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Bachelor-Thesis

Potential Effects of the new amendment to the laws governing financial services supervision on the German real estate market

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Abstract

The German real estate market has been growing ever since the 2007-2008 financial crisis. Even though prices in the major cities have been growing at a more accelerated rate, the growth is still visible throughout the entire country. The main price driver are an ever-growing demand and low interest rates. Even though the rising prices have been fundamentally justified and there is no speculative behaviour or expansionary credit growth evident in the market, authorities are still worried about the development of a bubble and the consequences it would have. The committee on financial stability advised the implementation of macro-prudential instruments in order to protect the financial stability of the country. They intended to prevent what happened in the United States from happening in Germany. With this consultation, the German Federal Financial Supervisory Authority was granted the ability to intervene and change the framework of real estate loans. With instruments such loan-to-value caps, debt-to-income caps, debt-sustainability ratios and amortization requirements, they are supposed to stabilise the real estate market and prevent it from becoming a threat to the financial stability of Germany in the future. Many countries before have used such instruments to reach the same goal. Drawing from experiences they made, one could determine the potential impacts they may have on the German real estate market.

Keywords: German real estate market, macro-prudential instruments, financial stability, real estate bubbles

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III. List of abbreviations

BaFin	German Federal Financial Supervisory Authority
DTI	Debt-to-income
GBIC	German Banking Industry Committee
HKMA	Hong Kong Monetary Authority
LTV	Loan-to-value
RHS	Right hand side

1 Introduction

1.1 Research problem

The growth of the German economy is showing no signs of slowing down. The country is regarded as a safe haven for global capital and the demand for real estate seems to be increasing. Both national and international investors interests in the German residential market continue to increase. Their scope of investments is even reaching on to second tier cities, project development, and even to the student housing segment. Mainly due to very low interest rates, Germany has been experiencing a shift towards house ownership. Housing prices, which in the past had been relatively cheap compared to other European countries have been rapidly rising in the recent years, mostly due to the low interest rates and hereto related lower borrowing costs. The solid economic growth of the country and low unemployment rates contribute to this as well.

This combination of a booming real estate market and low interest rates however could turn out to be dangerous. Although there is no definite talk of a housing bubble in Germany yet, there are experts who believe the market may be overheating. In order to halt or avoid the creation of a bubble, the German Federal Financial Supervisory Authority in, German known as “der Bundesanstalt für Finanzdienstleistungsaufsicht” (in the following: BaFin) has been authorised by a new amendment to the laws governing financial services supervision from the Federal Parliament to combat risks to the economic stability through real estate financing. To be more precise, it can limit the framework of real estate loans in order to prevent the creation of a housing bubble.

As seen by the financial crisis in 2007, housing bubbles can cripple entire economies. It is understandable why one would work towards avoiding them. The new legislation might however have further effects on the German real estate market besides what the federal Parliament and the BaFin intend for it to do.

This paper aims to analyse the impact of the said amendment might have on the real estate market in Germany. A respectable amount of literature, which may at times entail different views towards this specific type of issue already exists.

1.2 Research method

This paper aims to identify and analyse the influence of new legislations in Germany which effect the framework of real estate financing, especially in regards to loan to value and loan duration. Hence, in order to get a better understanding of the topic, knowledge about the real estate market, but also the lending market is required. For this purpose, the development and

current state of both markets in Germany are described. In order to portray objective views of the market, diverse literature has been used. To further simplify the portrayal of the markets, which at times might be rather complex, tables and graphs are included.

1.3 Course of investigation

Based upon the research question postulated in chapter 1.1, a description of the real estate market is given followed by that of the financing market behind the real estate market. In addition to that, there will be comparisons made with some other larger markets.

In the next step, the new legislation will be addressed. This chapter focuses solely on the change in the framework of residential real estate financing, explaining the theoretical changes and the intention. It also contains a few different opinions from some institutions, which have made an official statement.

Chapter 4 deals with analysing the influence of the new legislation on the market. It touches upon housing bubbles in general and specifically the major US housing bubble from 2007, which lead to the world wide financial crisis. There will also be a description of the possible consequences and effects the new legislation may bring along.

The concluding chapter 5 offers a summary of the discussed findings followed by a critical acclaim and a future outlook to conclude the paper.

2 The German real estate market

2.1 The development and current state of the market

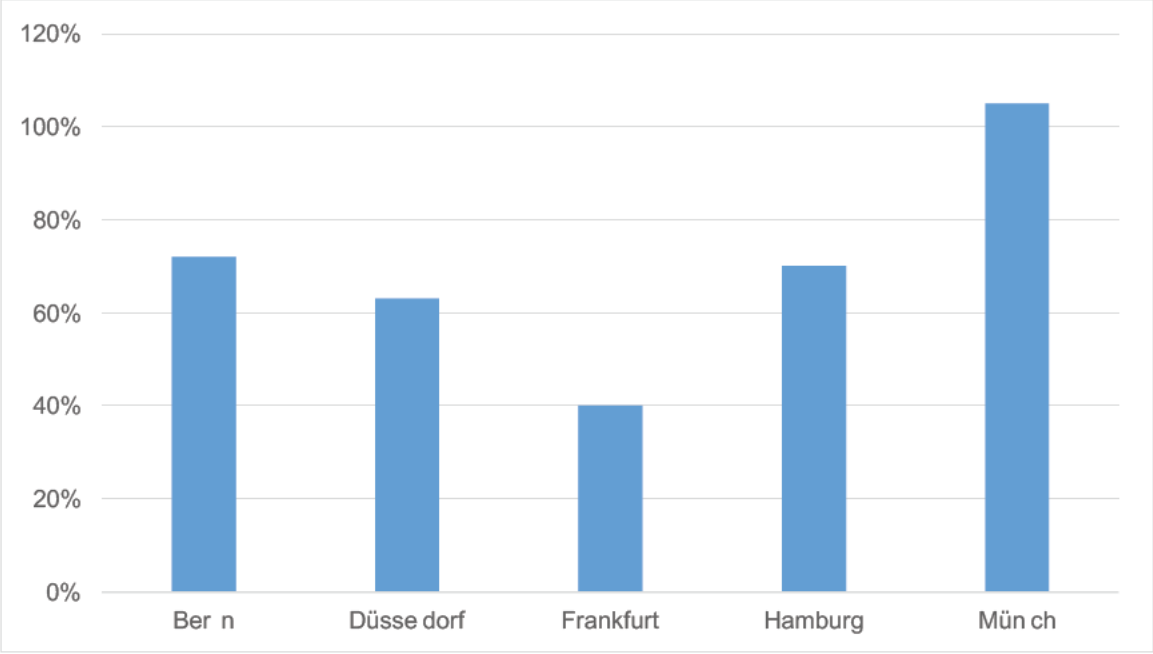
In 2007-2008, when the world was hit by the financial crisis, the German real estate market proved to be rather stable in times of turmoil (Maennig, 2012, p. 20). Especially, when compared to other countries during that time (ibid.). In fact, residential rents went up by 1%, and due to the price of commodities declining, they even outpaced the inflation rate (ibid.). In contrast to other countries such as the United Kingdom, the United States, Spain, Ireland as well as many Eastern European and Asian countries, where drastic price dips were recorded, the prices of real estate in Germany either stagnated or dropped to a very small degree (ibid.). Many observers believe and point out that the this was due to a backlog, which had been created with German housing prices (Mitropoulos, Focus on German Housing Market, 2016, p. 2). However, this reasoning fails to consider that those markets which experienced price hikes were mainly driven by credit excesses and were thus not fundamentally justified (ibid.). The notion that the German market is less cyclical by nature compared to others is more a myth than the reality of the situation (ibid.). By international standards, one could absolutely make the argument and even be proven right, saying that the quite conservative German

financing practice brings with it a market less susceptible to the formation of a bubble (ibid.). This however, in no way means that the German market is dull in it's core, as proven by the fact that from the end of the 1980s until the mid 1990s, average price increases recorded in the market were nearly 50% (ibid.).

One reason why Germany's real estate price deviated from the international pattern was the the real per-capita income which had stagnated for at least a decade and a half at that time (Maennig, 2012, p. 21). Another explanation is based on the characteristics of the German real estate finance systems, as described in chapter 2.2, and the fiscal policy, which includes non deductibility of interest expenditures for owner-occupied homes and high transaction costs (ibid.). A further reason, why prices stood steady, was the fact that the inflation rate had generally been rather modest, meaning it did not exactly encourage people to go and invest in tangibles such as real estate (ibid.). Through the years 1991-2009, the general inflation rate in Germany hovered around 1.8% (ibid.).

The strong rise of prices in the real estate market and the general growth of the sector since 2010 seem to show no signs of slowing down (Kholodilin & Michelsen, 2017, p. 255). Since 2010, prices of condominiums in all of Germany have gone up by 55% (ibid.). This exceptional development is unheard of in German history (ibid.). The figure below shows by how much prices of existing apartments rose between 2009-2016 in five major German cities.

Figure 1: 2009-2016 apartment prices in German cities, year-on-year %

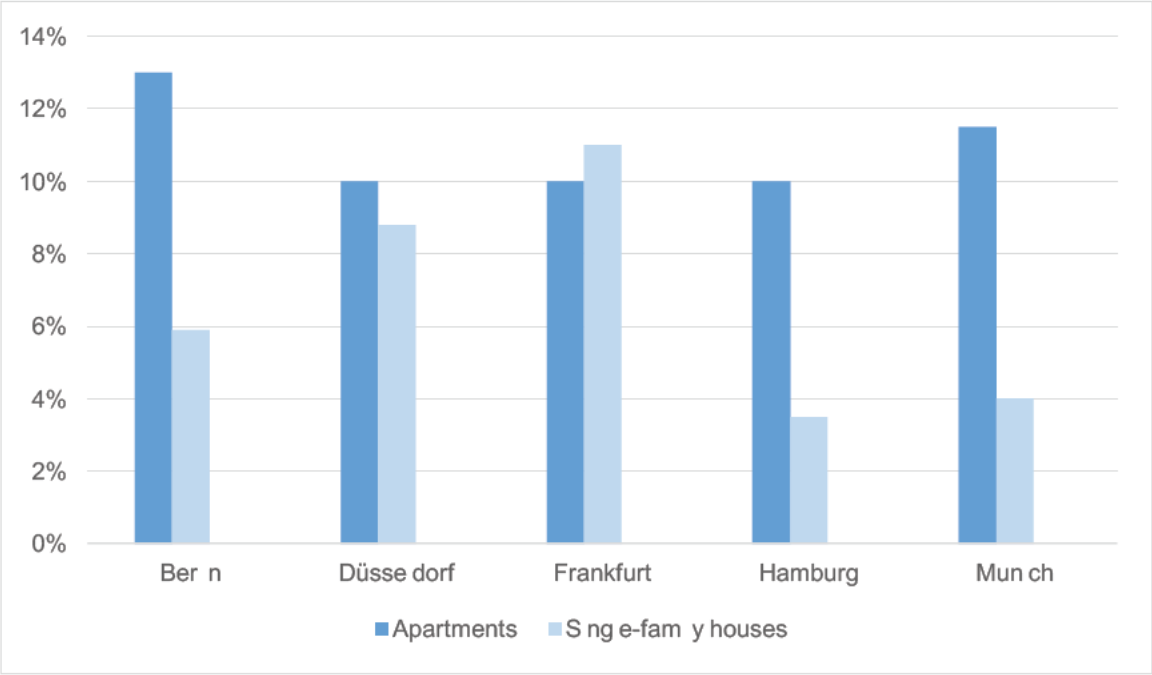


Source: Own figure based on data from Möbert 2017 p 2

Filtering out the C and B cities in which prices rose by 40%, prices in A cities rose by a total of 63% (Möbert, 2017, p. 2). There were 45,000 new homes completed in Munich between the years 2011 and 2016 (ibid). Yet the vacancy rate in Germany's most expensive city, Munich,

is still floating around the zero mark (ibid.). Property prices have more than doubled during the current cycle and as far as market researchers are concerned, they are going to rise even more (ibid.). The next figure shows by by what percentage prices of single-family houses and apartments in the same previously mentioned five cities rose just in the year 2016.

Figure 2: Price changes by percentage of properties in German cities in 2016



Source: Own figure based on data from Möbert 2017 p 2

The prices for existing housing stocks in Berlin rose by 13% only in 2016, which was the strongest rise between all German cities (Möbert, 2017, p. 2). Today, property prices in Berlin are twice as high as they were back in 2005 (ibid.). A shortage of accommodations and a lack of land for development are the main reasons why prices in Berlin have reached the level of some of the major cities in western Germany (ibid.). The high demand for housing in Frankfurt following the healthy economy and rise of population in the city could not be met by the scarce supply (ibid.). Between 2009-2016, prices rose by 40% (ibid.). The relatively high baseline level and low job growth in the financial services industry as a result of the financial crisis and the euro crisis, could be the main factors, why prices in Frankfurt were held rather low (ibid.). However, after the Brexit vote in 2016, prices, especially for family houses, started to rise again (ibid.). Since 2009, prices in Hamburg for existing housing stock, has gone up by around 70% (ibid.). There is a rather high level of construction activity in Hamburg, which in turn will lead to the gap between supply and demand to remain closer than in Berlin and Munich (ibid.). Thus the main explanation behind property prices in Hamburg must be the low interest rates (ibid.). Consequently, Hamburg's market would react very sensitively if interest rates were to be normalised but since any sort of normalisation is several years always, prices are bound to

keep increasing (ibid.). Düsseldorf has not experienced strong price increases (ibid.). These have more or less increased just in line with or below the average level (ibid.). The population has only increased by 5% since 2009 and other demand drivers have not been as outstanding as in the other major cities (ibid.). Interest rates could influence the market in Düsseldorf even heavier than in Hamburg, but for the foreseeable future, prices are forecasted to rise (ibid.).

After real estate prices started to rise in 2010, many started asking if a real estate bubble was in the making (Mitropoulos, Focus on German Housing Market, 2016, p. 2). Market participants, as a result of what had happened following the most recent financial crisis, became much more aware of their investment behaviour (ibid.). This upsurge in prices is mainly due to the European Central Bank's low interest-rate policy (Kholodilin & Michelsen, 2017, p. 255). With interest rates being at an all time low, conditions for financial real estate investments are loosened up (ibid.). Furthermore, the return on alternative investments are lower than what they used to be (ibid.). It seems as though that as part of the central banks' toolbox for getting a handle on the euro crisis, the economy is still being stimulated through negative real interest rates (Harnau & Möbert, 2012, p. 6). The inflation adjusted returns for German government bonds was even completely negative back in 2012 (ibid., p. 7). Saving via deposit accounts and bonds have thus become much less attractive than prior to the euro crisis (ibid.). As a result, investors are drawn to real estate (ibid.). 10 year-bond returns were at or above the level of rental yields in the pre-crisis years (ibid.). In 2008, this relationship reversed in the favour of the real estate market (ibid.). Rebalancing portfolios and shifting from financial markets towards real estate markets became more popular (ibid.).

These factors, coupled with the ever-growing trends of moving to cities have caused for construction activities to not be able to satisfy the increase in demand (Kholodilin & Michelsen, 2017, p. 255). This is reflected in the rising housing rents (ibid.). Housing prices should always develop in harmony with disposable income to ensure a healthy market (ibid., p. 257). Although real estate prices have recently risen quicker than income, the relationship between the two of them has always been and seemingly continues to be rather harmonious in Germany (ibid.). The interest in the German real estate market is not only from within the country, but also from outside of it (Harnau & Möbert, 2012, p. 8). In 2012, for example, the German housing market was still rather inexpensive by international standards as both prices and affordability indices, were much higher than in Germany (ibid.). Measuring how much foreigners have invested in the market can prove to be a difficult task (ibid.). Target2 balances of the Bundesbank can be an indicator used to determine this (ibid.). There was a strong rise in them between 2010-2012 which was mainly influenced by capital flows into Germany (ibid.). As a result of the European Central Bank announcing to supply even more liquidity to banks and countries without full market access, further liquidity flows to Germany could ultimately grow (ibid.). Target2 claims

are nearly all held by heavily indebted countries such as Spain and Italy (ibid.). There were large capital inflows from those countries and it should also be considered that although they had a declining per capita income in Italy, they were in average, richer than German households (ibid.). The increase in taxation risk in southern European markets, as a result of reductions in account and budget deficits made foreign assets more appealing (ibid.). The German real estate market proved as an acceptable and interesting investment alternative (ibid.).

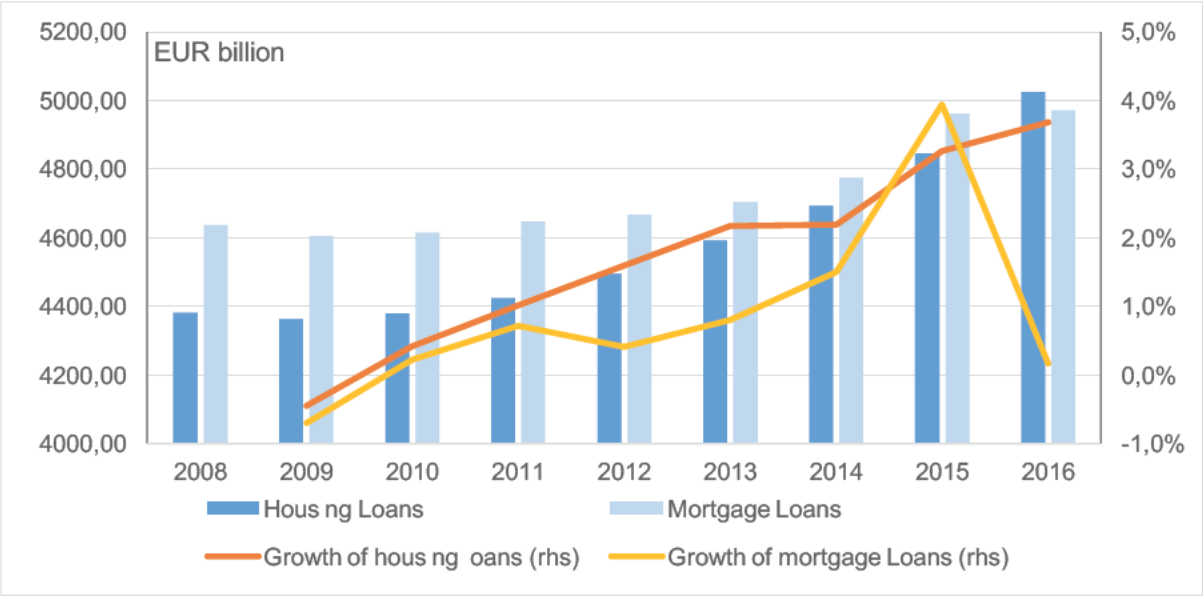
The combination of low interest-rates and the growing supply and demand trend easily explains the real estate prices in Germany (Mitropoulos, Focus on German Housing Market, 2016, p. 2). These two strong price drivers do not look like swinging in the other direction any time soon (ibid.). Although prices have been rising non-stop and the boom phase has not been showing any signs of slowing down, one very important factor which is missing from Germany as an essential element of a real estate bubble is very expansionary lending (ibid.). The stock of housing construction loans in 2016 was only 4% above that of the previous year (ibid.). From a long-term perspective and by international standards, this is rather unimpressive (ibid.). Due to the consistent rise in prices, the housing market can however become rather susceptible to correction (ibid.). Based on these findings, one could say that the development of housing prices is justified by the fundamental factors (Kholodilin & Michelsen, 2017, p. 255). Between the mid 1990s until 2010, prices for real estate in Germany stood rather still, and if one were to measure it by the general inflation rate, price of living space actually fell (ibid.). Today's price increases can in part be attributed to catch-up effects (ibid.). Based on current data, there is no price bubble in evidence in the German housing market as speculative investor behaviours, like those observed in the American market, can not be identified (ibid., p. 264). Transaction are being made upon financial bases and the sheer volume of loans given out are stable (ibid.).

2.2 The real estate financing market

During the current real estate cycle which started in 2009, both banks and borrowers have been behaving in a conservative manner, which in turn has had its effects on the German mortgage market (Böttcher, Heymann, Möbert, & Schneider, 2016, p. 5). Although prices have been growing rapidly, the loan book only grew by a nominal rate of 12.5% between 2009 and mid 2016, which when adjusted for inflation, would result in loan books growing by a mere 5% (ibid.). Until 2014, the cycle could even be deemed as credit-free, as higher repayment rates and inflation offset the slight increase in new lendings to that point (ibid.). The weak rate of lending growth could also be seen through the ratio of debt to GDP as it decreased from 47 % in 2009 to less than 40% in 2016 (ibid.). It was not until the strong summer of 2015 where new lending resulted in a 3.5% year-on-year increase in the volume of German mortgage loans

(ibid.). One reason behind it could have been the growing politcal uncertainty in various countries such as Greece during that period leading to many looking for a safe haven and finding it in Germany (ibid.). Through capital inflows in the German housing market, domestic lending was stimulated (ibid.). The aforementioned increase in lending could also be attributed to the fall in five and ten-year mortgage rates as the avergae mortabe rate fell from 2.4% in 2014, to 2% in 2015 and to an all time low of 1.6% in may of 2016 (ibid.). The following figure illustrates a detailed view on the real estate fiancing market in Germany.

Figure 3: The development of the real estate financing market in Germany



Source: Own figure based on data from Deutsche Bundesbank

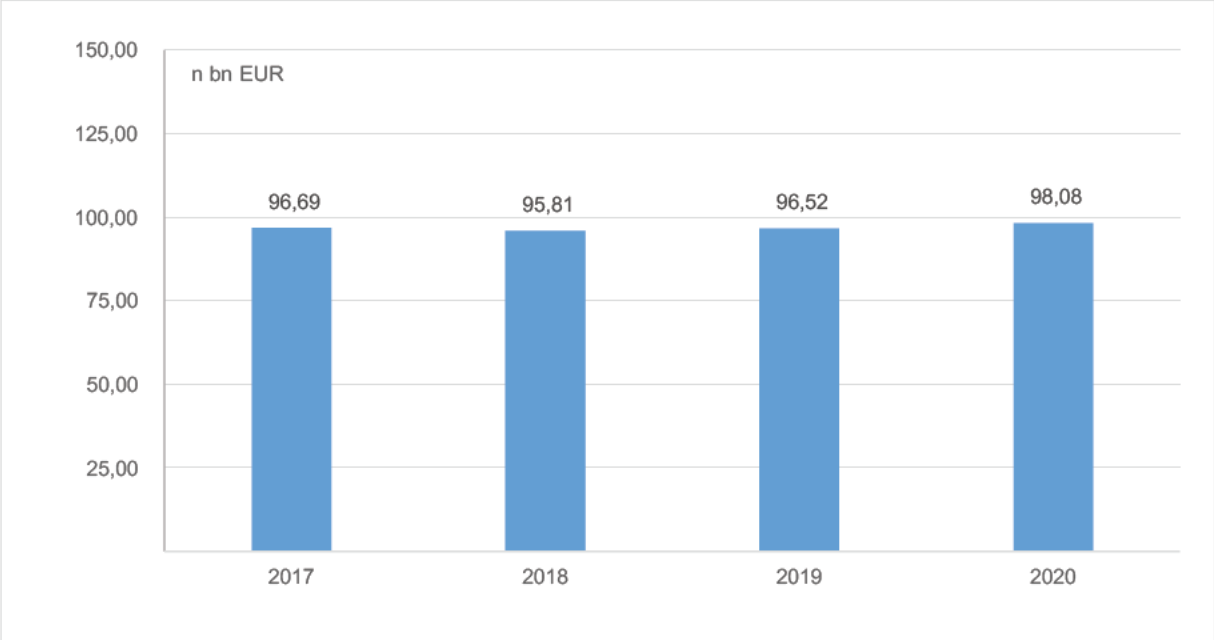
The effective mortgage loan rates have been on a downward trend ever since the end of 2008 (Rühlmann, 2017, p. 7). For a brief time at the beginning of 2015, an upward trend was noticeable in the short- and long-term interest rates, but then the downward trend continued in 2016 bringing the interest rates to an all time low at the end of Q3 2016 (ibid.). The German real estate finance system is known for utilizing long interest fixings of 5 to 10 years instead of variable interest rates (Maennig, 2012, p. 20). Furthermore, first time buyers usually have to deal with a relatively low Loan-to-Value (in the following: LTV) ratio when applying for real estate financing and there is rarely the chance to be granted a secondary mortgage during a boom market (ibid.). By Q3 of 2016, 36% of all new mortgages given out had a duration of 5-10 years, which was 3% lower than in Q4 of 2014 (Rühlmann, 2017, p. 8). In return however, the share of loans with a duration of more than 10 years has risen by 10% over the last 2 years, reaching a total of 44% (ibid.). Short-term interest rate agreements of up to 5 years have decreased by 7% in the same period, falling to only 20% (ibid.). Borrowers have been and still are taking advantage of the low interest rates to ensure the currently favourable conditions for the future (ibid.). A further effect of the low interest rates is the increase in the portion of loan repayments (ibid.). The rating agency Fitch, analysed the loan structure of 310,800 mortgages

and discovered that the annuity rate was hovering between 6.5% - 8.3% since 2004 (ibid.). The sinking interest rates, lead to repayments being recorded at an average of 6% p.a. (ibid.). As a result, the average loan durations were also reduced, as they moved from an average of 26 years in 2009, to 19 years in 2015 (ibid.). Because of this, both the credit risk of lenders during the term of the loan and the amount of loan which is at risk of higher interest rates in case of an adjustment are reduced (ibid.). In general, German borrowers are better protected due to the predominant structure of the real estate financing market in Germany than borrowers operating in markets with variable interest rates (ibid.). Thus, in case a real estate bubble is burst, this would dampen the risk of sudden market-wide insolvencies (ibid.).

2.3 A future outlook on the market

In the year 2020, Revenue generated in the German real estate market is set to reach 98.08 Billion Euros (Statista, 2013). Figure 4 shows a forecast of revenue generated through renting and operating of real estate in Germany in billion EUR from 2017 to 2020.

Figure 4: Revenue Forecast for German real estate activities in bn EUR



Source: Own figure based on data from Statista 2013

The population in Germany has risen to 83 million (Möbert, 2017, p. 3). That is a growth of three million since 2009, which is mostly a result of economic migration and the influx of refugees (ibid.). The resulting demand for housing could not be covered through the inelastic supply, leading to a countrywide shortage of up to 1 million homes (ibid.). Due to this gap between demand and supply, building regulations and environmental constraints should start to ease up (ibid.). The number of homes completed due to the above mentioned factors is currently set to reach 300,000 in 2017 (ibid.). Although this would be the first time this many

homes are completed, it would still not be enough to satisfy the demand (ibid.). According to estimates by the German government, at least 350,000 new homes are required, meaning the current gap between supply and demand is set grow even farther apart (ibid.). Interest rates in the capital markets have been raised by 30 basis points since October 2016, meaning that pressure on prices which are demand-related is likely to remain high (ibid.). Consequently, prices are set to rise, yet again in 2017 (ibid.).

The German real estate market does not entail the speculative behaviour which was reported from the American market from 2007 when the global economic and financial crisis was triggered (Kholodilin & Michelsen, 2017, p. 264). Transactions are being made upon solid financial bases and the volume of loans is stable (ibid.). Going forward the market could either keep growing and prices could continue to rise or a price correction could occur through a stricter monetary policy (ibid.). However, there is the possibility of a bubble being created in A-cities, which are large cities of international importance (ibid.). Selling prices are growing faster than rents (ibid.). Smaller cities in contrast are showing much less likelihood of forming property bubbles than before (ibid.). As previously mentioned, prices are all set to rise throughout most of Germany again (Möbert, 2017, p. 8). The only way it would change is if one of the following occurs (ibid.). First of, if supply were to massively expand and vacancies would start to emerge prices would stop rising (ibid.). This however seems to be at least years away (ibid.). In fact, the housing deficit is forecasted to increase even further in 2017 (ibid.). Next, a strong hike in interest rates would have the same effect on the market as the massive expansion of the supply would have, but the European Central Bank extended its expansionary monetary policy to at least the end of 2017 (ibid.). Furthermore, prices would be effected if demand for housing would fall (ibid.). This could occur if for example economic migration to Germany comes to an end or if macroeconomic imbalances in the Eurozone were to be eradicated (ibid.). This does not seem to be the case, at least not in the near future, as the election calendar for 2017 points to further political problems and difficulties in parts of Europe (ibid.). Lastly, if prices were to increase by so much that, the decision between either buying or renting would fall in favour of renting again, real estate prices would start to fall (ibid.). Rent though, went up by 4.8% in 2016 which was in fact the highest year-on-year increase in the past 20 years (ibid.). Since there still is a housing shortage in Germany, rent growth should remain high in 2017 (ibid.). None of the four mentioned conditions which would signal an end to the current cycle are evident in the market (ibid.). It could take several years before they even materialise; meaning in 2017 rents and property prices are to rise substantially once again (ibid.). Yet despite these increasing regional house prices since 2010, recent data shows that the housing market does note pose a threat to financial stability in Germany (Dahl & Góralczyk, 2017, p. 10). As assessed by the German government and the Financial Stability

Board, the European Commission believes there is no imminent threat (ibid.). The real estate price development since 2010 reflect the working of a market mechanism, which theoretically should narrow the gap between the increased housing demand and insufficient supply in time (ibid.). According to the German Central Bank, the real and imminent threat of a real estate bubble would exist if the following conditions occur (Rühlmann, 2017, p. 11). If there is a self-feeding and sustaining price increase which no longer has an economic feasibility, an excessive rise in real estate loan stocks and an easing of lending standards for real estate loans (ibid.). Although these conditions are currently not fulfilled, the German Central Bank does warn that the current circumstances of the market, could contribute to the market nearing the early stages of a bubble (ibid., pp. 11-12).

3 the new amendment to the laws governing financial services supervision

3.1 Macro-prudential supervision instruments

3.1.1 History and Defintion

The first mentions and hints of macro-prudential policies can be dated back to the 1970s as they could be found in background documents of some institutions away from the public's hand (Velauthapillai, 2015, p. 3). Today, not only have macro-prudential policies gained in popularity and meaning, their scope of limitation and very definition has changed as well (ibid.). Around 1979, Alexandre Lamfalussy, Chairman of the Euro-currency Standing Committee, first tried to give a concrete definition of what the term actually means (ibid.). He pointed towards both the unfavourable maturity transformation of loans and the resulting liquidity risk and towards the fact that despite a moderate credit growth of Financial institutions, the aggregated growth could take shape in dangerous dimensions (ibid.). He saw the macro-prudential approach as one which would deal with problems threatening the market as a whole (ibid.). The Cross Report, a report by a group of Central bank experts from the ten most important countries examining the influence of financial innovations on the financial and banking industry, took this a step further and defined macro-prudential policies in 1986 as policies which should safeguard the security and stability of the financial system as a whole and that of international transactions (ibid., pp. 3-4).

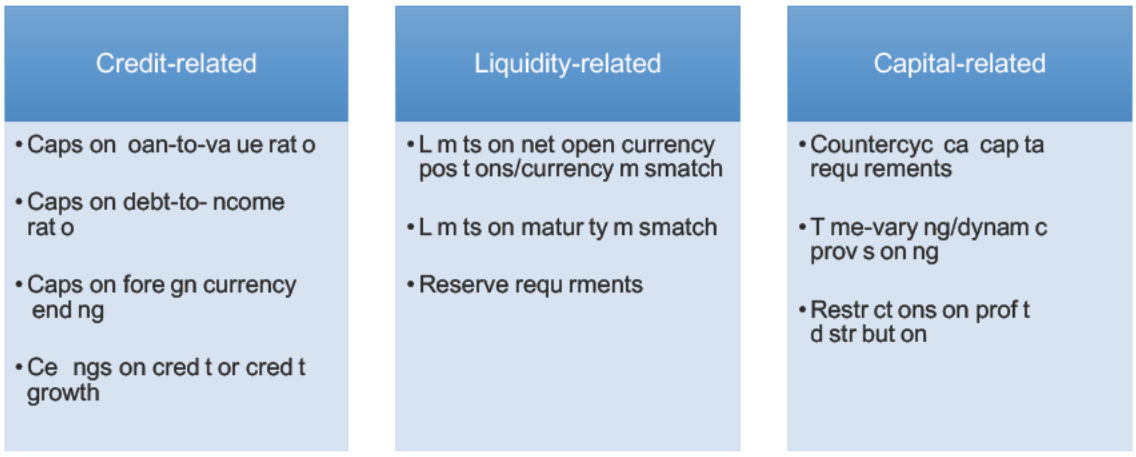
Perhaps the best way to understand macro-prudential polices is to define what distinguishes them from traditional micro-prudential regulations (Galati & Moessner, 2014, p. 2). The objectives and the understanding on the nature of risk are what mainly differ from one another (ibid.). While micro-prudential policies aim to enhance the safety of individual financial institutions, macro-prudential regulations aim to, as previously stated, safeguard the financial system as a whole, and thus limiting macroeconomics costs from financial distress (ibid.).

Furthermore, the former deems risk as an external factor whereas under the perspective of the latter, a special importance is given to systematic risk and its endogenous nature (ibid.). Therefore, the focus is strongly on the procyclical behaviour of the financial system (ibid.). While doing so, the connections and correlations between financial institutions and markets as well as their common vulnerability to economic risk factors are also closely monitored (ibid.).

3.1.2 Instruments and Measures

The International Monetary Fund, believes the macro-prudential toolbox to have two types of instruments (Galati & Moessner, 2014, p. 3). One of them, which includes countercyclical capital buffers or systematic capital charges, is designed to lighten systematic risk (ibid.). The other instruments were not originally created as tools to counter systematic risk but if they were to be modified accordingly, they could be part of the macro-prudential toolkit (ibid.). Time-varying loan-to-Value Loan-to-income or debt-to-income (in the following: DTI) ratios are a few which belong in this category (ibid.). For them to be considered macro-prudential tools, the International Monetary Fund believes they should both clearly and exactly target systematic risk and necessary governance arrangements should support the chosen institutional frameworks in order for them to work properly (ibid.). The above mentioned instruments can generally be categorised in three types of measures (Lim, et al., 2011, p. 8). The figure below gives an overview of some the most usual macro-prudential instruments and their category.

Figure 5: Macro-prudential instruments



Source: Own figure based on Lim et al 2011 p 6

There are credit-related measures such as caps on the loan-to-value ratio (ibid.). There are Liquidity-related measures, with limits on net open currency positions/currency mismatches being one of them (ibid.) Lastly, there are capital-related measures, i.e. restrictions on profit distribution (ibid.).

These instruments and policies are usually implemented with a clearly stated objective, is to mitigate one of the four general categories of systematic risk (Lim, et al., 2011, p. 9). First off, to reduce risks generated by a strong credit growth and the price inflation of credit driven assets (ibid.). The next category consists of risks originating from excessive leverage and the following deleveraging (ibid.). These instruments could also be implemented to lower systematic liquidity risk (ibid.). Lastly, there are risks related to large and volatile capital flows such as foreign currency lending which also have to be monitored and dealt with (ibid.).

There is also the matter of how to use the above mentioned instruments (ibid., p.4). Using multiple instruments rather than one allows different aspects of the risk to be tackled at once and, thus reducing the scope for circumvention and increasing the effectiveness (ibid.). By distinguishing between types of transactions and allowing risks to be targeted more specifically rather than taking a broad approach, the instrument could become more precise, leading to a higher rate of efficiency (ibid.). Financial cycles can be smoothened out more effectively if instruments are implemented at different phases of the cycle rather than at a fixed period (ibid., p. 5). Adjustments which are rules-based are effective and have clear advantages but, there is difficulty in designing rules, and those in charge of policies have to keep their discretion while adjusting the stance of macro-prudential policies (ibid.). Clear communication with the public is key during this phase (ibid.). When used together with further monetary or fiscal policy tools, the above mentioned instruments can be more effective as more tools are working towards the same goal while reinforcing each other (ibid.).

Whenever macro-prudential instruments are being considered, their benefits have to be weighed against their costs (ibid.). If implemented inappropriately, they could unnecessarily lower growth or even create unintended distortions (ibid.). High quality supervision, a strong regulatory framework, good macroeconomic policies and an appropriate institutional framework are all pre-requisites which have to be in place for a successful implementation of macro-prudential policies (ibid.).

3.2 The amendment

3.2.1 The necessity of the amendment

After the analysis of possible risks threating the financial stability of Germany, the Committee on Financial Stability advised the government in June of 2015 to give certain powers to the BaFin through a set of policies, which would allow them to counteract against possible threats to the financial stability of the country arising from overvaluations in the real estate market, slacking and easing of lending standards and the excessive expansion of lending (Deutscher Bundestag, 2017, p. 19). The creation of the policies advised upon by the Committee on

Financial Stability is deemed as necessary by the German Federal Parliament because of the importance of loans for buying or building residential properties have for both the banking industry as well as the private borrowers (ibid.). They make up for around 70% of the entire liabilities of German households and up to 50% of the credit volume of domestic banks towards domestic private persons and companies (ibid.). Furthermore, the contribution of the construction industry to the overall economic output in Germany is essential (ibid.). In Q3 of 2016, investments in housing made up around 6% of the gross domestic product in Germany (Buch, 2017, p. 1). Hence any disturbance to this sector could have a significant and formidable impact on the financial stability, the borrowers and the overall economic output (Deutscher Bundestag, 2017, p. 19). Therefore, it is advised by the committee to develop a set of macro-prudential polices to make sure the financial stability of the country is not put in jeopardy (ibid.). Looking upon history, imbalances in real estate markets have often been the triggers of systematic financial crises (ibid.). International studies have shown that during recessions, which have followed such crises, the gross domestic product has regressed very strongly and the time for the economy to recover has been longer than after recessions, which were not the result of exaggerations in the real estate market (ibid.).

3.2.2 Content of the amendment

The new amendment will see to creating instruments with which the BaFin can predetermine a set of minimum standards, in regards to giving out loans, for borrowers as a measure of protection against threats towards the financial stability of the country (Deutscher Bundestag, 2017, p. 20). The specific instruments being introduced through this amendment are as followed:

- A cap on the ratio of loans to the value of the real estate, also known as LTV caps;
- Predetermination of the period, in which a specific part of the loan has to be repaid, more specifically, a maximum term in case of bullet loans (amortization requirements);
- Requirements to debt sustainability, in form of a ceiling for the debt services in ratio to income or as a minimum level for the coverage rate of debt services;
- A cap on the ratio between the entire debt to the income, also known as DTI caps (ibid.).

The planned instruments display their stabilising effects through the reduction of the probability of default of loans because of the DTI cap for example or through the reduction of the loss ratio in case of a payment default due to caps on the LTV (ibid.). The amortization requirements are there to complement the other instruments (ibid.). For the amendment to work accurately and efficiently in limiting the threat the expansion of lending poses to the financial stability of Germany, the instruments above can be implemented either on their own or in cooperation

with each other (ibid.). The legal basis of the amendment also does not limit the instruments to only being used with loans issued for the construction or acquisition of unused owner occupied housing or the financing of residential properties in certain, clearly defined regions (ibid.). The financing of existing properties and new construction projects can also be subject to restrictions (ibid.). To prevent regulatory arbitrage and the warping competition, all commercial lenders in the real estate sector, meaning insurance companies and capital management companies are covered by the amendment (ibid.). Furthermore, to preserve comparability, it is designated to:

- exclude reconstruction and development/expansion purposes and renovations of residential properties, measures of social living space improvements as well as follow-up loans,
- to make smaller loans available at the decree of a minimum limit and also to allow lenders to give out a, from the supervisory authority determined, portion of new loans which are not subject to the mandatory limits (free quota),
- to have the option to bring forth further exceptions at the discretion of the supervisory authority (ibid.).

The amendment also refrains from the creation of a new groundwork for date collection (ibid.). The financial stability committee advised upon, ensuring the existence of a legal basis, which would allow the collection data and information which will be needed for the extended macro-prudential analysis and supervision purposes as well for the calibration, implementation and impact studies of the instruments (ibid., pp. 21-22). In the future, through the amendment and its instruments, crucial systematic risk can be targeted and addressed timely (ibid., p. 19).

These instruments will only be deployed if the financial stability is threatened by for example, a simultaneous increase in real estate prices and real estate loans to a point where banks stop paying attention to the credit-worthiness of the borrower and its ability to repay the loan (Bundesanstalt für Finanzdienstleistungsaufsicht, 2017, p. 16). If and how dangerous the threat actually is, is analysed by the BaFin and the German Central Bank, and then further consulted upon by the Financial Stability Committee (ibid.). A few European countries, which already have a form of boundary on debt financing consist of but are not limited to: Sweden, Poland, Netherlands and Ireland (ibid., p. 17).

3.2.4 Opinions on the amendment

The strength and stability of the German real estate financing market makes the notion of macro-prudential instruments and their actual necessity appear questionable (Voigtländer, 2017, p. 9). The German Banking Industry Committee (in the following: GBIC), made a

statement on, what was then, the draft of the amendment in February of 2017 and stated that in principle, the threat of an overheating real estate market is to be taken seriously and it is reasonable to keep a close eye on it (Die Deutsche Kreditwirtschaft, 2017, p. 2). However, they too believe there is currently no reason for the amendment as there is no overheating evident in the real estate market (ibid.). The drafting of the amendment to prevent maldevelopments in the future, rests upon experiences made abroad, suggesting that self-reinforcing effects can emerge, in particularly, between extensions of credits and bubble formations in the real estate market (ibid.). The GBIC however believes, these empirical findings can only be carried over to Germany conditionally, which is why they also deem the amendment to be excessive and inadequate given the actual threats and risks (ibid.).

The GBIC argues, Germany has not experienced imbalances on the real estate market and the negative consequences these would have because of the characteristics of the the German real estate market (ibid.). They believe Germany is well protected against systematic risks and point out three traits which set Germany apart from other countries (ibid., pp. 2-3). The first is the fact, which was also described in chapter 2.2 of this paper, that there are virtually no mortgage loans with variable interest rates in Germany (ibid., p. 3). Comparing this to Europe, the only other countries with this trait are France, Belgium and the Netherlands (ibid.). In countries such as Portugal, Spain and Ireland, variable interest rates make up to 80% of the market (ibid.). A further trait of the German real estate market is the share of households with home ownership (ibid.). According to international statistics, 44% of German households live in their own house or apartment, which is the lowest rate in the entire EU by a large margin (ibid.). European countries which have had to battle crises in their real estate markets such as Spain, Ireland or the United Kingdom boasted rates higher than 70% (ibid.). Thirdly, legislators already took care of financial institutions weighting the risks of a real estate loan more thoroughly by the introduction of the residential credit directive in the March of 2016 (ibid.). The directive dictates stricter standards for loans and the value of the real estate in question is only allowed to be considered in the creditworthiness check in a very limited manner (ibid., pp. 3-4). These provisions aim towards the same goals as the macro-prudential instruments do, namely reducing the probability of default of loans and reducing the loss given default (ibid.). Using four instruments to achieve one goal may be unnecessary, as protecting the financial stability could arguably be achieved by using limits on the LTV (Voigtländer, 2017, p. 8). If necessary, a high amortization could be seen as a substitute (ibid.). As a consequence, thereof, households with high incomes but low savings would not be unnecessarily denied a loan (ibid.). The other instruments in the amendment are redundant due to the existing, previously described residential credit directive (ibid.) The GBIC also argue that due to the German real estate market not being homogenous, regional or loan-based differentiations

between the measures should be considered (Die Deutsche Kreditwirtschaft, 2017, pp. 4-5). The instruments should be interlinked with a real estate price or loan value, so they would not be used nationwide, all-encompassing but rather in areas where a threat actually exists (Voigtländer, 2017, p. 9). Bubbles are usually formed in larger cities, and if the said instruments were to only address loans higher than 400.000 euros, real estate transactions in less tense regions would not be effected while simultaneously, bigger cities would start to experience more restrictions (ibid.). By introducing such a limit, significant repercussions on residential property purchasing can be avoided (ibid.). These suggestions would help make the implementation of the polices easier (ibid., p. 10).

4 The new amendment and the German real estate market

4.1 Avoiding Financial instabilities

4.1.1 Housing bubbles

Based on recent events, booms and busts of asset prices have been identified as sources of financial instability (Kuttner & Shim, 2012, p. 231). In the 2007-2009 financial crisis, property prices and their unsustainable appreciation played a significant role (ibid.). The same goes for the Asian financial crisis in 1997-1998 and in Japan's property market collapse in the early 1990s (ibid.) While there is no definitive explanation of what housing bubble is made of up, the most generally definition is a situation in which the price of housing exceeds its fundamental value (Joebges, Dullien, & Marquez-Velazquez, 2015, p. 10). Due to houses being assets, this deviation is possible, as there are buyer who will pay a higher price for houses than fundamentally justified, because they speculate prices to increase even further (ibid.). Stiglitz, an American economist, once said if asset prices in the present market are only high because investors are calculating their selling price in tomorrow's market to be even higher at a time when fundamental factors do not seem to justify it, a bubble exists (ibid.). There has been a lot of critical monitoring and examination of monetary policy as a contributing factor to the overhearing of real estate prices (Kuttner & Shim, 2012, p. 231). A lot of blame has even been directed towards the US Federal Reserve's low interest rate policy for creating a bubble in the country's housing market (ibid.).

As previously mentioned, the main intention of the amendment is to preserve the financial stability of Germany (Bundesanstalt für Finanzdienstleistungsaufsicht, 2017, p. 15). The German Central Bank defines financial stability as the financial system being able to fulfil its main duties, especially in periods of despair and upheaval (Buch, 2017, p. 3). The latest financial crisis proved that a purely micro-prudential, meaning solely supervising individual institutions, is not enough to safeguard the stability of the financial system (Bundesanstalt für

Finanzdienstleistungsaufsicht, 2017, p. 15). The amendment is not an instrument of an urgent call for action, but one which creates the ability to take action if it ever becomes necessary (ibid.) The main target of the Financial Stability Committee, which first advised the drafting of the amendment, is to prevent taxpayers from being burdened with exorbitant costs of a financial crisis which could result from the maldevelopment of the German real estate market (ibid.). An excessive lending on the market could lead to an artificial increase in demand for real estate, leading to prices rising even more and the imbalance on the market growing even further (ibid.). The sensitivity and vulnerability of the banking system could further increase as a result, and thus lending by the institutions plays a major role in the financial stability of a country (ibid.). Ever since the previous financial crisis, policy reforms were decided upon to decrease the probability of crises and to make the financial sector more resistant (Buch, 2017, p. 2). Many of them however were designed to be implemented on an international level whereas in the end, the principal of the protection of the financial stability lies at the national level (ibid., p. 3). The level which would have to endure the real economic and fiscal costs of financial crises (ibid.). In order to protect the financial system against a crisis, the amendment allows the BaFin to directly influence the type and scope of loans given out for residential properties and more specifically on the contract conditions of new loans through LTVs for example (Bundesanstalt für Finanzdienstleistungsaufsicht, 2017, p. 15). In times where positive growth is expected, individuals may lose touch with their risk awareness and fail to account for the possibility of prices and incomes to fall and interest rates to rise, leading to resources being shifted into sectors of the national economy, which are not being developed in a sustainable manner (Buch, 2017, p. 3). If these maldevelopments become evident, adaption and adjustments processes will be deployed, which could lead to weaker growth rates and increasing unemployment rates (ibid.).

Caps on LTVs play a very significant role in what the amendment is supposed to achieve, as by limiting how much of the the price of the real estate property may be financed through the bank, financial institutions can, in case of a default, reduce their expected losses through the liquidation of the real estate collaterals (Bundesanstalt für Finanzdienstleistungsaufsicht, 2017, pp. 15-16).

Amortization requirements, the second instrument of the amendment, allows the BaFin to determine a portion of the entire loan to be have to repaid in a certain amount of time by the borrower, if needed (ibid.). From the perspective of financial stability, this means the probability of default is reduced (ibid.). Additionally, the swifter repayment of the loan leads to a faster reduction of the loan receivables for the lender (ibid.). Both of these aspects contribute heavily to the reduction of systematic risk (ibid.). The exceptions to these instruments, which were described in chapter 3.2.2, are there to prevent unfair hardships (ibid.). The idea of LTV and

DTI caps is to set a maximum level on the price of a house a private household can buy, which in turn should dampen the housing price growth (Næss-Schmidt, Jensen, Heebøll, & Sørensen, 2017, p. 19). Amortization requirements aim to reduce the debt of new homeowners after they have bought the house (ibid.). This too could have an effect on housing prices to the extend that the total instalments are important to new homebuyers (ibid.).

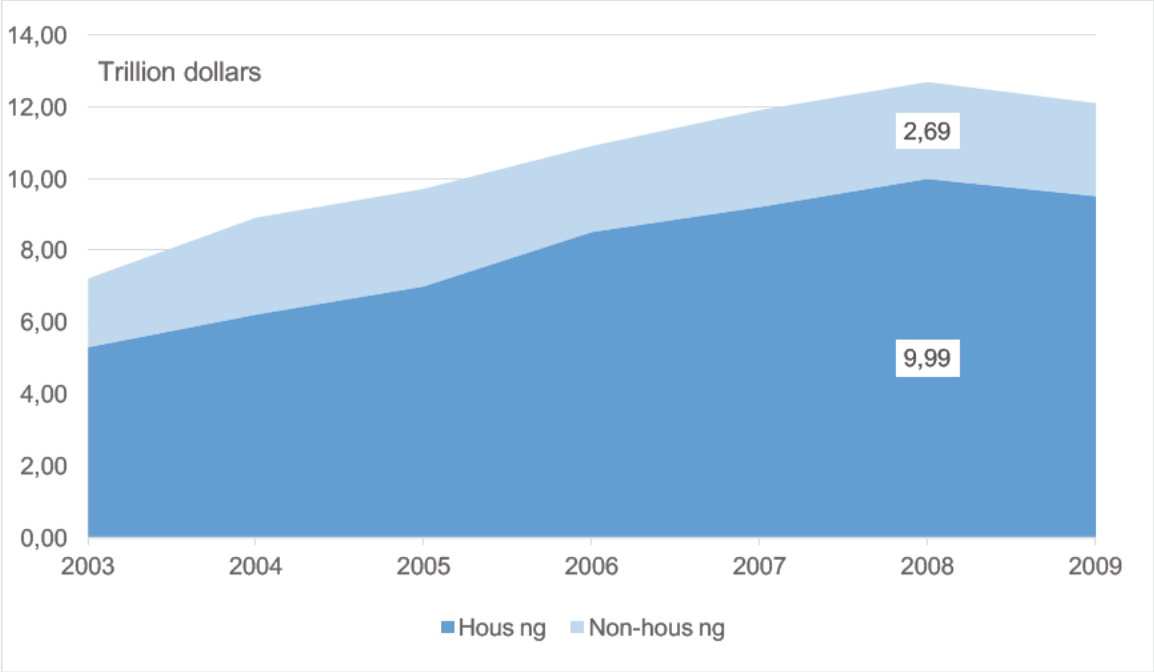
A question of the effectiveness of non-interest rate policies like prudential regulation as tools for stabilising housing prices and credit cycles has risen due to the turbulent experiences made following the financial crises (Kuttner & Shim, 2012, p. 231). This is an important challenge for central bank looking to ensure the financial stability of a country while at the same time using interest rate policy to pursuit their microeconomic objectives (ibid.). It is even of more importance for countries with fixed or heavily managed exchange rates, as they are limited in what they can do in regards to their interest rate policy to properly address market imbalances (ibid.). Macro-prudential policies could at times decrease economic efficiency by constraining the behaviours of economic agents (Kim C. , 2014, p. 125). While they are without doubt proficient in securing the financial stability of a country, they may bring forth unintended consequences (ibid.).

4.1.2 A look at the US Housing bubble crisis

From 2000 to 2003, home refinancing climbed from $460 billion to $2.8 trillion in the United States after the Federal Reserve cut the interest rates leading to mortgage rates falling (The Financial Crisis Inquiry Commission, 2011, p. 5). Home sales rose and as a result, so did home prices (ibid.). Over a span of eight years, average prices rose by 67% nationwide hitting a national high of $227.100 in early 2006 (ibid.). In Sacramento for example, prices increase nearly two and a half times in just 5 years (ibid.). Cities such as Bakersfield, Miami, and Key West also experienced price hikes nearly as high (ibid.). In more than 110 metropolitan areas, prices were nearly doubled (ibid.). In the spring of 2004, homeownership reached an all-time high of 69.2% (ibid.). In the seven years between 2000 and 2007, Americans extracted $2 trillion in home equity including $334 billion in 2006, which was seven times the amount taken out in 1996 (ibid.). By July 2005, over 10% of homes being sold were to either investors, speculators or someone buying a second home (ibid.). The financial industry began to create more sophisticated financial innovations to support the growth of housing prices in the United States (Baker, 2008, p. 76). In the mid 90s, mortgages usually had a fixed rate, however by the year 2006, 35% of the loans on the market had adjustable rates (ibid.). Not only did they not come with the level of security which fixed rates provide, they were usually issued with rates below the market average known as teaser rates that would be set back to higher levels after the initial 2 years even if interest rates did not rise (ibid.). What the made the matter worse

was that this was especially common in the subprime share of the mortgage market (ibid.). From under 9% in 2002, these subprime loans made up 25% of the market by the year 2005 (ibid.). Coupled with Alt-A loans, which were loans given out to homebuyers who either had a mixed credit record or had not provided enough information on their income and assets, made up to 40% of the loans in the United States at the peak of the bubble (ibid.). This increase in high-risk loans was mainly attributed to misplaced incentives on all sides in the sale and financing of housing (ibid., p. 77). The figure below shows the household debt of Americans between 2003 and 2009 in trillion dollars.

Figure 6: Household debt of Americans 2003-2009



Source: Own figure based on data from Loesche 2017

Even if the mortgage rates in the United States had been higher, a housing bubble could still have occurred, albeit to a lesser extreme (Holt, 2009, p. 128). In the 1980s, the interest rate was much higher and that did not stop a bubble from occurring (ibid.). The one crucial cause of the housing bubble and the following crisis, was the unjustified exuberance (ibid.). If there had been no widespread belief, that prices are still going to rise, things would have not gone this far (ibid.). The low interest rates are a result of this as well, as both credit agencies and foreign investors also believed that prices in the market will continue to rise (ibid.). Without this unjustified and irrational exuberance, there would have not been an excessive use of adjusted rate mortgages and high leveraging and the resulting increase in subprime mortgage loans as a result of relaxed standards (ibid.). The housing bubble in the states and the resulting financial crisis was avoidable (The Financial Crisis Inquiry Commission, 2011, p. XVII). There were enough warnings which were ignored by those responsible (ibid.). They also failed to assess the risk accordingly (ibid.). The risk was not questioned, understood or managed properly

(ibid.). There was an unsustainable rise in housing prices and an increase in household mortgage debts (ibid.).

As stated throughout chapters 3 and 4.1.1 of this paper, the new amendment aims to reduce the systemic risk arising from a real estate bubble busting. By creating the ability to act when needed and safeguard the financial stability of Germany, it intends to prevent what happened in the United states from happening in Germany. Although the German market does not show many of the attributes which the American market did prior to the financial crisis, increasing prices have put authorities on alert and they have decided to lay a plan to manage the possible risks by introducing the amendment to the laws governing financial services supervision.

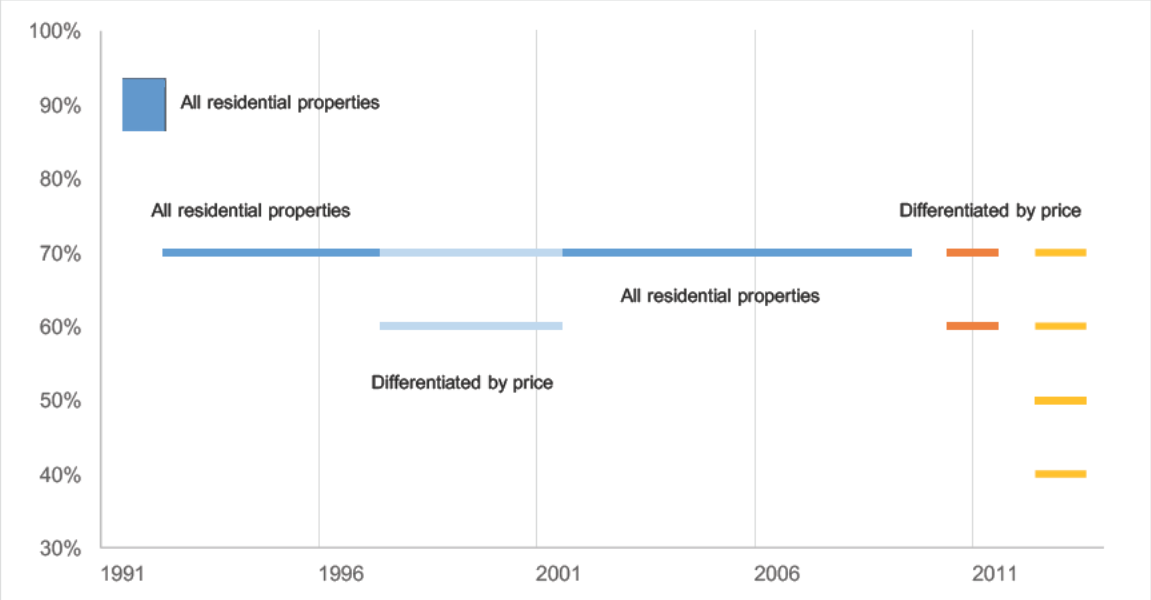
4.2 Macro-prudential instruments and real estate markets, country examples

4.2.1 Example: Hong Kong

Risks concerning the housing market have always been something the Hong Kong Monetary Authority (in the following: HKMA), the central banking institution of Hong Kong has heavily focused on regarding their financial stability work (He, 2014, p. 106). Similar to the amendment introduced in Germany, the HKMA also implements macro-prudential instruments to combat volatilities in property prices (ibid.). The importance of the real estate market to Hong Kong's macroeconomic outcome is instrumental as in 2012, services in the sector accounted for 6% of the GDP (ibid.). Residential mortgage lending in Hong Kong has always been one the largest threats of risk exposure for the banks (ibid.). Ever since 1991, it has never fallen beneath 20% (ibid.). The maximum of 35% was reached in September 2002 (ibid.). The reason why Hong Kong pays such attention to the housing market is due to what happened in the past and the lesson they learned following the Asian financial crisis in the years 1997-1998 (ibid.). On the eve of the crisis, housing prices in Hong Kong were showing a mismatch with economic fundamentals, adding to the issue of the overvaluation of the Hong Kong Dollar (ibid.). With the collapse of the property market, housing prices dropped by 66% (ibid.). However, the mortgage delinquency at that time was only at 1.6% and there was no banking crisis in Hong Kong (ibid.). This case sharply contrasts the financial crisis in the United States, described in the previous chapter during which housing prices did not drop as significantly but delinquency ratios increased more strongly (ibid.). Comparing the numbers, house prices in America dropped by around 33% whilst the delinquency ratio increased to over 10% (ibid.). A lot of different factors contributed to this low rate in Hong Kong such as the declining mortgage rate and the high savings of the households (ibid.). However, an essential factor was the implemented LTV rate of 70% which provided banks with enough cushion to absorb the housing prices corrections, and an equity stake that kept incentives for borrowers to service loans as long as they could (ibid.).

Just like in Germany, the HKMA fears a new housing bubbles is being formed in Hong Kong, threatening the financial stability (He, 2014, p. 106). Since early 2009, house prices have started to rise again and by the end of 2013, they were higher than twice their value in mid 2009 (ibid.). Tight housing supply and low interest rates are main drivers of these price increases (ibid.). The price increases are expected to continue, which is why the HKMA is concerned with a bubble being formed and the financial stability being threatened (ibid.). Over the past two decades, the HKMA has implemented LTVs as a measure to manage bank's credit exposures to the housing market and lean against the amplitude of the housing-price cycle (ibid.). The following figure gives an overview of the LTV policies in Hong Kong.

Figure 7: LTV ratio in Hong Kong

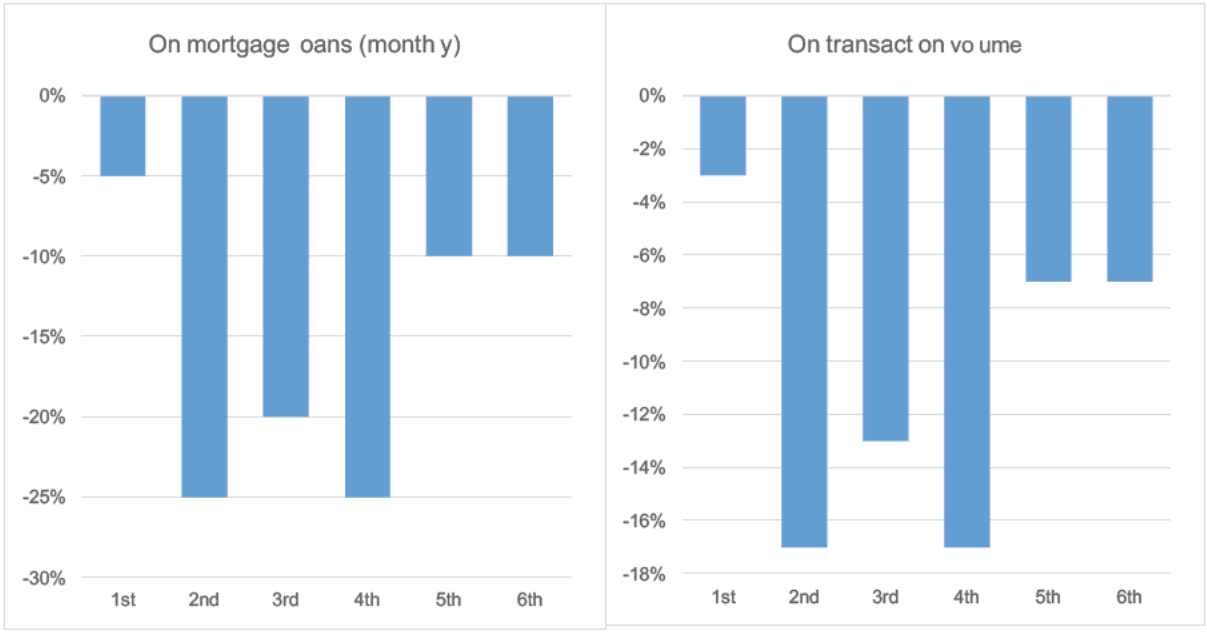


Source: Own figure based on data from Demary & Haas 2015 p 62

The HKMA first introduced a LTV policy in the early 1990s and tightened it as a result of the Asian financial crisis (Demary & Haas, 2015, p. 62). They experimented with different calibrations throughout the many years (ibid.). At the beginning, the maximum LTV was at 90% for all residential properties (ibid.). in 1992, this was further lowered to 70% (ibid.). In 1997, they started differentiating the LTV based on the value of the property in question (ibid.). Residential properties with a value under HK$ 12 million, which translates roughly to €1.4 million, had a maximum LTV of 70%, whereas everything over that sum had a maximum LTV of 60% (ibid.). In the year 2007, the HKMA went back to a maximum LTV of 70% for all residential properties (ibid.). Ever since 2010, they have been differentiating the LTV rate again based on the value of the property (ibid.). Currently, there is a four-level distinction (ibid.).

Data from Hong Kong has shown that the sensitivity of the mortgage delinquency ratio to property prices is found to be negative and in absolute terms, even lower in economies with LTV policies (Wong, Ho, & Tsang, 2015, p. 4). For example, a 1% drop in property prices would lead to an increase of 0.35 basis points in delinquency ratio in an economy with LTV policies whereas the same price drop in an economy without LTV policies would result in delinquency ratios increasing by 1.29 basis points (ibid.). This difference is found to be very significant statistically, meaning or implying that such policies do reduce the vulnerability of banking systems to housing price shocks (ibid.). For example, if the LTV in Hong Kong would have been at 90% instead of 70% in 1997, the delinquency ratio after the housing price shock would have been 1.7% at the end of 1998 instead of the actual 0.84% (ibid., pp. 4-5). Further analysed data have implied that in Hong Kong, the LTV policies did in fact manage to dampen the growth of property prices, however these effects were rather weak (ibid., p. 5). A much stronger dampening effect was noticed on the mortgage debt leverage (ibid., p. 6). This finding suggests the effect of LTV policies on systemic risk may be mainly transmitted through its influence on household leverage (ibid.). The figures below show the impact of macro-prudential measures in Hong Kong throughout different rounds of prudential measures.

Figure 8: Impact of macroprudential measures in Hong Kong



Source: Own figure based on He 2016 p 155

The vertical axes of the figures above show the total impact of macro prudential measures on the monthly change in mortgage loans and on the level of transaction volume (He, 2014, p. 115). The data shows that during the second, third and fourth round of macro-prudential measures, which entail stricter LTV requirements, debt servicing ratio caps and stress tests

seem to be more effective in limiting mortgage loan growth by average monthly rate of 0.2% (ibid.). In the other rounds, the average was at 0.1% (ibid.). The transaction was also dampened by an average of 16% in the aforementioned rounds (ibid.).

Results from empirical studies imply, the effect LTV policies have on loan growth in Hong Kong are probably state-dependent, meaning that LTV policies are more effective in limiting credit growth if there is excess credit demand and not so effective when there is excess credit supply (ibid., p. 7). To determine the volume of new mortgage loans, one major factor is credit supply (ibid.). This is suggested by the fact that since the tightening of macro-prudential policies in October 2009, the number of months during which an excess demand was estimated is more than months during which and estimated excess supply was estimated (ibid.). Put differently, LTV policies were effectively transmitted to the market in Hong Kong through their effect of dampening the supply of mortgage loans (ibid.).

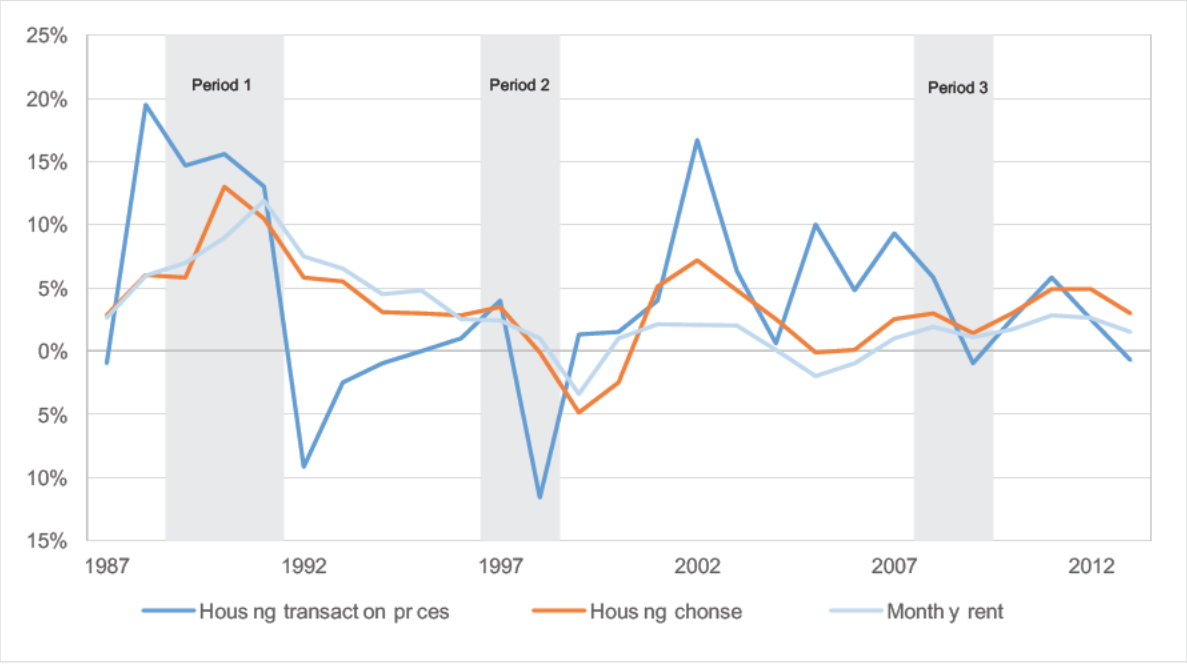
All the data analyzed throughout empirical studies imply strongly that tightening LTV caps reduce household leverages which in turn reduces the mortgage default risk (He, 2014, p. 116). The results from Hong Kong however show no evidence that tightened LTV caps would reduce housing market prices significantly (ibid.). LTV caps can have an effect on the loan growth, but that is probably, as previously explained, state-dependent (ibid.).

4.2.2 Example: Korea

The Korean housing market and its changes can be divided into three periods (Kim, Kim, & Kim, 2016, p. 2). The first period (1988-1990) was characterised by the expansion of the Korean housing market (ibid.). Thanks to industrialization, Korea experienced a sharp increase in income and a large-scale surplus balance in international trade (ibid.). As a result, urban population was increasing, which in turn, lead to a shortage in housing (ibid.). Consequently, housing prices, chonsei prices and rental fees were rising at a very high rate (ibid.) Chonsei, is a unique way of renting a house in Korea where the tenant pays a lump-sum deposit, typically ranging between 40%-70% of the property value, to the landlord to use the property (ibid., p. 1). In such a deal, the tenant does not have any monthly rental payment obligations (ibid.). Upon the termination of the contract, the nominal sum is repaid to the tenant (ibid). Following the eventual overheating of the market, the government implemented strong anti-speculation policies, such as supply expansion and tax reinforcement in the housing market (ibid., p. 2). The market held a stable downward trend following these events until 1996, before the foreign exchange crisis broke out (ibid.). This marked the beginning of the second period (1997-1999) during which both the financial and the real estate market stagnated because of the economic recession resulting the aforementioned crisis, which began in 1997 (ibid.). The housing transaction market, the housing chonsei market and the housing monthly rental

market were all depressed following the foreign exchange crisis (ibid.). However, as the entire market was strengthened by the housing market polices of the government, it started to recover (ibid.). From 2004 to 2005 house prices were increasing but monthly rents started to fall stronger than chonsei prices due to a lack of demand in the rent market (ibid.). The third period represents the housing market changes during the time of the global financial crisis (2008-2009) (ibid., p. 3). The crisis was a significant turning point in the housing market, as the housing transaction market was depressed by it (ibid.). Since the government had already experienced an overheating of the market in recent pass as a result of strengthening policies, which it had implemented following the foreign exchange crisis, it forewent doing it again (ibid.). Hence, the housing market began to be differentiated based on districts (ibid.). Although housing prices in Seoul, which up until that point were foreshadowing the housing market trends in the entire country, were dropping, provincial areas saw an increase in housing transaction prices (ibid.). In 2016, the Korean housing market was in a stagnated state because of the shrinking investment psychology (ibid.). Even though the global crisis had a very strong effect on the housing market in Korea, the housing chonsei and monthly rent market were only influenced by it in a relatively small way (ibid.). Both of these segments maintained a continuous upwards trend after 2010 (ibid.). The following figure describes the development of the Korean housing market from 1987 until 2013.

Figure 9: Korean housing market 1987-2013



Source: Own figure based on data from Kim Kim & Kim 2016 pp 3 4

In the 2000s, house prices were rising strongly and quickly and with them, mortgage loans were increasing as well as there was abundant market liquidity and an increased demand for housing (Kim C. , 2014, p. 125). Also, banks had started to focus more on lending to

households rather than companies, as loans for companies were impaired after the 1997 foreign crisis (ibid.). In September 2002, the supervisory authorities in Korea introduced LTV regulations to the market (ibid.). They were differentiated based upon the maturity of the loan in question, the housing price of the property and the location (ibid.). Usually, the longer the term of the loan, the more expensive the costs of the housing and the more speculative the location, the lower the LTV ratio cap applied (ibid.). LTV regulations, however, have their limitations in regards to, curbing procyclical behaviour, since increases in housing prices could still raise loan amounts by pushing up the values of mortgage collaterals (ibid.). To complete and complement the LTV regulations, further DTI policies were introduced in August 2005 (ibid.). Similar to the LTV policies, the DTI polices were differentiated too (ibid.). Their distinction was based upon borrower characteristics such as marital status, housing price and the location of the property (ibid.). Unmarried borrowers receive lower DTI ratio caps (ibid.). Both the LTV and the DTI policies in Korea have been dealt with in a flexible manner, meaning based upon the housing prices or mortgage lending of the market, they were either tightened or relaxed (ibid., p. 125-126). The LTV and DTI ratios were adjusted nine and eight times respectively, whereas the former ranged between 40%-70% and the latter between 40%-75% (ibid.).

The impacts of the two macro-prudential instruments in the Korean market were analyzed (Igan & Kang, 2011, p. 16). More specifically, their influence on house price dynamics, residential real estate market activity and household leverage were examined (ibid.). The gathered data showed a significant reduction in transaction activity in the three months following a tightening of LTV or DTI policies (ibid.). It took price appreciation longer to be effected by them, but analyzing the six-month window showed the policies affect them as well (ibid.). Tightened LTV policies showed to have a stronger effectiveness on reining in price appreciations than tightened DRI policies (ibid.). LTV policies and DTI policies also had a meaningful influence on dampening the increase in mortgage loans and housing prices in expansionary periods (Kim C. , 2014, p. 126). A simulation based on panel data from Q1 2003 – Q2 2012 showed, if there had been no LTV and DTI policies present in the market, housing prices and outstanding amount of mortgage loans would have been 75% and 137% higher respectively than their actual rates at the end of Q2 2012 (ibid.). One issue with the macro-prudential policies in Korea was the balloon effects incurring, as the regulations were applied only to the banking sector leading to an increase in mortgages being granted through non-bank financial institutions (ibid.). Banks even tried to bypass them by increasing their commercial mortgage or other types of household loans, which were not subject to the regulations (ibid.). Further analysing of survey data showed expected house price increases in the future to be reduced following policy interventions (Igan & Kang, 2011, p. 16). This is the

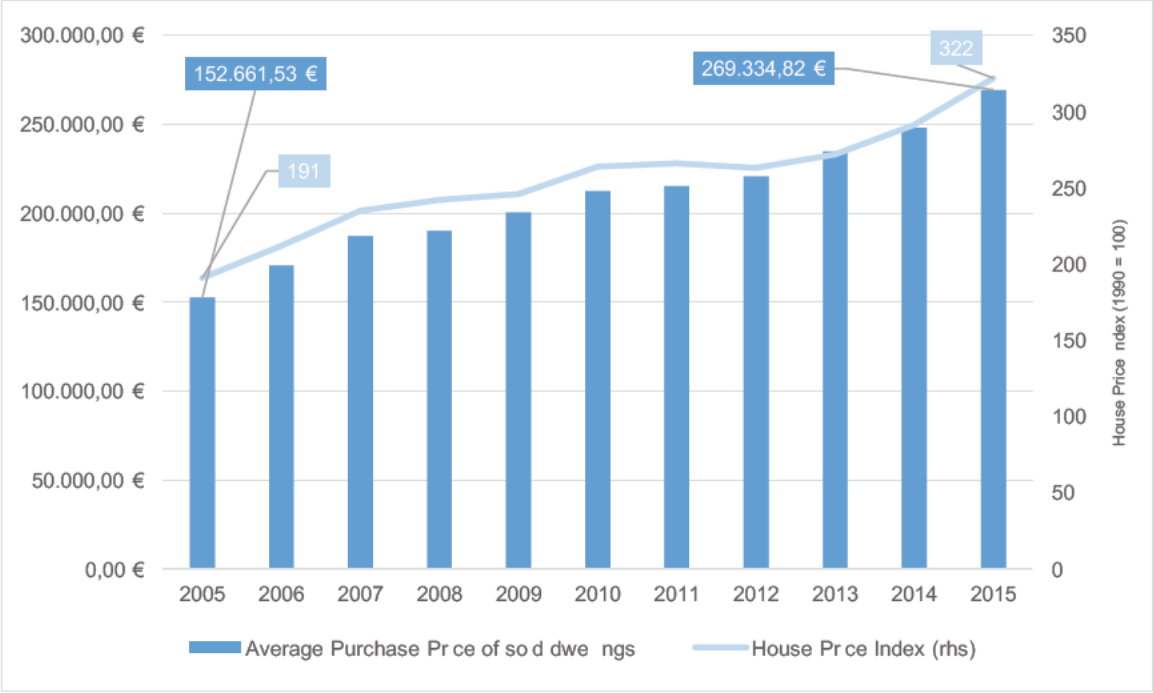
predominant view among older households meaning their plans of purchasing a home while already owning a property are likely to be postponed (ibid.). This suggests that the stricter limits on loan eligibility criteria, especially on LTV, stem speculations on the market (ibid.).

These findings are all encouraging as, expectations are usually one of the main factors to bubble dynamics being formed in the market (ibid.). The evidence here implies macro-prudential instruments can achieve the aforementioned results, making them effective tools to tame real estate booms and contain the associated risks (ibid.).

4.2.3 Example: Sweden

In February 2016, Swedish real estate prices were rising dynamically and reached a very high level (Mitropoulos, Record Breaking, 2016, p. 3). Comparing this rise with the rest of Europe, it has been above average (ibid.). The following figure illustrates an overview of the Swedish housing market from 2005 to 2015.

Figure 10: Swedish housing market



Source: Own figure based on Statista (A) and (B)

Swedish housing prices stood 13% higher in Q3 of 2015 than the previous year's level (ibid.). Since 2010, prices spikes in Sweden have been the largest in all of Europe (Mitropoulos, Record Breaking, 2016, p. 3). The reason for these rising prices in Sweden are fundamentally not so different with those in Germany (ibid.). Both countries are experiencing real economic growths, strong population growth and a low amount of new construction activities (ibid.). Just like in Germany, the Swedish real estate is also benefiting from low interest rates, they are

boosting the attractiveness of real estate as an investment and making properties affordable despite the high prices (ibid.). Price increases have been mainly observed in the conurbations of Stockholm, Malmö and Gothenburg, point to a regional differentiation (ibid.). However, there have been robust price increases even in the more thinly populated regions of northern Sweden (ibid.).

Another crucial factor supporting the rise of housing prices in Sweden is the structure of its mortgage contracts (Burgert, D'Souza, & Vermeulen, 2016, p. 2). Historically, they have always had long terms and usually little to no obligation to amortize the loan principal over time (ibid.). In 2015, a typical Swedish mortgage term was around 40-45 years (ibid.). These mortgages are usually bound to to short-term interest rates, with approximately 75% of households having a fixed interest term if less than one year (ibid.). Sweden's mortgages are mostly of interest-only, variable-rate nature (ibid.). This has amplified the financial impact of the historically low short-term interest rate currently in place (ibid.). Households can take higher loan whilst simultaneously maintaining their monthly payments or even decreasing them (ibid.).

The Swedish central bank started warning about the high risk the housing market entails (Mitropoulos, Record Breaking, 2016, p. 3). The strong rise in prices in Sweden is accompanied by a debt level of private households, which when compared internationally, is very high (ibid.). Only the Netherlands and Denmark have a higher level of debt relative to disposable income in Europe (ibid.). At the end of 2015, the household debt reach 179% of the disposable income (Burgert, D'Souza, & Vermeulen, 2016, p. 3). The use of credits in buying real estate however, does not seem to be at a critical level or better put, the average which is at 67% LTV does not seem critical (Mitropoulos, Record Breaking, 2016, p. 3). With the expansionary monetary policy not looking to fall back, the central bank is of the opinion that primarily the government and the financial regulators have to step in (ibid.). Based on recommendations, Sweden has taken some regulatory steps to address the dynamic it has between its house prices and the indebtedness levels of the country (Burgert, D'Souza, & Vermeulen, 2016, p. 4). These regulations are macro-prudential instruments including LTVs caps, amortization requirements for new mortgages (ibid.). There were also risk weight floors introduced in 2013 and 2014 (ibid.). The LTV caps, which were introduced in 2010, had a ceiling of 85% for mortgages (ibid.). The amortization requirements were implemented in June 2016, meaning household have to amortise 2% of the total size of their loan if the LTV ratio is over 70% and 1% if the LTV level is between 50%-70% (Næss-Schmidt, Jensen, Heebøll, & Sørensen, 2017, p. 18). The Swedish financial supervisory authority also advised upon the introduction of a 600% DTI limit (ibid., p. 19). This means households are not allowed to be granted a loan with a value which is six times higher than their disposable income (ibid.). An

alternative and less strict version of this suggests, 15% of new mortgages for each institution can have a DTI above 600% (ibid.).

Empirical research imply that lending restrictions can to an extent dampen credit growth, but their effect on housing prices based on two studies in Sweden are less (Næss-Schmidt, Jensen, Heebøll, & Sørensen, 2017, p. 20). Based on a study by the International Monetary Fund, LTV caps and amortization requirements reduce both the DTI ratio of households and consumption volatility, while only reducing housing prices in a limited manner (ibid.). In their model, a reduction in the LTV cap from 85% to 80% lead to a decrease of long-term household debt by 10%, whereas house prices only fell by 1.5%. (ibid.). In a further study by Riksbank from 2015, the influence of the proposed 600% DTI limit was evaluated (ibid.). Their results showed a drop in housing prices in the short run due to the DTI limit (ibid.). They believe housing prices will decline by 4% after the introduction of the policy (ibid). This effect should only be noticed in the short run though, as in the long run, housing prices will only drop by 0.3% (ibid.). The researchers point out that an uncertainty factor in their examination is the extent to which house prices are affected (ibid.). Furthermore, they observe that DTI ratios of Swedish households will be slightly lowered in the short run, because only new mortgages are affected by the limit (ibid.). After the limit has been fully implemented, estimations are that the DTI ratio of Swedish households will have decreased by 11 percentage points (ibid.). Besides the positive benefits of the macro-prudential measures, they may also entail some significant costs (ibid., p. 27). When evaluating a customer's loan application and their creditworthiness, banks already consider DTI (ibid). Some customer, for good reason, may have a DTI ratio higher than the suggested limit (ibid.). A household of two recently graduated people for example may have a high DTI ration and still be worthy of the credit (ibid.). Through this, a rigid credit assessment procedure may be created, which could affect households rather despotically (ibid.).

4.3 Possible effects of the amendment on the German real estate market

A number of empirical evidence have implied that a 10% raise in the maximum LTV cap contributes to a 13% increase in nominal house prices (Jácome & Mitra, 2015, p. 24). Other studies suggest a 10% decrease in the LTV ratio leads to a 10% decrease in the house price appreciation rate (ibid.). Researchers believe tightening LTV and DTI limits are more effective in times when credit is expanding quickly or when housing prices are high in relation to the income of household (ibid.). Cross country experiences in which panel data regressions and dummy variables were utilized for tightening and loosening periods, imply that LTVs and DTIs are in fact capable of helping to curb credit and house price growth (ibid.). Based on the same data, it was also implied that both macro-prudential instruments are capable of leaving long-

lasting effects on the market (ibid.). However, there were also studies which could not find any empirical support for these measures (ibid.).

To analyse the effects of LTV caps and DTI caps on the German real estate market, observations from other countries and experiences they made, which were described in the previous chapters of this paper could be included. Looking at Hong Kong, LTV caps had strong effect on mortgage loan growths. It could effectively dampen these and thus could also have a strong impact on the sheer volume of real estate transactions in Hong Kong. The strong effect of the LTV policies on credit growth in Hong Kong however were state-dependent. This mean they were more effective in influencing credit growth during times in which an excess credit demand was evident on the market. During times with an excess in credit supply, LTV policies were not as effective. Studies from Korea have also shown that LTV policies have an influence on market transaction volume levels. Korea also had DTI policies which were able to influence market transaction volume levels. Data from Korea showed a strong reduction of transaction volumes in the first three months following the tightening of DTI and LTV policies. Both of these measures showed to have an impact on housing prices, but the said impact could only be seen when the six-month window after them being tightened was analysed. However, LTV policies did seem to have a stronger effect on house prices than DTI policies did. A simulation with data from Korea showed how huge of an impact LTV and DTI policies had on housing prices and outstanding amounts of mortgage loans. The findings from analysing Korea are rather encouraging as the seem to imply that macro-prudential instruments can stem speculator behaviour on the market which in turn means they could be effective tools to control real estate booms and contain systemic risk. Hong Kong and Korea, have both implemented macro-prudential instruments for a while now. A third country which this paper analysed as an example is Sweden. Sweden, recently introduced macro-prudential policies as well, with the same goals and intentions of Germany. Rising prices in Germany and Sweden have one important factor in common, which is expansionary monetary policies in both markets. Something else which they have in common is that although prices were rising all over the country, prices in larger cities such as Stockholm and Berlin were rising at a higher rate. Although, macro-prudential instruments in Sweden are rather young, there are a number of studies examining the effects they could have on the Swedish housing market. DTI and LTV policies in Sweden are forecasted to reduce credit growth but not to have a major impact on housing prices. Amortization requirements are said to reduce the consumption in the Swedish market and the DTI of households. However, even they are tipped to only have a minor impact on housing prices. One study by the International Monetary Fund suggested a 5% reduction of the LTV ratio could lead to a 1.5% reduction in housing prices. Riksbank believes the suggested DTI of 600% in Sweden will to lead to housing prices being reduced by 4% in the

short run. In the long run though, prices will only drop by around 0,3%. Researchers can not determine by which extent house prices will be affected. Further countries in which the impacts and effectiveness of macro-prudential instruments were analysed show, to an extent, similar results (Jácome & Mitra, 2015, p. 28). All the studies showed LTV and DTI measures to be more effective in dampening credit growth rather than house price growth (ibid.). Between Brazil, Malaysia, Korea, Hong Kong, Romania and Poland, only Korea showed a meaningful and significant change in housing prices following the introduction of macro-prudential measures (ibid.). As thoroughly described in the previous chapter researchers analysing the Swedish real estate market do not believe housing prices to be affected significantly by these measures either. Studies have observed that in countries, in which there are persistent housing demands and capital inflows, macro-prudential instruments were not effective in reducing housing prices (Jácome & Mitra, 2015, p. 28). In Malaysia it was observed that the implemented micro-prudential measures lead to less speculative behaviour in the market (ibid.). Stricter amortization requirements, mean households will have larger mortgage repayments leading to them spending less on acquiring a property (Burgert, D'Souza, & Vermeulen, 2016, p. 4). Relative to the baseline, in Sweden for example, their level of investments falls by around 3,5-4% in the short and medium-run (ibid., pp. 4-5). This drop in demand will have its impact on housing prices, reducing them marginally (ibid.). In turn, households with less financial constraints will gain interest in the real estate market as an investment (ibid.). With these households increasing their housing investments, the initial drop in housing demand by credit-constrained households will be just partly offset, not entirely (ibid.).

Overall time-series from a set of countries have all shown that reductions in LTV and DTI limits have been effective in reducing loan-growth, improving debt-servicing capacities of borrowers and making the financial sector a lot more resilient against downside risks (Jácome & Mitra, 2015, p. 31). Capital flows into real-estate markets and direct lending by banks could take away from the effectiveness of the measures (ibid.).

In regards to Germany and the effects these micro-prudential instruments could have, this papers tries to determine these by deducing the results and experiences of the findings above. All the results showed that macro-prudential instruments can strongly influence the credit growth on the market. Although, as it can be seen in Figure 3, credit growth has not been rising at an alarming rate once compared internationally. Debt service to income ratio limits have also shown to slow credit growth (Kuttner & Shim, 2012, p. 232). These measure could curb credit growth to a certain extent in Germany, but not by a lot, as there is already an existing law which creates strict lending standards. The existing law coupled with the new amendment could lead to credit growth remaining stable and not become excessive, which could be very

important to the market. An excessive credit growth has long been identified as main contributor to the development of a housing bubble. As for housing prices, it was observed in one of the studies that macro-prudential instruments do not have a strong impact on the growth of housing prices in markets, which entail persistent housing demand and capital inflow. The German real estate market, as described in chapter 2 entails both these factors. There were a lot of investments coming into the German market, as it has been proven to be safe haven. Furthermore, the gap between demand and supply is set to grow even more in the coming years. An influx of refugees and economic migration could also lead the gap getting bigger. Based on this and the previous findings, one could conclude that housing price should not be affected significantly through LTV and DTI limits. There are amortization requirements in the amendment. As described above, they might be able to have an impact on housing price growth. However, that impact would be very small. An impact the amendment could have on the market and the market agents is making them all more resilient. Reports from Hong Kong, as described in chapter 4.2.1 showed delinquency ratios were extremely low after the property market collapsed and housing prices fell by 66%. As stated above, LTV and DTI limits improved debt-servicing capabilities. The implementation of macro-prudential measures could improve the resilience of all participants of the real estate market in Germany. Furthermore, the results have shown these measures to curb speculative behaviors. This was especially the case in both Malaysia and Korea. Although the German market has not shown any signs of speculative behaviors, the implementation of the discussed macro-prudential instruments could help keep it that way. Based on the findings above, the new amendment to the laws governing financial services supervision could impact the German real estate market in the following ways:

- Housing prices should not be expected to fall in a significant manner because of the amendment;
- Credit growth should be expected to curb slightly but maintain its steady and stable rate;
- Speculative behaviour, although currently not present in the market, should not become a problem;
- Market participants of the real estate market in Germany should become more resilient to sudden price shocks and correction, if there were to ever occur.

5 Conclusion

5.1 Summary

This paper began with describing the real estate market in Germany. Ever since the financial crisis in 2007-2008 which originated from the United States housing bubble being burst, housing prices have been rising in Germany. Cities such as Berlin, Hamburg, Munich, Düsseldorf and Frankfurt are among those which have seen the highest price increases since 2009. These cities might be the ones with the strongest rises, but that does not mean they are the only ones. Prices increases have been observed throughout most of the country. There is a considerable gap between demand and supply and there are no signs of this gap being narrowed in the near future. The expansionary monetary policy of the European Central Bank has also lead to very low interest rates in Germany, making real estate properties an attractive investment. The market in Germany is deemed so attractable, foreign investors have started to enter it as well. Given the political unrest currently evident in Europe, Germany is seen by many as a safe haven. Although the current prices seem to be fundamentally justified and there are no signs of speculative behaviour in the market, authorities are still concerned a bubble may be starting to form in the market, which could endanger the financial stability of the country.

In order to combat any threats to the financial stability of Germany, the Committee on Financial Stability advised the introduction of a set of new macro-prudential policies. The committee sought a way to counteract threats which could arise from overvaluations in the real estate market, easing of lending standards and excessive expansion of lending. Macro-prudential instruments have gained much popularity since the latest financial crisis. These are instruments which aim to safeguard the financial system as a whole and limit the microeconomic costs from financial distress. They are also designed to dampen systemic risk. The new amendment to the laws governing financial services supervision created instruments for the BaFin to predetermine a set of minimum standards for borrowers who apply for a loan. These instruments are: LTV caps, DTI caps, amortisation requirements and requirements to debt sustainability. These instruments are to show their stabilising effects through the reduction of the probability of defaulting or through the reduction of the loss ratio. There are some exclusions to this new law such as renovations of residential properties, the improvement of social living spaces and etc. Some experts from within the industry, however do not see why such measures are necessary given the strength and stability of the German real estate financing market. Even the German Central Bank does not see a reason for this new amendment to be introduced in the current state of the market. They believe Germany is already well protected against systemic risk because of the characteristics of the German real

estate market. These feature interest rates with fixed rates, the share of German households with home ownership and an already existing law which dictates stricter standards for loans related to housing.

When implementing such measures, it is important to analyse how the market could be impacted by them. It was often stated that the main goal of micro-prudential instruments and the new amendment is to avoid financial instabilities. The real estate market has been identified as a threat to financial stability due to past experiences. During the U.S. supreme mortgage lending crisis property prices and their unsustainable appreciation had a huge role. The same is true for the Asian financial crisis in the 1997.1998 and Japan's property market collapse in the early 1990s. Housing bubbles occur when houses, which are assets, have a high price today just because investor believe it will have higher selling price tomorrow. In such a situation, the price of the asset, in this case the house, is not justified by fundamental values. In the past years, a lot of attention has been directed towards monetary policies as contributors to overheating real estate prices. In the United States, the Federal Reserve's low interest rate policy received a portion of the blame for the bubble being formed in the market. The same financial crisis showed one could not only rely on micro-prudential policies, meaning just supervising individual institutions. Banks could be left exposed if lending gets out of hand and excessive, which in turn will have its effects on the financial stability of the country. The new amendment in Germany intends to protect the financial system from this happening. It was questioned if non-interest rate policies such as prudential regulations can be used to stabilise housing prices and credit cycles. Macro-prudential instruments could unwillingly decrease economic efficiency by constraining the behaviour of economic agents. The Financial Crisis Inquiry Commission stated in its finding after examining the housing bubble that the situation could have been avoidable. The warnings were there, but no one took actions against them. To stop something similar from happening in Germany is exactly why the amendment was introduced. It is however, to be examined what further effects its content could have on the market. Hong Kong had macro-prudential instruments implicated as well. The housing market there has always been kept under close examination as risks arising from it could be threatening to their financial stability. Following the Asian financial crisis, housing prices fell to a great extent. However, delinquency ratios remained very low and there was no banking crisis. Quite contrary to what had happened in the United States. Hong Kong had LTV caps of 70% in the market, which helped banks have a cushion to absorb the housing price corrections. The LTV caps in Hong Kong were first introduced in the early 1990s and have since then gone through some changes. Empirical data from there showed that tightening LTV caps lead to a reduction in mortgage default risks but not to a significant reduction of housing prices. They were also found to have an impact on credit growth in Hong Kong. Korea also had macro-

prudential measures implemented in the housing market. Data from there has shown for LTV and DTI policies to have an effect on house price dynamics, market activity and household leverage. Transaction activity was significantly reduced following the introduction of these measures. House prices were affected by them in Korea as well. Both of the measures also showed to have an influence on credit growth. Further results showed the measures to lessen speculative behaviour on the market. LTV caps, DTI caps and amortisation requirements were introduced in Sweden as well. Studies from there showed these measure to have an impact on DTI ratios of households and consumption volatility but not on housing prices. Examining these findings and that from other countries, the following is expected to occur in the German market. Prices shouldn't be affected by the amendment. Credit growth should be curbed. Speculative behaviours should not become a problem in the market. Market participants should become more resilient to sudden price corrections, if there were to happen.

5.2 Future outlook

The German real estate market is set to grow even more in the coming years. Housing demand has been rising and construction activities have not been able to keep the gap between demand and supply narrow. The influx of refugees and economic migration has also contributed to the rising demand. The European Central Bank's expansionary monetary policies are not expected to change either, meaning real estate properties should remain viable and affordable investments.

Although many agree that there is currently no bubble evident on the German real estate market, the Committee on Financial Stability wants to assure that the country is ready, if one were to be developed and burst. The amendment is in place to help the financial system to be able to absorb possible damages without high economic costs. Better yet, it intends to stop the market from heading in such a direction and prevent the damages altogether. As results from other countries have shown, it should be capable of doing so. It would also be important to see what levels BaFin sets for each of the ratios. Information on how tight or loose these would be, could determine more accurately what impacts the amendment could have on the market. For now, prices are still fundamentally justified and speculative behaviour is non-existent.

5.3 Critical acclaim

The possible impacts the new amendment could have on the market as described in this paper are estimations based on experiences from other countries and research studies. There are limitations to how relatable those findings to Germany are, as there are differences between the economies. Furthermore, since effects of macro-prudential instruments are in part deduced

by correlation studies and models built by researchers, the factors involved are important as they probably vary from research to research. Hence, a large set of studies from different countries were included in the findings in order to be able to analyse the effects from different views. Lastly, the use of macro-prudential policies has really gained popularity since the 2007-2008 financial crisis. Although there are a number of researches and studies have been conducted on them, there could still be effects and implications which have not been fully discovered.

IV. Glossary

Dwellings	In law, a dwelling is a self-contained unit of accommodation used by one or more households as a home, such as a house, apartment, mobile home, houseboat or other 'substantial' structure.
Dummy Variable	In statistics and econometrics, particularly in regression analysis, a dummy variable (also known as an indicator variable, design variable, Boolean indicator, categorical variable, binary variable, or qualitative variable is one that takes the value 0 or 1 to indicate the absence or presence of some categorical effect that may be expected to shift the outcome.
Panel analysis	Panel (data) analysis is a statistical method, widely used in social science, epidemiology, and econometrics to analyze two dimensional (typically cross sectional and longitudinal) panel data. The data are usually collected over time and over the same individuals and then a regression is run over these two dimensions.
Target2 Balances	TARGET2 is the operational tool through which National Central Banks (NCBs) of euro are Member States provide payment and settlement services for intra-Euro Area transactions. The settlement of payments between National Central Banks in different Euro Area countries gives rise to intra-Eurosystem cross-border obligations. All these obligations are aggregated and netted out at the end of each single business day, leaving each National Central Bank with a certain net TARGET2 balance against the ECB, the ultimate manager of liquidity. A positive TARGET2 balances correspondes to a net claim vis-à-vis the ECB and a negative balance corresponds to a net liability.

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VI. Declaration of originality

I hereby declare, that this thesis and the work reported herein was composed by and originated entirely from me. Information derived from the published and unpublished work of others has been acknowledged in the text and references are given in the list of references.

_____ _____

Place, Date Mohammad Pacha Djabbari-Hagh

VII. Declaration of consent

I hereby

❍ agree,

❍ do not agree,

that my bachelor thesis will be included in the department's library.

_____ _____

Place, Date Mohammad Pacha Djabbari-Hagh