). Exchange rates affect the real estate market in different ways, including indirectly as a weak Swedish krona against the dollar or euro stimulates exports, which in turn encourages overall growth in Sweden. However, all imported goods become more expensive, which has a negative impact and decreases purchasing power for companies in other areas. This issue is most prominent for the space market, although it can also have a direct effect on the asset market, as property prices will become cheaper and more attractive for foreign investors to invest in Swedish assets when they have a stable currency in respect to the Swedish krona (Runestam and Wiksell, 2016).

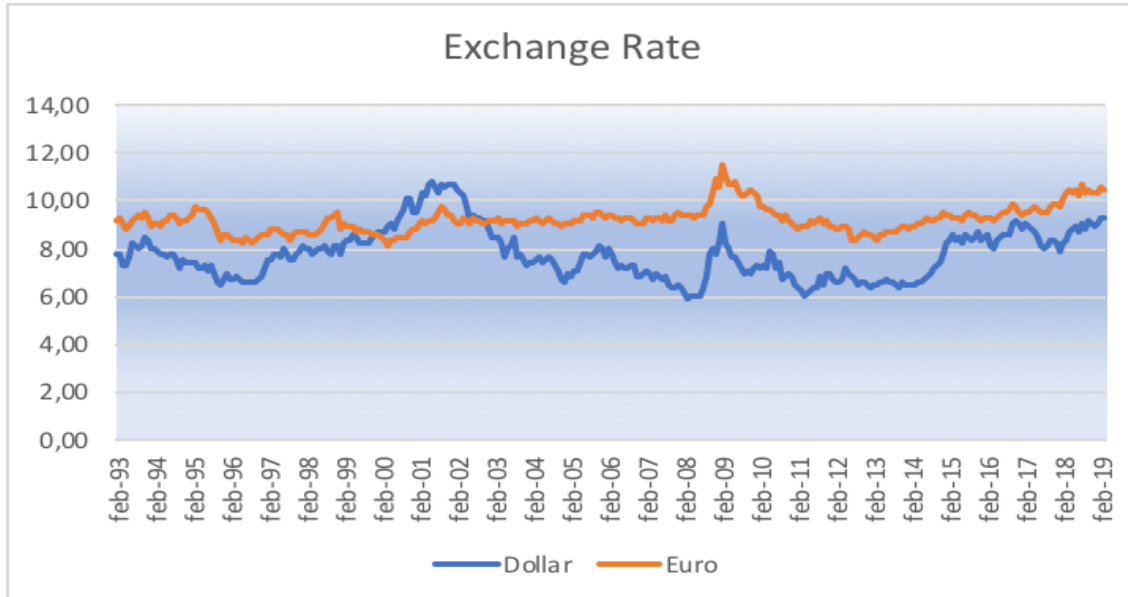


Figure 13: Exchange rate of the Swedish krona against the dollar and euro for Q1 1993-2019.

Source: Carlgren

4.2.2 Micro Variables - Stockholm's real estate market

Microeconomics is the field within the economy that primarily interpret the collaboration among producers and consumers in markets. When it comes to real estate microeconomics focus lies on the supply and demand in both the space and asset market, that in return affect the vacancy, rent, yield and valuation (Geltner et al. 2006). The following paragraph covers the micro-factors studied to create a clearer understanding of how the market peer during the various crises and the situation now. According to the theory, aspects as demand, supply, vacancy, market rent, and total return are parameters that are of great importance for the crises. Therefore, these factors, in particular, will be explained in more detailed below.

Total Return

Total return measures the increase in capital growth (value) of an asset and the income return (cash flow) produced from it. Figure 14 demonstrates the overall growth and income for commercial properties (offices) in central Stockholm for 1989-2018. The chart displays the negative impact of all three crashes, following the steady growth of increasing returns from year to year. In 1989 and 1999 a considerable increase in property values can be seen, due to falling yields. During the crisis in 1990, property values declined to negative figures of 30% with falling rents and increasing yields. The next downturn is evident from 2000, when the dotcom bubble burst, and decreasing returns resulted primarily from decreasing rents. The crisis in 2008 also produced a negative total return for two years, due to increased yields and somewhat reduced rents.

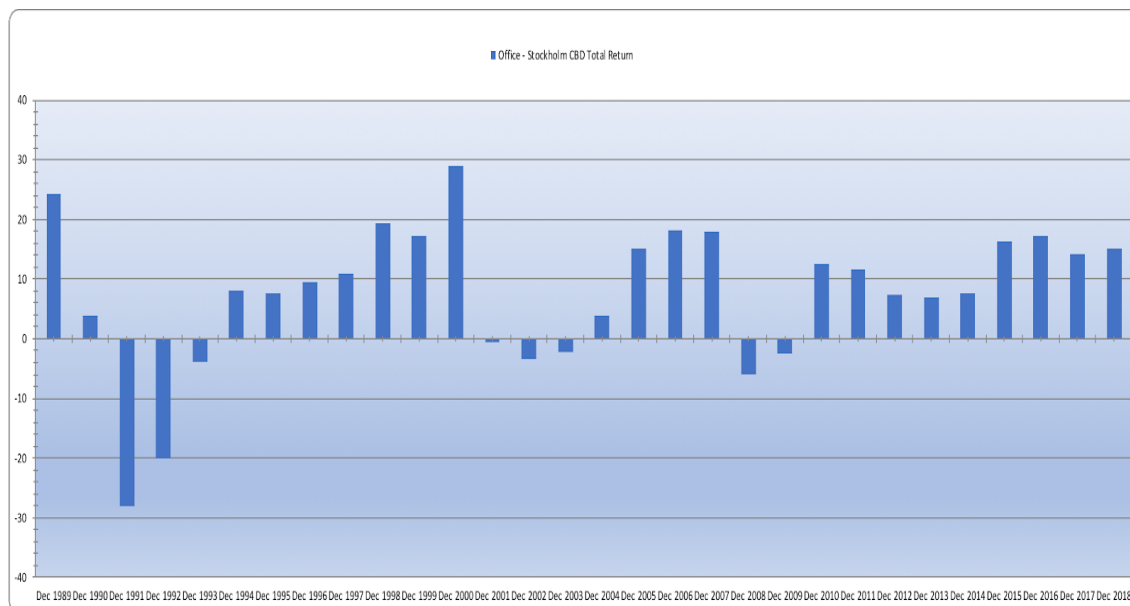


Figure 14: Total return of commercial properties in Stockholm. Source: MSCI

Yield and Yield gap

The yield gap is the spread between the property yield and the risk-free rate, which indicates the risk premium for the property type. The graph indicates the long-term development of the average office property yield in the CBD, Stockholm, compared to the 'risk-free' 10-year government bond (Nordanö, 2018).

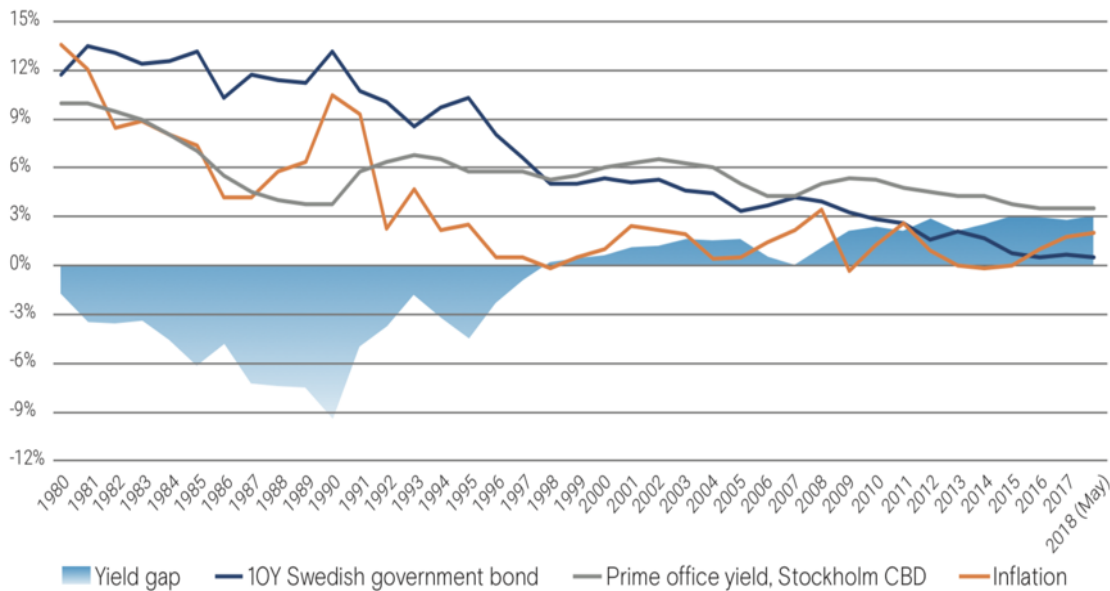


Figure 15: Yield-gap in relation to 10y government bonds. Source: Nordanö

Office Rents in Stockholm

Figure 16 illustrates real rents from 1985 until 2018. The significant changes in rent levels occurring before and after each crisis are remarkable. Notably, the 2008 crisis did not affect the rents to the same extent as the previous crises.

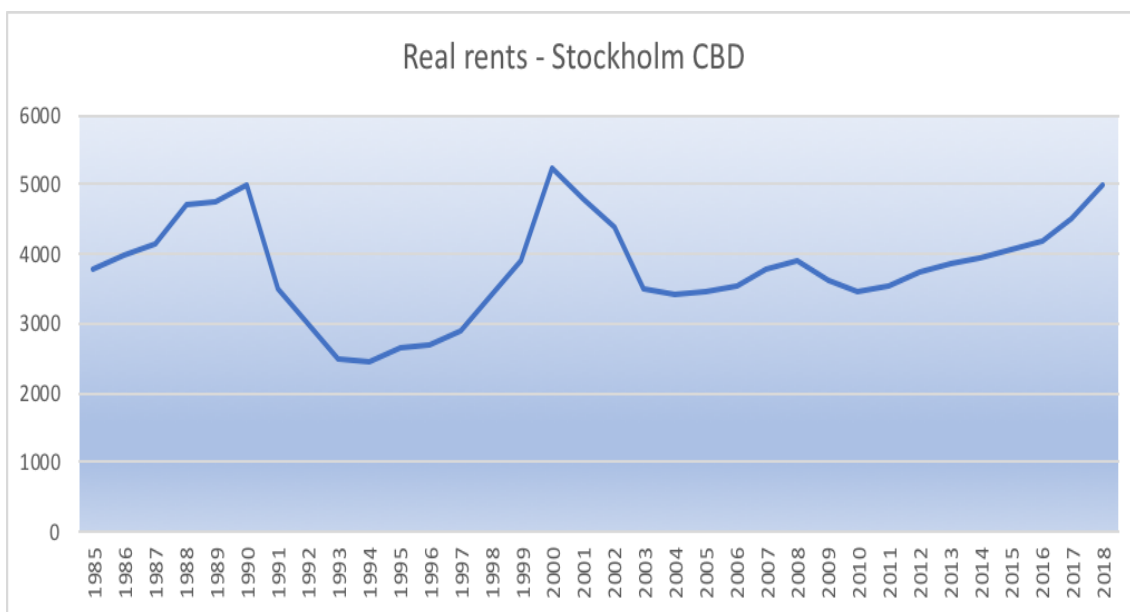


Figure 16: Real rent in Stockholm CBD for 1985-2018. Source: Fabège

Vacancy

The vacancy measures the number of empty premises against the total office stock. As shown in Figure 17, vacancy peaked at historically high levels after the crises in 1990 and 2000. Despite the 2008 crisis, the space market remained relatively stable on behalf of continued stimulation from lowered interest rates. In addition, the market's underlying productivity maintained a robust demand for offices in Stockholm. Since the peak in 2005, the office market in Stockholm has experienced declining vacancy rates, and in 2018 they again reached record low levels.

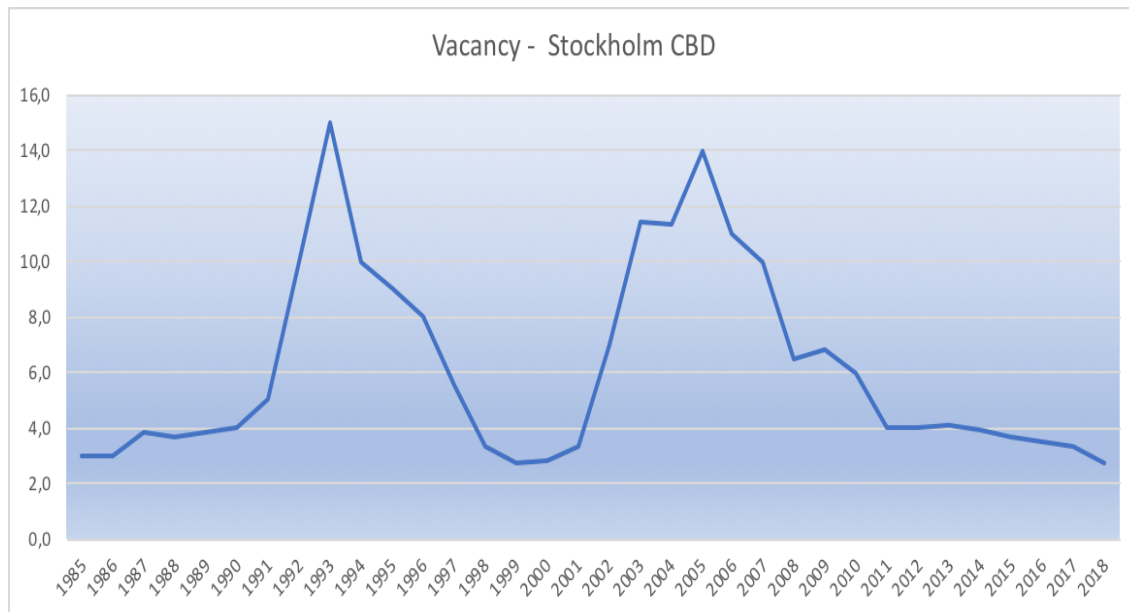


Figure 17: Vacancy rates in Stockholm CBD for 1985-2018. Source: Fabege

4.3 Structural factors

Changes in the office market

Coworking is a new emerging concept that provides office spaces in a disruptive way and which is part of the more prominent phenomena of the 'sharing economy'. The concept can be described as an open space which is shared by multiple members, i.e., a flexible workplace (Newsec, 2019). The idea behind the concept originates from freelancers and startups in need of a working space (Fastighetsägarna, n.d). The space is managed by an operator who leases the premises from the property owner, and in turn supplies it to tenants who sign extended contracts. Today the dominant users of coworking spaces are mid-sized firms and large corporations. Compared to traditional leases, the tenant instead pays rent through memberships or a subscription to utilise the space (Fastighetsägarna, n.d). The difference to a traditional contract is that the coworking operator adapts the space to the tenant, thus it becomes more of a service than a good (Fastighetsägarna, n.d). Moreover, coworking has led to increased efficiency regarding the square meters required per worker and has therefore increased the supply of spaces. Currently, coworking spaces in the major Nordic cities represent approximately 3% of the total office stock (Newsec, 2019).

Change of financial structure

The structure of the financial sector varies between countries. A distinction can be made regarding whether the financial arrangement is market-based or bank-based (Riksbanken, 2009b). For example, in the US companies are more dependent on the capital market compared to Sweden, where companies are dependent on banks; thus, the latter is bank-based (Riksbanken, 2009a). Therefore, the Riksbank, the central bank in Sweden, places more emphasis on supporting the banks. The Riksbank reported in 2017 that commercial real estate companies had increased their market-based financing from 112 to 267 billion sek from 2013 to 2017 (Riksbanken, 2017). Statistiska centralbyrån (SCB) demonstrated that 52% of these investors were foreign, domestic funds constituted 13%, and institutional owners represented 9% (Riksbanken, 2018).

Evidently, financing for companies has become increasingly market-based. This is especially the case for real estate companies as the number of bonds has increased since the financial crisis (Riksbanken, 2018). Commercial real estate companies represent 40% of the total value of the issued corporate bonds. This type of financing involves different kinds of risks, and bonds can rapidly become more expensive if uncertainty in the market increases. Furthermore, the issuing companies can encounter liquidity problems when the bonds mature and need to be refinanced. It is essential to consider that even though commercial property companies use market-based financing, banks are still involved, as banks provide the companies with credit or liquidity facilities to cover the certificate (Riksbanken, 2017). These facilities are used in the case where the company cannot pay back their issued bonds to the investors. A large proportion, around 40%, of the bonds outstanding in Sweden will be refinanced in 2020 (FI, 2018).

Loan to value ratio & interest coverage rate

The LTV ratio is a measurement of a company's net debt in relation to their assets. This measurement is useful for determining the financial stability of a company. The average LTV ratio for commercial real estate companies in Sweden is 52%, which is a historically low figure. However, this has been achieved according to the increasing market valuation of the assets (FI, 2018).

The interest coverage ratio is another relevant ratio for measuring a company's financial stability. It can be useful to understand a company's sensitivity to increases in financial costs, for instance, higher interest rates. It can be calculated by adding operating income and financial income divided by financial costs. A lower interest coverage ratio indicates that the company is sensitive to increased financial cost, e.g., higher interest rates. The average interest coverage ratio for the more prominent commercial real estate companies in Sweden is approximately three (FI, 2018). The Riksbank has pointed out that an interest coverage ratio at these levels could mean a potential risk, since the interest rates are currently at historically low levels (Riksbanken, 2017).

5. Methodology

In the following chapter, the methodology used for gathering the primary and secondary data will be described. This will help the readers to understand the research design and what interpretations it had on the outcome of the study.

5.1 Approach

This study takes the form of qualitative research. The selected approach is associated with an interpretation philosophy, since the researchers have to understand the subjective element being studied. This can be seen as the opposite of a quantitative study, which aims for an objective assessment in the form of analysing collected hard data (Saunders et al. 2016). This study also takes the standpoint of an inductive approach, whereby theory is used to build or further develop new perspectives. Such an approach is characterised by acquiring data and knowledge in a variety of ways, including through interviews (Saunders et al. 2016).

The qualitative approach is suitable for the selected subject, as the study's objective is to compare today's market with the previous crises and examine the consensus among active market participants. The questions used in the interviews are founded on existing theory, covering the real estate market and relevant topics, and are combined with literature on the studied crises. Semi-structured interviews are used, as this naturally creates a structure for the interviews in order to gather comprehensive data (Saunders et al. 2016). Furthermore, the questions are outlined in a way which allows the participants and authors to discuss each question to acquire a broader understanding of the subject. With the findings from the interviews, which comprise the participants' knowledge and thoughts, combined with the existing theory, the authors are able to answer and discuss the study's objectives extensively.

5.2 Data collection

Theory → *Framing of questions* → *Interviews*

Literature study

The theory and background were assembled from sources such as reports, and articles written by various firms and organisations. The Riksbanken, Finansinspektionen and consultancy firms have published the majority of the examined literature, as this material turned out to be useful for the purpose of the study. Initially, time was spent acquiring information regarding the real estate market's different components, how the market is connected to other essential cycles, and structural factors influencing the industry. Based on the purpose of the study -to understand the similarities and differences between the current market and previous crises -reports covering the crises were identified. Ultimately, macro and micro factors relevant to the market were acquired from the MSCI (Morgan Stanley Capital International) database, along with other sources. From this, the study could compile data series of the macro and micro factors that are relevant to understand and observe the impacts of the crises.

Primary data Framing and Interviews

The questions raised in the interviews were founded on the theoretical part in addition to interviews with academic professionals. The interviewed academics were Hans Lind, Stellan Lundström and Christina Gustafsson. During the meeting, significant factors to study were discussed as well as the characteristics of the previous crises. The authors attempted to select the most important factors concerning the general real estate market and the office market in Stockholm. This resulted in division of the questions into three sections for the interviews, with the aim to simplify the interview structure and subsequently the transcription.

To achieve a holistic view of the market, the selected actors represented different parts of the real estate market. As institutional owners and large property companies own most of the office spaces in central Stockholm, the author decided to interview more than one of these actors. Other interviewed groups were public and private companies; this could add another perspective since private companies have less obligation to act on behalf of other shareholders. The chosen companies were selected as they represent a large part of the central office market in Stockholm, and they were a part of the market during the crises. Moreover, banks are an essential part of the office market, as much of their credit goes to the property sector. The chosen bank and its representatives were selected with respect to their long history and experience in the industry. Indeed, this was the case for all interviewed actors. The authors also interviewed a consultancy firm, since their primary objective is to inform the industry about the studied matters, which should also contribute valuable insights to the study. Table 1 lists the selected participants.

Company	Sector	Department	Interview	Duration
Folksam	<i>Institutional</i>	<i>Head of Real Estate</i>	<i>Meeting</i>	<i>1 hour 20 minutes</i>
Vasakronan	<i>Institutional</i>	<i>Research & Finance</i>	<i>Meeting</i>	<i>55 minutes</i>
Fabege	<i>Public Co.</i>	<i>Finance</i>	<i>Meeting</i>	<i>50 minutes</i>
Bodin Fastigheter	<i>Private Co.</i>	<i>Business development</i>	<i>Meeting</i>	<i>50 minutes</i>
JLL	<i>Consultancy</i>	<i>Research & Valuation</i>	<i>Phonecall</i>	<i>35 minutes</i>
Swedbank	<i>Bank</i>	<i>Head of Real Estate</i>	<i>Meeting</i>	<i>1 hour 10 minutes</i>

Tabell 1: Tabell of facts over the interviewees. Source: Developed by the writers.

5.3 Reliability and validity

Reliability is a concept used to evaluate the quality of research. In a qualitative study, quality has the purpose of generating understanding (Golafshani, 2003). The importance of reliability concerns the quality of research which enables other researchers to apply the same design and achieve the same results (Saunders et al. 2016). The possibility to obtain the same results for this study could be limited since the applied methodology was semi-structured interviewing, which requires the researcher to discuss and ask follow-up questions during the interviews, so that diverse questions can be involved. Accordingly, this research could generate different results if six different actors were chosen, which decreases the reliability. Thus, the research design and approach of the study can be replicated and performed again. Research question one can be regarded as more reliable, as differences and similarities can be replicated in an objective way and by using the studied method. Regarding research question two, which concerns the perception of the actors, this is less likely to achieve a repeatable result. Moreover, interviews took place face-to-face with each interviewed respondent. It would be difficult to obtain the same structure in different interviews, as divergence occurs in semi-structured interviews.

Qualitative validity implies that the researcher checks the accuracy of the findings by employing specific procedures. Validity determines whether the findings are accurate from the standpoint of the researcher, participant or the reader (Creswell, 2014). By clearly stating the course of action and objectives of the study, validity can be achieved. This study achieves validity through the use of primary data and selected questions, which are retrieved from interviews with companies and organisations having a high reputation and individuals with expertise in the field. Validity is highly significant if there is a clear correlation between the purpose of the thesis, the theoretical framework and the results. This is achieved in this study, since the selected questions are grounded on the theoretical framework. In the sense of external validity, the approach and design can be applied to other property segments, although only a proportion of the results would be similar; macroeconomy applies to all property segments, while microeconomy can differ.

6. Result

In this chapter, the result of the interviews will be presented. The chapter is divided into two sections concerning the different question asked, see appendix 1, to the respondents granted in figure 15. Significant responses have been chosen to be presented within the various subjects. Moreover, the text is objectively written within all the paragraphs below, and the representatives' answers are reflections based on their knowledge and assumptions.

6.1 Macro- and Microeconomic

6.1.1 Macro-level results

View of the overall economic situation

The economic cycle has been considered as the most important and significant factor for the future growth of the office market in central Stockholm. The majority of the respondents argued that Sweden still faces low UE, and high utilisation and GDP growth. However, most of the respondents explained that the signs are pointing towards a future economic slowdown. Sweden is a small and open economy and is therefore sensitive to external events worldwide. One of the respondents explained that the office market is most affected by increasing UE as demand for space decreases. Furthermore, they argued that in today's market the most significant threats for such a scenario are political factors, such as trading wars, Brexit and high indebtedness among European countries.

Most of the respondents argued that the office market in Stockholm is stronger than the overall office market in Sweden. In addition, there are no significant signs that the office market in Stockholm will face negative growth in the near future. Stockholm also has one of the highest population growth rates of a European city. One of the property owners pointed out that the relationship between population growth and the number of office workers is linear.

Thoughts on the interest rate

According to the interviews, limited signs are indicating increased interest rates in the years to come. The low inflation and demographic shifts encouraging more people to save are, among other things, phenomena which maintain the interest rate at low levels. It was also mentioned by a few respondents that a continued strong economy could result in higher interest rates, which in turn would increase the cap rates and decrease property values. Paradoxically, a continued strong economy would not necessarily be beneficial for the real estate sector in that sense.

Another discussed topic was the historically high yield gap. Some argued that there is still room for higher interest rates without impacting properties as an attractive investment opportunity. Thus, predicting how much the interest rate could increase before affecting the cap rate is pure speculation. Furthermore, according to some respondents, the interest rate can be divided into the spread of the rate at which banks lend and the rate at which the market borrows. In this respect, there may be some room for the bank to hold the interest rate at the same level, even when the central bank increases the repo rate.

Financial stability

One of the respondents explained that the banks have a significant amount of capital allocated to the real estate sector. Therefore, a large part of the bank's lending consists of real estate securities and commercial properties including offices. Consequently, it is essential that the Riksbanken and Finansinspektionen focus on the risks connected to the banks and real estate companies. Respondents also explained that regulations such as 'Basel III' require the banks to be less speculative and to hold more equity on their balance sheets to increase financial stability.

Another collective reflection was the low degree of speculative construction currently in the market, which the respondents believed to increase the stability in the market. A few respondents mentioned that there was much more speculative construction during the crises of the '90s and '00s. In addition, the property companies could exceed 100% in terms of the 'debt-to-value ratio' during the '90s. This type of speculative building and financing would not occur or be accepted by the banks in today's market.

The LTV ratios have been regarded as low, and the respondents believed that property companies are healthier in that sense. However, one respondent stated that if the property values continue to increase, even more capital will be allocated to the sector, which could cause financial instability in the future. Additionally, the interest rate coverage is incorporated widely in today's market to determine financial stability among property companies.

Financial structure

All respondents testified that there is a change in the financial structure of Sweden. Today, preferred shares and bonds are commonly used as financing sources among property companies, but this was uncommon 10 to 15 years ago. One of the respondents argued that risks might be associated with bonds and lending from the capital market in particular. The capital market was explained to be binary, that is to say, as being either on or off. This respondent further argued that if the capital market becomes cautious about the real estate sector, companies could face issues with financing their businesses. However, another respondent could not see any significant risk with the financing source, because of the substantial capital surplus that is seeking returns today and at least in the nearby future. A few respondents also discussed how bonds are a way of diversifying traditional bank financing. They further maintained that most companies match the amount of one's bonds and credit binding, which reduces the risk of refinancing.

Moreover, according to one respondent, the banks will not have to take the riskier top or junior mortgage loans, which means that the banks hold less risk. It could be problematic if the banks' clients cannot refinance the outstanding bonds, and in that case the bank might have to step in and support the client. This was not regarded as a significant risk, since the more prominent owners of commercial office buildings have low debt-to-value ratios.

6.1.2 Micro-level results

Supply and demand of offices in central Stockholm

The strong population growth in Stockholm will continue to reinforce the demand for offices in the market and increase the possibility of a future solid space market. Concerning the supply, most respondents underline the shortage of supply in the office market of Stockholm and especially in the most central areas. In their opinions, there are no indications of large increases in supply. A few respondents discussed how the shortage of supply could be partly attributed to the geographical situation of central Stockholm and what is permitted by the municipality of Stockholm. The limited area and current regulations, such as controlling for building height, limit the potential new supply in the most attractive areas, such as the CBD. At this moment about 1% of the total stock is being built annually. Therefore, the space market will continue to increase the gap between supply and demand in the years to come. One of the property owners pointed out that central Stockholm only consists of one CBD, unlike other cities which have multiple CBDs. Therefore, a competitive supply of offices cannot be developed in another part, as seen in, for instance, e.g., Paris or London. Moreover, as discussed by some respondents, there will always be a strong demand for space in the central part of Stockholm. Specific business models benefit from being located in the central areas, and new construction in the suburbs will not build competition with offices in the central region. Argued in another interview, almost all new construction takes place in the areas near to convenient transportation, and few actors will develop projects in areas without access to transportation and services. More thoughtful planning will limit the future number of offices and reduce speculation. The bank argued that the risk of speculative building could be almost non-existent compared to previous crises, since in today's market banks do not lend money to risky projects.

However, the respondents' views on speculative building in Stockholm did diverge to some degree. Two of the respondents argued that some areas surrounding central Stockholm consist of relatively high amount of construction without any significant leases in place, which can be speculative.

Ownership

Today, there is a steady flow of capital from institutional owners into the property market. The majority of the respondents believe that more capital will be provided from institutional owners purchasing more assets in the coming years. One of the interviewees explained that institutional owners dominate the market of central Stockholm and hence fewer transactions occur today compared with the past. Some respondent argued that the property owners now have a longer-term perspective and focus on cash flow, in contrast to their approach during the crises.

Cap rate

The prevailing view among the respondents is that the present cap rate levels in the Stockholm office market can be fundamentally motivated even though they are at historical low levels. Most of the respondents mentioned the combination of a shortage of alternative investments, and the historically high yield gap making real estate an attractive investment. They pointed out that alternative investments, i.e., government securities and bonds, are less attractive due to the low rates and the stock market offer a higher return, but with greater risk. Properties become an attractive substitution among the alternatives. Furthermore, one respondent argued that the Stockholm office market has attributes such as high transparency and liquidity, which could further

motivate a low cap rate. These attributes are attractive not least for foreign investors, where this issue can be problematic in other countries.

All actors expressed some degree of uncertainty about the cap rate level. The argument for these levels to remain is that the interest rate and alternative investments have to stay at low levels to stimulate the mortgage flow to the sector. Thus, the impact of interest rates and how much the cap rates will eventually increase is difficult to predict. It is necessary to consider more than just the interest rates, argued one of the respondents.

Rent levels

One of the institutional owners explained that since Stockholm has one CBD, this presumably drives the prime rents, which could be close to the peak. Most respondents discussed during the interviews how high growth is unlikely to continue and will instead stagnate. Thus, most of the respondents believed that the current rent levels could be motivated because of the stable space market. Besides, one of the property owners pointed out that in real terms today's rent levels are not the same as during previous crises. A few respondents explained that high prime rent constitutes a minority of the office market and represents new office premises in prime locations. The general rent level is lower for offices in Stockholm. Further, some respondents argued that modern offices are more efficient at utilizing space, and that tenants pay roughly the same amount or even less for new office premises.

Moreover, the last years rental growth could be generalised for the tech industry, as noted by some respondents, whereby coworking operators might be the underlying factor. However, for now this can only be speculated on.

Vacancy

One respondent argued that there will always be an underlying risk of vacancies if a recession occurs. The most prominent risk for vacancy would be tenants' ability to pay rent in the case of a down-trending economy. Furthermore, if tenants cannot pay rent, this will affect the NOI for property owners and decrease property values. Thus, current tenants can be considered stable, according to most respondents. One of the respondents pointed out some concerns regarding the growing coworking phenomenon and expressed that this could eventually be a contributing factor for increased vacancies, since the operators are not making profits. However, during the interviews no specific risks for increased vacancies were mentioned. The underlying space market in central Stockholm is robust, and therefore the risk of vacancies can be considered low.

Structural changes in the office market

Coworking was highlighted as one significant structural change in the office market. The subject of discussion with most respondents was to what extent coworking will affect the office market in Stockholm. The majority of the respondents argued that this is hard to predict and depends on how large a fraction of the market coworking will become. In other words, coworking is currently too small a part of the total market to speculate on its effect. Some of the respondents believed that coworking is here to stay and could potentially have a significant impact on the office market. More tenants will demand flexible working spaces, and property owners will have to adapt to this new trend. However, the demand for traditional offices will remain, since many companies want to have

their own office space for branding purposes. One respondent argued that coworking could be regarded as a speculative tenant and that they would instead lease the premises to a stable and less risky tenant. Otherwise, they might as well invest in stocks.

6.2 Comparison with previous crises

Similarities with today's market

The dotcom era and current market were commonly considered by interviewees to possess similarities, including the emergence of new companies without the generation of any significant profits, namely coworking. The booming rental market under the dotcom era was one of the driving forces of increased property prices. One interviewed mentioned that not necessarily all landlords understood the phenomena or concept of the businesses during the dotcom boom. The market became more speculative and riskier, and similarities can be drawn with the coworking sector now. Contrarily, one respondent argued that the ICT sector was young and inexperienced under the dotcom era, and that a comparison with today cannot truly be made. Furthermore, there are few landlords today who would sign contracts with tenants without checking the underlying performance of the business and its profitability.

The low cap rate was highlighted in several interviews as an evident factor in the previous crises. A small number of respondents mentioned that before the '90s the market was driven by cap rates, which can also be seen in today's market. Some also noted the current yield gap as a contributor for today's low cap rate and stated that there will continue to be a strong underlying demand for office spaces in central Stockholm in the foreseeable future. Moreover, the macroeconomic situation exhibited many differences back then, such as high inflation, higher interest rates and aggressive policies in the financial system, making the comparison irrelevant.

One respondent suggested how the financial crisis of '08 itself created uncertainties which could affect the market in the future. It was argued that low interest rates have only postponed the fundamental problem, that is to say, the debt bubble is still present in the world and is not fully resolved. Currently there are a number of countries with high levels of indebtedness, such as China, Italy and the US. A future financial crisis could also be created in this era.

Differences and common thoughts regarding today's market

In general, the respondents acknowledged that the combination of low cap rates, falling interest rates, a long business cycle and abundant supply of money in conjunction with the aggressive rental growth of recent years has created large values in the real estate market. These values were argued to be a risk since they increase sensitivity to an inversion. The majority of the respondents expressed concerns about the low interest rate and regarded it as an 'experiment'. Furthermore, some argued that there is limited space to lower interest rates in the case of an economic downturn. Another respondent counter-argued by bringing up the low national debt in Sweden, which can be utilised instead of interest rates.

The use of bonds as financing was commonly raised as a difference. The perception of the structural change, however, was twofold, and some stated that the risks of the actual financing do not differ significantly from traditional bank financing. In contrast, one respondent specified that market financing is significant compared to traditional bank financing. Bonds need to be refinanced at maturity, and the capital market acts much more on its interest compared to banks. Banks have to take into consideration their importance to the financial system and stability. This method of financing combined with lack of a relationship between the issuer and the investors can be problematic.

After the financial crisis in '08, coworking rapidly emerged and attracted attention. A number of respondents described it as an unproven business model, and it is difficult to predict the long-term effects. One respondent speculated that if coworking continues to grow exponentially, the office market could face significant vacancies in a weaker market. In other words, if the demand for coworking spaces decreases and payments to the operator start to fall, holding large office premises could be unattainable. However, respondents also expressed optimism and believe that coworking will remain as part of the market as a complement to traditional office spaces.

On the whole, respondents believed that awareness is higher today concerning uncertainties. These uncertainties could be attributed to low LTV ratios, increased fixed interest rates, more extended credit bindings, and broader and more diversified borrowing. In contrast, in '08, for example, too much focus was placed on short funding. However, several of the respondents pointed out that the factor or factors that will trigger the next crisis are most likely unknown, which is the typical pattern for crises.

Motivation to invest in today's market

The predominant motivations for investment in the central Stockholm office market today were argued to be the shortage of alternative investments and a favourable environment with low interest rates. The environment was further motivated by the high yield gap, making real estate even more attractive than other alternative investments. Representatives from the bank pointed out that Stockholm has a healthier population growth compared to other cities. A stable population growth will also increase the underlying demand for real estate and office spaces and encourage the risk of vacancy to remain low, which makes the underlying cash flow stable and attractive. The institutional investors explained how they usually invest in three types of securities or assets, namely bonds, stocks and real estate. The evaluation of where to allocate more capital is based on the investment's risk profile, in order to hedge for a potential downturn. Real estate in that sense becomes attractive in comparison to stocks, which are more volatile, and bonds, which offer low returns. Regarding public and private real estate companies, it could be argued that they still view the market as attractive because of the stable space market, which stimulates the rents. Furthermore, with the generally low LTV ratios and easy access to cheap money, property companies can continue to invest and achieve attractive returns.

7. Analysis and Discussion

In the following chapter, the theoretical framework and result will be combined to answer the research questions. The chapter consist of three parts where the two first are divided into the research question and the last part is a discussion. In the discussion, the authors express their subjective view on the analysis and discusses upon the significant findings.

7.1 RQ1: Similarities and Differences

Macro

Table I demonstrates the macro conditions for Sweden just before the various crises, as well as for today. The table displays an overall judgment upon macroeconomic factors that have been discussed in the interviews and described in theory. The outlined figures in the table are collected from analyzing the theoretical part in chapter 4.2.1, and the reasoning in each column is the summarized judgment regarding the other crises figures and collected knowledge.

	Before 1990	Before 2000	Before 2008	2019
Real GDP growth (years)	Moderate (5)	Long (7)	Long (6)	Very Long (8)
Inflation	High (10%)	Low (1%)	Average (2,5%)	Low (1,5%)
Repo Rate	High (12%)	Average (3,5%)	Average (4%)	All time Low (-0,25%)
Exchange rate	-	Average (Dollar 9, Euro 8)	Average (Dollar 7, Euro 9)	High (Dollar 9,5, Euro 10,5)

Table I: Content of the macroeconomic before the crisis and today in Sweden.

Source: *Developed by the writers.*

Based on the earlier parts of this paper, the present macroeconomic conditions exhibit more differences than similarities to previous crises. As shown in Table 1, macro factors such as GDP, CPI, interest rates and exchange rate mark the contrast between the crises and the previous market. Thus, comparing the present macro with that of the '90s is not justified, since the previous circumstances were vastly different regarding the fixed exchange rate and regulatory austerity measures in the financial system. Furthermore, in order to control and defend the currency, combined with abnormally high inflation, the marginal rate was unusually high during the late '80s. The macroeconomic situations in '00 and '08 are more comparable with a related financial system, but with higher inflation and interest rates.

The periods leading up to the crises involved long cycles of economic growth, much like the current economy. These long economic cycles are characterised by high inflation, high productivity, low UE and high exports. Naturally, this cycle is followed by increasing interest rates to control inflation and hedging for a slowdown in the economy. This factor distinguishes the present economic cycle, as the absence of both inflation and rising interest rates is evident. A report by the Bank of England concluded that because of demographics, the reallocation of investments and savings combined with the global and digital world could result in the absence of inflation in the foreseeable future, while the interest rates environment will, in turn, remain at the current levels (Rachel and Smith, 2015). In both the '00 and '08 crises, the economy evidently recovered to some degree from stimulation by lowered interest rates. Sweden could be argued to currently lack these abilities to stimulate the economy in that context. However, as one of the respondents argued, the national debt is at a record low in relation to GDP and could be a substitute for interest rates.

The crises demonstrated how large an impact the commercial real estate market can have on Sweden's financial stability. This statement is supported by the Riksbank, who stated that the commercial real estate sector has had a significant role in previous crises (Riksbanken, 2017). During the '90s the industry was not aware of the profound impact that it could have on financial stability, which later became evident. Following the financial crisis in '08, the intertwining of the real estate sector and the financial sector became evident and important to consider. As a result of '08 the banking sector became more regulated, for instance by Basel III. This differentiates the industry today since it has obtained more strict regulations. The result also supports the statement, and according to the interviews the banks can be regarded as more risk averse and less speculative.

The study's result also points to less evident threats for a recession similar to the previous crises, and the most apparent risks are political. Brexit, trade wars and countries having high national debt are more likely to be the triggers for a potential recession. Several respondents indicated that an even more prosperous economy would probably not be beneficial for the office market. A stronger economy would mean higher inflation and interest rates, which in turn affects cap rates and NOI, e.g., increased finance costs.

Micro

Table II demonstrates the micro conditions in Sweden before the various crises and today. The table displays an overall judgment upon microeconomic factors that have been discussed in the interviews and described in theory. The outlined figures in the table are collected from analysing the theoretical part in chapter 4.2.2, and the reasoning in each column is the summarized judgment regarding the other crises figures and collected knowledge.

	Before 1990	Before 2000	Before 2008	2019
Yield	Low (3,5%)	Average (6%)	Low (4,5%)	All time low (3,25%)
Yield gap	Highly Negative (-9%)	Positive (1%)	Neutral (0%)	Highly Positive (3%)
Real Rents (sek/sqm)	High (5000)	High (5250)	Average (4000)	High (5000)
Vacancy	Low (3,5%)	Low (3%)	Average (6%)	Low (2,5%)
LTV	High (>85%)	Average (65–70%)	Average (60–70%)	Low (45–55%)
Financing	Bank	Bank	Bank	Bank/Market

Table II: Content of the microeconomic before the crisis and today in Sweden.

Source: Developed by the writers.

The results suggest that today's market and previous crises, especially in the '90s, show similarities in terms of low cap rates in the market. A counterargument made by the respondents concerns the historically high yield gap. The expanding yield gap has been generated by the historically low risk-free rate (Riksbanken, 2017) and the risk premium for real estate has in turn increased, even though the current cap rate remains low from a historical perspective.

Supply and demand are two fundamental parts of the space market and are the driving factors for rents and vacancy levels. Similar to the crises of the '90s and '00, the current demand for office spaces is high, and vacancy has fallen to historically low levels. During the previous crises, speculative construction projects were a significant factor that drastically increased supply levels. Excess supply created negative leverage when the crisis took place, thus rents were forced to low levels and vacancy soared. However, the results indicate that there is a low level of new supply being constructed today, with speculative construction being almost absent. This low level of construction has been attributed to central Stockholm consisting of only one CBD, which limits the addition to new competitive office spaces.

Record high prime rents have been noted in recent years, much like during previous crises. However, the primary data of the study indicates a healthy space market through studying rent

levels. Graphs of real rents in Stockholm illustrate that current levels are not higher than during previous crises (Faberge, 2019). Several respondents argued that the high prime rents concern few premises, and that the general rent level is lower than the prime. Furthermore, there is no clear evidence of one sector driving the rent levels higher today, which took place in the dotcom era.

The LTV ratios for commercial property companies are currently around 50% and the current market can be considered healthier as crises were known for high indebtedness, even exceeding 100% in the '90s. Respondents also argued for an even more stable market as the focus is now on cash flow. In other words, property companies are ensuring healthy levels of interest rate coverage, which indicates room for increased financial costs.

Several differences were established following the crisis in '08 as real estate companies have started to use market financing, i.e., the use of bonds and preference shares. In previous crises, real estate companies were mostly financed with loans from banks. This shift makes the real estate market more connected to the capital markets. The capital market is, according to the results, known to change its perception rapidly if uncertainty appears in the market. This could mean that liquidity might become a problem, much like in '08. As argued by some respondents, this could result in part of the sector encountering difficulties when refinancing their businesses as financing becomes more expensive or, worse, completely closed.

In the '90s, ownership in Stockholm was more fragmented and privately owned. Today, the majority of ownership consists of institutions, which can be characterised as more stable with a focus on long-term investments, and therefore as more risk-averse. During the interviews, the respondents stated that institutional owners use less or no debt to leverage their real estate assets. The use of only equity contradicts the theory stating that credit expansion occurs as property prices increase. Additionally, the outcome of institutional ownership should imply decreased financial risks, and the industry today can be regarded as more stable compared to previous crises.

An important aspect to consider is the underlying cause of the crises. The crisis of the '90s occurred as a combination of a financial and economic crisis. Therefore, it was the most severe of the three considered crises, since it affected both the asset and space markets. In the dotcom crash of '00 the crisis was a stock market crash, which resulted from an economic downturn whereby UE rates started to increase, and companies trended downwards. This type of crash mostly affects the space market because the underlying demand for offices decreases. In '08 the crisis was financial, which harmed credit expansion and economic stability within the asset market, but the underlying demand for offices remained. With the previous aspects in mind, one can ask whether the similarities or differences are more significant. Since the differences are more notable, this raises the question of what will trigger the next real estate crash. The saying that one learns from one's mistakes is thus negligible, as these mistakes (i.e., similarities) with high probability will not form the basis of a new crash, which has been interpreted from the different bases of the various crises. The second research question was raised to analyse the new uncertainties and potential risks in the market by studying the consensus among actors over the prevailing market conditions.

7.2 RQ2: Consensus of Stockholm office market

Table III illustrates some of the underlying risks that were present in the market before the various crises in the office market of Stockholm. The triggers (risks) have been collected from analyzing the theoretical parts and interviews. Hint, the crisis in '08, had few triggers concerning the real estate market and, where a crisis in the US that affected the global, as Sweden's GDP and financial system.

Crisis		Triggers		Consequence
90s	Speculative investments	High LTV-ratio	Financial policies	Collapsing RE/Bank market
2000s	High rents	Dotcom companies	Speculative supply	Soaring vacancy and decreasing rents
2008	U.S housing market	The financial system	Speculative banks	Negative GDP and restricted financing.
Today (2019)	High valuation	Bond financing	Low interest rates	-

Table III: Demonstrate significant underlying triggers to the crises.

Source: Developed by the writers.

Objective assessment of the results shows an optimistic view of the current office market in central Stockholm. The studied factors within both macro- and microeconomics point towards prosperous asset and space markets. The study further reveals that the office market in Stockholm provides attributes, such as transparency and high liquidity, which make the market attractive. As argued by the respondents, this could be an additional reason for motivating the low cap rate, as transparency and liquidity are parts of the risk premium.

As described in the theoretical part of the study (chapter 3.5), the real estate market consists of two cycles, the fundamental cycle and the financial cycle, which can illustrate the strong underlying demand for office spaces. Firstly, Stockholm has one of the highest population growth rates among European cities and on average a higher GDP per capita than Sweden overall. These factors imply an enduring fundamental cycle, i.e., the long-term cycle. In addition, a high capital inflow and low interest rate levels, indicating a robust financial cycle which increases property prices. This analysis supports the argument made by respondents concerning how the gap between supply and demand for offices in central Stockholm will continue to grow. The respondents extended their argument for a stable space market partly because of the city's geographical attributes. Stockholm consists

of one CBD, which decreases the risk of a competitive supply being built and thus lowers the risk of increased vacancy. Real estate is also an inelastic product, which asserts that demand will develop faster than supply, as it takes time to construct a new office. However, if a competitive supply were to be built, it would eventually catch up with demand and rents would fall to 'equilibrium' again. Equilibrium is the state when supply nor demand are distorted. The situation in Stockholm displays the opposite situation, as supply has not caught up with demand, and rents have risen. Hence, if the statements made by the respondents are accurate, central Stockholm will not experience excessive supply and rent levels will hold or increase further.

Meanwhile, the future outlook of the asset market involves uncertainties that were not present in the previous crises. Increased property values can partly be attributed to the low interest rate. Although the values have become highly sensitive, the consensus points towards minor worries over the unusual interest rate situation. The respondents' opinions were that interest rates would remain at present levels, taking into account various aspects such as inflation, globalisation and demographics. In the low interest rate environment, the property sector has also started to use market financing, that is issuing bonds, which is growing and yet untested. The trend of using market financing has been normalised in the market during recent years and represents more than 25% of the outstanding debt among property owners in 2017. According to Riksbanken (2017) bonds have increased by 80% from the previous year. The financing source has shorter maturities, usually three to five years, and in 2020 a large part of the outstanding bonds will be refinanced (FI, 2018). The results indicate that there are concerns about the capital markets which are governed by its mood, and there are certain associated with liquidity risks. But to what extent this type of financing can affect the market is not evident, and according to some of the respondents the use of these instruments is not considered riskier than bank financing. Thus, large firms have made these statements, and the risk might be more evident for smaller actors with strained balance sheets or cash flow.

Speculative behaviour and unproven business models were significant during previous crises, which can be compared to coworking today. This phenomenon has similarities to the dotcom era in '00, such as speculative characteristics, as argued by a few of the respondents. Primarily, the uncertainties of the business model are to proof sustainability before representing a substantial part of the market. Presently, coworking operators are at a stage where much focus is placed on expansion, and yet no significant profits are returned. One could question the stability of the market if coworking becomes more prominent. In such a case, there could potentially be risks of increased vacancies. For example, WeWork, a coworking operator, is one of the largest private tenants in London and may demonstrate the effects of coworking on a market in the nearby future (Buxton, 2018). Stockholm and London have different attributes, but the comparison should be relevant. Nevertheless, once this phenomenon has started to exhibit sustainability, the concept could be seen as less risky. For now, only speculations can be made.

7.3 Discussion

The situation of Stockholm's office market can be proved unique with the use of the Barras model (1994), as shown in Figure 4. This demonstrates how the current market deviates from the nature of the model. According to the result, the economy can be placed between the states of 'economic boom' and 'economic downturn' in the cycle. Hence, the present market should involve a building boom and increasing interest rates. In reality this is not the case, as limited building and low interest rates are observed. The situation can further be demonstrated by considering Geltner et al. (2006) model, which states that the combination of economic growth and an optimistic capital market should promote the initiation for new construction projects. Furthermore, the limited supply in central Stockholm could increase the risk even more for bubbles, since commercial real estate are more subject to it because of the fixed supply in short-term (Grover and Grover 2014). The low number of construction projects has been claimed, accordingly to the result, to be partly related to the geographical situation of central Stockholm. It should be relevant to question the argument since the past crises were known for excessive supply. Additionally, the geographic attributes of the city have not changed significantly, hence one could also ask why this time would be different. It can be speculated whether this attribute 'protects' the low vacancies seen today in the long run. If increasing amounts of supply were constructed, which cannot be completely neglected, this would according to the models of DiPasquale and Wheaton (1992) (Figure 1) decrease rents in the long run, which from the current 'strained' level would have a significant effect on the asset markets valuation.

Meanwhile, the low LTV ratios signal a more stable industry in comparison to previous crises. It can be questioned if this can partially be attributed to favourable macroeconomics and advantageous valuation standards, IFRS, i.e., estimating the market value of assets by projecting future cash flow streams in relation to the cap rate (Fastighetsvärdering, 2014). The historical level of cap rates has been considerably higher, and levels of 4-5% can be regarded as unsustainable (Nordlund and Lundström 2011). As the cap rates have decreased vigorously, real estate companies have been able to increase the values of their assets, resulting in stronger balance sheets. Further, the feedback loop perceives a stronger market, but it also creates a credit expansion which can result in a bubble (Grover and Grover, 2000). One can argue if these are, to some extent, artificial values and that the favourable conditions have partly driven the LTV ratios to low levels. And, there could be more risks than regarded if the loop turns the negative direction, i.e., decreasing prices and weaker balance sheets (Grover and Grover, 2000). The same applies to the argument for interest coverage ratios, as these are estimated from a historic low interest rate environment. Consequently, one could consider how the company's interest coverage ratio would be affected in a higher interest rate environment or with rising bond premiums. Both the LTV ratio and interest coverage rate are essential components from a risk and financial stability perspective. An 'interest rate experiment' is currently being discussed in the market, but still, opinions and arguments seem to hang on a continued low interest rate environment, which is almost considered the new normal. The strong macroeconomic situation and the historically long business cycle may have left their marks on the high hopes of the future, and the question can be raised as to why this time would be different.

The cap rate levels deserve further attention and, it could be discussed how the abnormally low cap rates can be regarded as sustainable. Part of this question can be answered by Figure 15, which illustrates the yield gap and indicates how the low interest rate environment is discounted from the

present commercial real estate valuations. That is, the graph implies that, theoretically, if the market would be able to foretell that interest rates would remain at present levels, the asset values would be valued even more highly, i.e., even lower cap rates, from a historical perspective. On the other hand, a report from Nordanö (2012) raised the question of whether or not the low cap rate is rational. In recent decades investors have required lower returns and decreasing cap rates, at the same time as rents have continued to increase and rental prospects have decreased. In addition, if rents rise rapidly, the likelihood of further growth should decrease, and investors should thus require a higher risk premium, i.e., higher cap rates. From the previous chapters, one can consider the belief that rents will continue to be stable and will continue to grow, although gradually. This reflection could be questioned since it is grounded on low vacancy levels and a strong economy. Furthermore, rent levels were argued to be, in real terms, not at the same levels as during the dotcom era. One can question whether it is rational to use previous rental peaks as a benchmark for a 'healthy and sound' market.

In addition to the above discussion, it can be argued that more capital is flowing from the capital markets into the real estate sector and that the increasing amount of bonds has almost doubled in recent years (Riksbanken, 2018). One can compare it to the first phase of Allen and Gale's (2000) model, which is financial liberation and large credit expansion. Moreover, consensus implies a continued high stream of capital into the sector and easy access to capital with excellent terms. In a report from Linneman (2015) the capital flow was pointed out as the most important fundamental factor for low cap rates. Thus, the increased liquidity and credit easing can lead to bubbles in assets (Allen et al. 2009; Allen and Gale, 2010). Furthermore, the advantages of using market financing include the diversification of credit for property companies and the decreased amount of credit by the banks. However, it is essential to consider that bonds are secured with liquidity facilities by banks (Riksbanken, 2018). The banks involvement in financing real estate booms can be critical to the financial stability and countries economic growth (Crowe et al. 2011). And, as mentioned, the decent mood in the capital market might be a reflection of the 'contemporary' strong macroeconomy and experimental interest rate environment.

Not least, property companies in the '90s were known for negative cash flows and LTV ratios above 100%. This behaviour seemed reasonable until the market started to collapse. This is similar to the dotcom era, when property owners allowed their premises to be leased to unstable companies with weak or negative profits. Moreover, after '08 the banking sector was more regulated because of its loose credit business to substandard clients. Ironical to the study and as mentioned during the interviews, what causes the next crisis will be something unknown to the market. The factors which have been studied and which are understood by most actors are unlikely to be what causes future crises, and subsequently the causing factors will seem evident to the market actors involved in the behaviour. This pattern becomes apparent when studying the causal factors for other crises. And, crises will keep recurring in the future as they're inevitable and follow similar pattern with large credit expansions (Reinhart and Rogoff, 2009)

The present situation, compared to previous crises, depicts a more stable and experienced industry based on the study's findings. Fundamentally, the real estate market in Stockholm is more prepared to handle a recession without threatening the entire financial system. From a historical perspective, business cycles come and go and at their peak words of a 'new economy' are spoken, and there are some concerns about the prevailing optimistic view of the market. Most of the interviewees answered,

surprisingly, in a very similar way to the questions. To questions concerning ‘what motivates investment in today’s market’, common answers mentioned the few alternatives in the market. Additionally, considerable amounts of capital from pension and insurance companies attempt to generate returns in a low interest rate environment. As a result, these actors find their way to the real estate market. The lack of alternative investments and the wall of money creates a cycle of increasing property prices, as illustrated in Figure 5, which could eventually create a bubble. Also, during long periods of increasing property prices, the asset starts to appeal to other investors who are not accustomed to properties and their characteristics (Nordlund and Lundström 2011). The inexperienced investors will further increase the risks within the market when they are not acting on a rational basis (Rosengren, 2017; Dilén and Sellin, 2016). This can be attributed to the phenomena of herd behaviour, when investors act upon the actions of others in the belief of having superior knowledge and experience. Furthermore, the respondents considered motivations for today’s market with a few signs pointing towards an increasing interest rate. A stalled rate might be the case, but in respect to the critical impact of the interest rate on the industry (Mera and Renaud, 2000), one can argue for visible significant effects on the market if it starts to incline. However, for now, the office market in Stockholm seems to be in a favourable phase and with a decent probability continue to yield attractive returns in the coming year(s).

8. Conclusion

This study aimed to evaluate the current market conditions with the previous crises of the office market in Stockholm. A comparison with the crises of the '90s, '00, and '08 with today was made both on a macro and micro level. In addition, the study analysed the market actors' motivations for investment and their perception of how prepared the market is to deteriorating conditions, through an analysis of the market consensus on a possible downfall. The study's primary data was collected from representative professionals from within various parts of the industry. This provided updated insights into the current perception of the office market's conditions and stability.

The central Stockholm office market consists of historically low cap rates, a long period of continuous high rental growths, and property prices increasing to new standards. One can see that these factors show similarities to the previous crises, especially in the 90s and in '00. Thus, when studying the market in detail, the complicated nature of the situation becomes apparent. Many factors have changed between the crises, and a direct comparison cannot be drawn. Meanwhile, the ongoing office market can be regarded as more professional and stable compared to its status before the crises, one can outline that the differences are more significant than the similarities between the crises. This can be partly attributed to structural changes, coworking, and the shift of the financial structure. These are new trends that have been emerging rapidly after '08 and which could have a substantial impact on the office market.

Moreover, the tailwind in the macroeconomy, that is not least the abnormal interest rate environment, may have encouraged irrational confidence and, in turn, values in the market. As the literature review indicated, the leverage is one of the most important factors concerning the financial stability. The current LTV-ratios are not particularly high from a historical perspective, but the borrowing should be considered with the sharp rise in prices that has been significant in recent years. The question can be asked whether the borrowing is sound in relation to the long-term property values on a fundamental level, as the feedback loop promotes higher asset price and credit. However, the loop acts much similar in the negative direction which causes rapid price declines. Although the study's analysis can fundamentally motivate the current asset values and considered to continue to favour the market, this is unlikely to last forever. The responsibility falls to the companies to obtain information on where the company is heading and not to be persuaded by the effects of the macroeconomic tailwind.

During previous crises the commercial real estate market was a significant contributing factor to the economic turmoil. By having a more financially stable office market in Stockholm, future crises could be less severe for Sweden's financial stability. A situation such as that in the '90s could have been less severe if property companies had not acted irrationally and acted with too much risk. On behalf of that, we believe this study will contribute with an updated view on the existing office market in central Stockholm and perhaps awake some of the new emerging phenomenon in the market to be further evaluated.

8.1 Future research

We suggest future research to examine the implications of the shift to market-financing by property companies. As these instruments are becoming more common in Sweden and considered one of the prominent differences with the past crises. A deeper study in the subject could be interesting in the sense of both evaluate the implication on the bank sector, as the stability in the financial sector in a recession.

Moreover, when writing a study about the office market today, it is almost inevitably to not bring up coworking. Yet, we cannot be certain what implication the structural change will have on the office market. It becomes even more uncertain as the operators have not proved to be sustainable. Can coworking impact the office market much like e-commerce disrupted the retail industry? However, as this study have explained, the commercial real estate market is an important part of the financial stability for a country. When a concept such as coworking emerges, we believe it has to be taken seriously and studied thoroughly. Therefore, we suggest future research to study whether coworking can become more efficient at utilizing the office space. In other words, can the cost per employee decrease if the use of an operator? If this is possible, the concept can prove to be more sustainable than believed.

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Appendix 1.

Macro factors

1. Business cycle

During the recent financial crisis, the Swedish government succeeded in dampening the effects on the office market by lowering the interest rate. It is possible to argue that there is not the same room to "save" the economy today, given the current low interest rate environment.

☐ Are there signs of a downtrending economy and what effect would they have on the real estate market today?

2. Interest rates

The current level of interest rates is at record low levels and much speaks for these levels to remain in the future.

☐ What is your view of the interest rate over the next 5 years?

☐ What would it mean for the real estate market if interest was raised to a "normal rate", e.g. 250 dots and 400 dots?

☐ What is your view of inflation in coming years?

3. Currency

The Riksbank continues to keep the interest rate record low and the Swedish krona is weakening against the euro and the dollar.

☐ What does this mean for the Swedish real estate market? ex. there are risks / opportunities with increased capital from foreign investors.

4. Structural changes

In recent years, major structural changes have taken place. The sharing economy creates new players within 'Co-working', which is growing and taking larger market shares in, among other things, Stockholm.

☐ How will these structural changes affect the real estate industry / office market?

Micro factors

1. The yield requirement

The current yield requirement is at historically low levels. Earlier crises are also characterized by low direct yield requirements and historically they have been significantly higher in terms of trend.

☐ Can today's levels be motivated by fundamentals? How do you view the underlying factors such as risk premium, risk-free interest rate and growth (g)?

2. Property owner

During the 1990s, more properties were owned by "inexperienced" investors. Today, the market can be considered more professional since more institutional owners and professional real estate companies are on the market.

☐ What does this mean for the office market in general?

☐ How is the office market affected by the increased interest from institutions such as pension companies, who try to increase returns through real estate investments and see the properties as so-called return properties?

3. Financing

The bank lent more money to properties during the 1990s compared to today (not in absolute terms, but in relation to the value, for example). Today, the banks have lowered the risks and do not lend to the same extent, but this has instead increased the amount of bonds and preference shares as alternative financing.

☐ What are the risks of increased bond borrowing as financing?

4. Mortgage ratio & interest coverage ratio

Today, mortgage lending among property companies is relatively low, but in absolute terms it has increased sharply in the past decade.

☐ What risks are connected with today's loan-to-value ratio?

☐ Are there risks with the interest coverage ratio?

5. Supply

In theory, properties are inelastic, which means that the supply does not follow demand immediately in increases. Hence, there are substantial increases in rents and then fall to equilibrium again when supply comes up with demand.

☐ Are there tendencies for increased supply, in or around Stockholm, that can create a balance between supply and demand in the next few years?

☐ If yes, are there trends in speculative construction regarding the current demand for offices?

6. Rentals

In recent years, rents in Stockholm have increased rapidly and today it is at similar levels as in larger cities in Europe. The rent has been estimated to continue to rise from high levels.

- ☐ Do you think today's rents are justified? Can today's rents still rise?
- ☐ Can recent rental growth be generalized to a particular sector, and become a driving force for rental development in other sectors?
- ☐ Are there any risks with how today's lease contracts are designed? Ex. that shorter contracts are demanded to a greater extent today.

7. Vacancy

During previous crashes, vacancies have reached levels of 12-16%. Even in "normal conditions", it is said that the vacancy should be about 4%. This is considerably higher than today's vacancies in CBD Stockholm.

- ☐ What would it mean for the market if the vacancy rate reached the same levels as in previous crises, 12-16%? Alternatively, "normalize" to historical levels / what is considered normal?
- ☐ Is there a risk that today's demand for offices, like the dotcom bubble, is inflated by a specific sector?

Differences and Similarities

- ☐ Are there parallels with the current market situation that can be drawn to the previous crashes?
- ☐ Are there risks in the current market situation that were not present in the previous crashes?
- ☐ The macro / micro mode is very unique today. The unique conditions do not last forever. How are investments motivated in today's market given that all factors look "good"?

