

WHAT TO POUR IN THE PUNCH BOWL?

CENTRAL BANKS AND ASSET PRICES

Until the financial crisis of 2008-09, asset prices played a secondary role in monetary policy. The mainstream view was that they should only be accounted for to the extent they affected the inflation forecast. Quite a number of people have started to question this approach considering the huge costs incurred upon society from the US housing bubble and argue that monetary policy, i.e. the steering rate, should be used to curb excessive asset price developments. This thesis employs a qualitative approach in order to present, structure and analyse the academic debate on this topic, limited to housing prices only. It starts off with an empirical overview of a number of relevant countries, followed by an analytical review of the literature and an account of a number of interviews carried out with Swedish financial sector economists. Taken together, it is the idea that these three parts shall constitute a well-founded base from which practical policy recommendations can be made. The overall conclusion is that central banks are not apt to prevent asset price bubbles by using the steering rate or through non-traditional monetary policy. A mixture of policies which limit the debt incurrence among households should rather be the aim.

Keywords: Monetary policy, asset price bubbles, Jackson Hole Consensus, leaning against the wind, macroprudential policy

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1 Introduction

One of the most fundamental research topics in the field of economic sciences has for generations been that of the stability of prices. William McChesney Martin, legendary Chairman of the Federal Reserve (Fed) from 1951-1970, used to describe his role as “to take away the punch bowl just as the party gets going”¹, referring to the Fed’s task of hiking interest rates when economic activity is in bloom. However, the answer to the question when those very moments occur, and correspondingly the inverted scenario, has often been far from obvious. When have the guests consumed too much of the punch and how quickly shall it be removed from the table?

This question has puzzled generations of philosophers, economists, economic historians and politicians. But following the period often labelled “The Great Moderation”, setting in from the early 1980’s, many were those who thought we had now learnt how to tame inflation as well as the business cycle – if not entirely, then at least for the most plausible scenarios. Nobel Laureate Robert Lucas (2003) went as far as stating:

“[...] macroeconomics in this original sense has succeeded: Its central problem of depression-prevention has been solved, for all practical purposes, and has in fact been solved for many decades.” (p 1)

Monetary policy was a centrepiece in achieving this and five broad principles outlined what was considered the main components for successful conduction of monetary policy: keep inflation at low but positive levels, use the short-term policy rate of the central bank to achieve this goal, forecast inflation on the basis of the gaps in product and labour markets, consider asset prices only to the extent they affect the inflation forecast and remain willing to let the currency float freely.² And indeed was inflation brought down to targeted levels, often set implicitly or explicitly at an annual rate of around two per cent, during the twenty year period of the Great Moderation.³ Asset prices, though, were not a main concern.

In August 2007 however, conditions in US money markets began to deteriorate significantly. What would later develop into what has widely been described as the “worst financial crisis since the Great Depression of the 1930’s”⁴ would change many of the perceptions of what constitutes good monetary policy. In light of the central role played by the US housing market, many have questioned the prevailing stance of “benign neglect” towards asset prices when conducting monetary policy. This was by no means the first asset price bubble in history, but its vast magnitude made many people change their minds. The Fed has, for instance, been

¹ McChesney Martin quoted, for instance, in Mankiw (2007).

² See for instance White (2006).

³ See for instance Bernanke and Gertler (2000), Bernanke et al. (2001), King (2005) or Allsopp (2010).

⁴ See for instance a statement by Ben Bernanke quoted in BBC (2009).

heavily criticised for its monetary policy during the early 2000's as a main determinant for the soaring prices and subsequent creation of a bubble in the US housing market, not least by Taylor (2007 and 2009).⁵ A lively debate on the matter has been triggered and although few question the merits of consumer price stability, policy makers as well as financial commentators and market participants ask if asset prices should not be given a more prominent role in central banking policy.⁶ Considering the last crisis specifically, 77 per cent of Wall Street and business economists believed excessively easy Fed monetary policy were the reason for the boom in US housing prices with a corresponding figure among academic economists of 48 per cent, according to a Wall Street Journal survey (Hilsenrath (2010)).

Hence, the prevailing principle of central banks not taking asset prices into direct account when conducting monetary policy no longer appears as self-evident. Is there a case for making asset prices another main variable along with consumer prices? Or, to twist William McChesney Martin's metaphor a little, what ingredients should really be in the punch bowl that his successors try to take away as the party gets going?

1.1 Purpose of the thesis and research questions

This thesis aims at presenting important insights and understanding of the role of asset prices in monetary policy and specifically *if* and, if so, *how* asset prices could best be accounted for. Options also outside the trajectory of typical monetary policy will be considered. In order to structure this purpose, three research questions will provide the basis of the thesis and, hopefully, some light will be shed upon them:

- 1) Should central banks engage in bubble-prevention with regard to asset prices when implementing monetary policy?
- 2) If so, which alternative policies and tools exist?
- 3) What seems to be the most economically efficient option?

1.2 Method and delimitation

This thesis employs a qualitative approach whereby it is sought to tell *how* the effects of asset prices in monetary policy can be viewed upon and how different tools would work. The task is not to quantify any such interconnections, tell the size of bubbles or otherwise provide econometric estimates. Against this background, the method chosen to answer the research questions above is to present, structure and analyse various contributions that have been made by

⁵ These accusations have been widely present and other examples, among many, include Stiglitz (2009) and Time Magazine (2009), where the latter names Alan Greenspan as number three on its list of 25 people to blame for the financial crisis.

⁶ See for instance Nyberg (2010), Bäckström (2010), Wolf (2009) or Smithers (2009).

researchers and scholars, provide a basic data analysis and interview a number of financial market economists. In doing so, it is the author's belief and hope that some insights and at least partly new light can be shed upon this fairly long-debated topic.

The author further realises that the scope for this thesis could be made very wide and thereby potentially difficult to grasp. In order to limit the area of investigation, the thesis will define the concept of "asset prices" as housing and real estate prices only. Share prices and commodity prices etc. will hence not be part of this thesis, although they are indeed "assets" as well. The reason for focusing on real estate is the central role played by this sector during the last as well as previous financial crises.⁷ However, as much of the literature deals also with shares, the analytical review of the literature in section 3 will also include parts and contributions on asset prices in this broader sense. The policy recommendations and conclusions on their end though will be limited to housing and real estate only, which warrants special consideration to be taken in order to reach viable conclusions.

Moreover, in order to further limit the scope the point of departure will be that flexible inflation targeting, as defined in section 3.2, shall continue to be the fundament of monetary policy.⁸ To the extent that asset prices should be accounted for it would therefore rather be as an additional variable to be considered and not as replacement of targeting consumer price inflation. The thesis will also occupy itself with developed nations only, as many developing nations are deficient of the implicitly assumed institutional framework, such as central bank independence and the principles outlined in the introduction.⁹ By definition, countries also operate under a floating exchange rate regime.

Also worth mentioning is that this thesis will not directly involve itself in the debate on the commonly alleged role of excessively loose US monetary policy in the last financial crisis.

⁷ It could obviously be argued that commodity prices were a central topic in the last crisis as well with oil prices peaking at an unprecedented USD 145 per barrel in the summer of 2008 and food prices hitting many developing nations severely. However, real estate, and especially the housing markets in the US and the UK, was the epicentre of the crisis and the following public debate on asset prices and monetary policy has primarily been directed towards this form of asset prices. Further, IMF (2009, p 108) in one of its studies on the topic notes: "Because housing wealth is generally more important than equities for most households, and because house purchases typically require bank credit, the focus is on housing price booms rather than stock price booms." Also, from a historical perspective, real estate prices rather than equity prices have been the main determinant among assets for financial instability, as argued, for instance, in Borio and Lowe (2002), Leamer (2007), Nyberg (2010) and Wolf (2011). Looking ahead, real estate has been described as one of the very foundations for growth in countries like China and the risks associated with a deflating bubble is seen as the main threat of the stability of the Chinese economy, as reported for instance by Davis (2011).

⁸ This assumption is also accepted by many of those who argue that asset prices should play a more prominent role in monetary policy, as exemplified by Cecchetti et al. (2000).

⁹ The role of initial institutional and economic conditions for the decision by a country to adopt an inflation targeting framework is debated. Many studies, like Mishkin and Schmidt-Hebbel (2007), argue that the institutional set-up is of significant importance, whereas some, like Batini and Laxton (2007), claim the initial status is not as crucial, since less institutionally developed nations build up the necessary framework accordingly. The author however chooses to assume the mainstream view, i.e. that the initial institutional framework does count, is correct.

Indeed, this debate triggered the author's curiosity for the subject in a general sense, but telling the roots and causes of the financial crisis is a far too herculean mission which is left to others to carry out. However, there are some aspects of general interest which will be brought up.

Finally, the author also recognises that there is a debate on whether financial bubbles do exist at all, as outlined for instance in Allen and Rogoff (2010). Orthodox defenders of the efficient market hypothesis would not accept their existence. This thesis will not dig into that debate, but merely assume that bubbles can arise and thereby cause significant financial turmoil.

1.3 Organisation of the paper

Following this first part, which describes the method, limitations and general background of this thesis, an empirical overview of relevant data for a number of selected countries is provided as a general background. Section 3 then provides an extensive and analytically structured account of the most important literature in this field. It starts off with a brief outline of the emergence of the prevailing theoretical framework for central banks and monetary policy. Section 3.2 will then specifically describe how central banks have accounted for asset prices only to the extent they seemed to create inflationary pressure – the so called “Jackson Hole Consensus”. Section 3.3 then looks into what has emerged as the main alternative: the approach commonly referred to as “leaning against the wind”. In addition to this, section 3.4 presents the new concept of “macroprudential policy”, which some people claim could serve as a third alternative to the two slightly more traditional approaches above.

Section 4 lays out the result of some interviews with a number of Swedish financial sector economists as well as one leading politician undertaken by the author. The interviews are intended to complement the theoretical arguments presented earlier with some practical insights.

Section 5 outlines the author's overall analysis of three parts described above. It seeks to provide an overall answer to research questions and present the author's main policy recommendations.

Finally, the thesis's main conclusions are presented in section 6 along with some suggestions for what might be interesting areas for further research as well as some reflections on this thesis's merits and eventual flaws.

2 Empirical overview of selected countries

This chapter outlines some basic time series for a number of selected countries with special relevance for this thesis. They are meant to serve as a background to the rest of the thesis by providing an empirical overview. The author would like to underline that this study is of a basic character and that further enhancements and extensions indeed would be beneficial, but such endeavours are refrained from since this thesis does not aim at presenting advanced econometric calculations. Preferably, one would look at as many sample nations as possible but the author has chosen six countries considering practical constraints. The logic for choosing these specific countries/currency areas, i.e. the US, the UK, the Euro area, Sweden, Switzerland and New Zealand, follows the prerequisites set out in section 1.2. The diagrams start in 1985 at the earliest since financial markets were subject to far-reaching de-regulation in the mid-1980's which makes previous years less applicable for comparisons.

Four variables are used in the country examples. In the light of the heavy criticism directed at the Fed by Taylor (2007 and 2009) and the broad impact it has had, it is relevant to see whether there is any obvious proof of his proposition that excessively easy monetary policy caused the US housing bubble. The dispute is relevant not only for this specific case, but for the debate on monetary policy and asset prices in general. Taylor uses a graph similar to figure 1 to illustrate how a too low Fed funds rate during 2002-04 caused the housing bubble. In order to test this proposition cursorily, the same variables are provided for the other example countries. The monetary policy steering rates have been sourced from the respective central bank. The property price index used is provided by the Bank for International Settlements (BIS). Finding a consistent, cross-country property price index over adequate time horizons is not an easy task and although there are differences between individual countries, the one compiled by BIS has been the most suitable index that the author has been able to find. It should be noted, however, that there is no international standard on property price indices and also the BIS index is, for this reason, constituted of various sources and different types of series which have been adjusted in order to provide an at least somewhat consistent data base.¹⁰

An account of the general development of the volume of consumer credit is also included, since the bulk of housing is financed through borrowed money. Investigating the relationship between the provision of consumer credit and housing prices could therefore prove useful. The data on consumer credit here employed is the general level of consumer credit. Obviously, one could also look at mortgages and housing related credits only. The reason for not doing so in this thesis is simply that the author has not been able to find consistent data for time

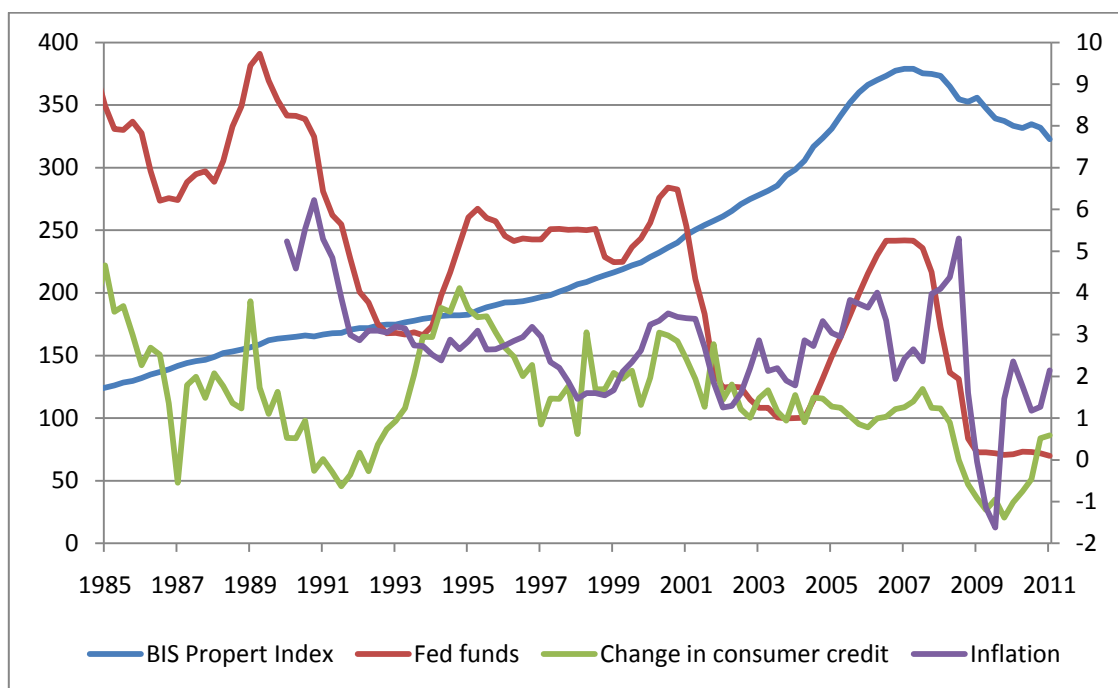
¹⁰ Please refer to BIS (2011) for further details on this price index.

periods long enough. Nevertheless, mortgages constitute a main share of the overall debt taken on by households and the risk of giving a slightly biased picture should not be too much of a fatal mistake for a basic study of this kind. Data has been taken from various sources – each referred to in association to the specific figures – and converted into percentage change at a quarterly rate. The data is not seasonally adjusted, except in the case of the US.

Finally, the inflation rate is also included as a general point of reference in the form of the percentage change of the headline consumer price index at an annual rate. Sources are indicated next to the figures. It should also be noted that the ambition is not to explain the determinants of housing prices in general, but only to see whether monetary policy and the growth in consumer credit have any obvious effect them.

2.1 United States

Figure 1 – Property prices, monetary policy, consumer credit and inflation in the US 1985-2011



Property prices along the left-hand scale (1980Q1 = 100) with the monetary policy steering rate, the change in consumer credit and inflation in per cent along the right-hand scale.¹¹

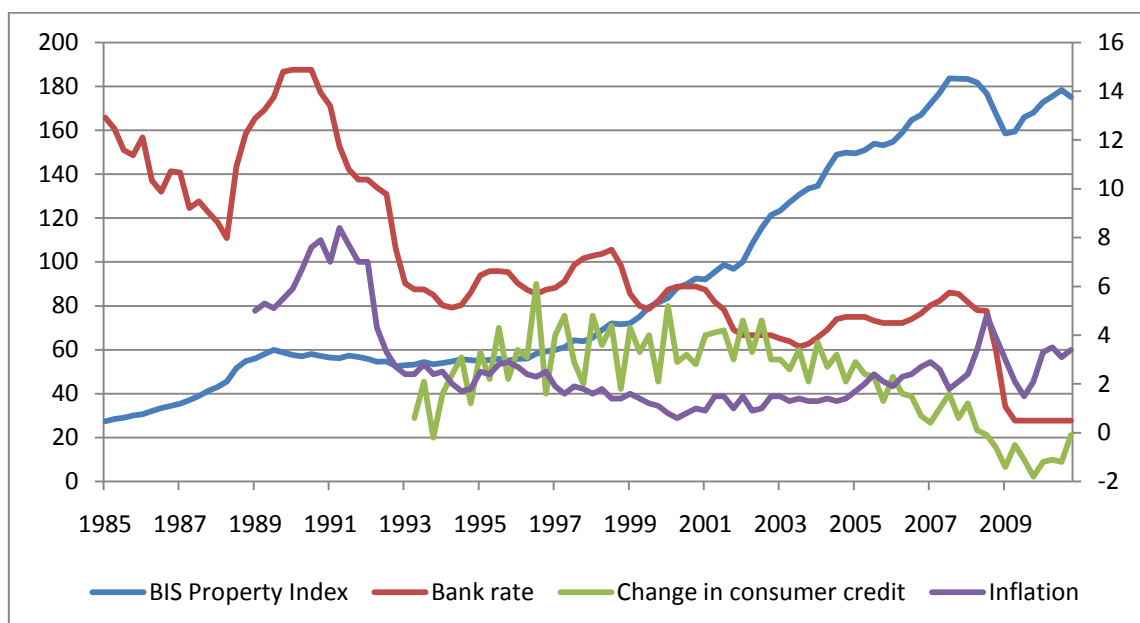
Sources: BIS, the Board of Governors of the Federal Reserve System and the Bureau of Labor Statistics

As indicated by the blue line, the level of housing prices has been consistently increasing, although two distinct periods can be easily identified: before and after 1998. The development before 1998 is not very eye-catching as housing prices increase with inflation (and, to some extent, according to the decreasing land-to-inhabitant ratio). The increase after 1998, on the other hand, has caught quite some attention. As already mentioned, many argue like Taylor that the Fed set interest rates too low in 2002-04, which made housing prices soar. As the upward path of the interest started though, there does not seem to be any effect on housing prices until the peak in 2007 though. Whether it was the interest rate or other factors which brought about that turn is unclear. The provision of consumer credit has stabilised in the last fifteen years around two per cent quarterly, separating itself from a more volatile pattern in previous decades. There is no obvious relationship though between consumer credit and housing prices, with the possible exception of the period of 1993-96 when the credit provision went from zero to some 3-4 per cent per quarter. If this was the determinant for accelerating prices from 1998 onwards though is difficult to tell from a basic study of this kind.

¹¹ The consumer credit indicator is based on data from the Federal Reserve (G.19 in Fed lingo). Inflation statistics is provided by the Bureau of Labor Statistics.

2.2 United Kingdom

Figure 2 – Property prices, monetary policy, consumer credit and inflation in the UK 1985-2011



Property prices along the left-hand scale (2002Q1 = 100) with the monetary policy steering rate, the change in consumer credit and inflation in per cent along the right-hand scale.¹²

Sources: BIS, Bank of England and Office for National Statistics

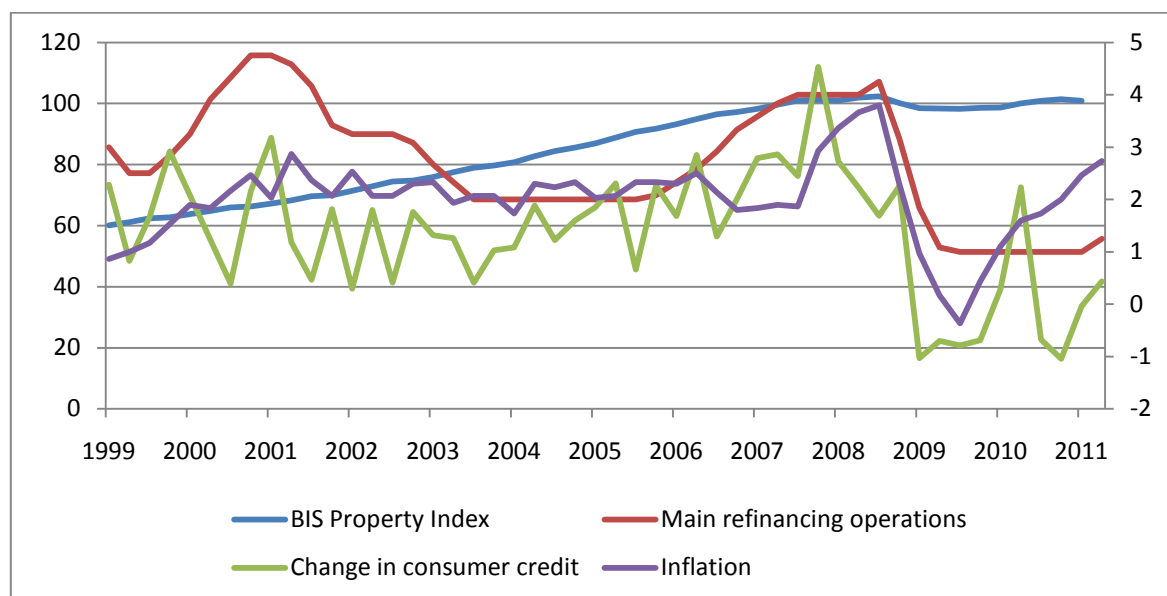
Like the situation in the US, property prices seem to take off around 1997-98 and the price level triples until to the financial crisis breaks out in 2008. The Bank rate, which is used as the monetary policy steering rate, was stable from the mid-1990's – at least compared to historic figures. Inflation was around two per cent, which means a real interest rate of about four per cent until the early 2000's. In 2002, however, the real interest rate is brought down to some two per cent and it seems as if housing prices accelerate at more or less the same time. One could therefore potentially make the argument that as the interest rates stabilises as of the mid-1990's, housing prices begin their upward journey which is then reinforced around 2002 when real rates decrease further. Meanwhile, the provision of consumer credit was high at circa four per cent during the same period and could also be an explanation. In any event though, it was not the interest rate which made housing prices flatten out in 2007 as they were more or less held constant.

The fall in housing prices in recent years, along with the Bank rate as well as consumer credit, are probably to be attributed to the global financial crisis which hit the UK severely.

¹² The indicator of consumer credit provision is sourced from the Bank of England and is the growth rate of monetary financial institutions' sterling net consumer credit lending excluding securitisations to individuals. Inflation data is provided by the Office for National Statistics and the official CPI index starts in 1996 but historical estimates back to 1988 have been calculated by the provider based on archived RPI data.

2.3 Euro area

Figure 3 – Property prices, monetary policy, consumer credit and inflation in the Euro area 1999-2011



Property prices along the left-hand scale (2007 = 100) with the monetary policy steering rate, the change in consumer credit and inflation in per cent along the right-hand scale.¹³

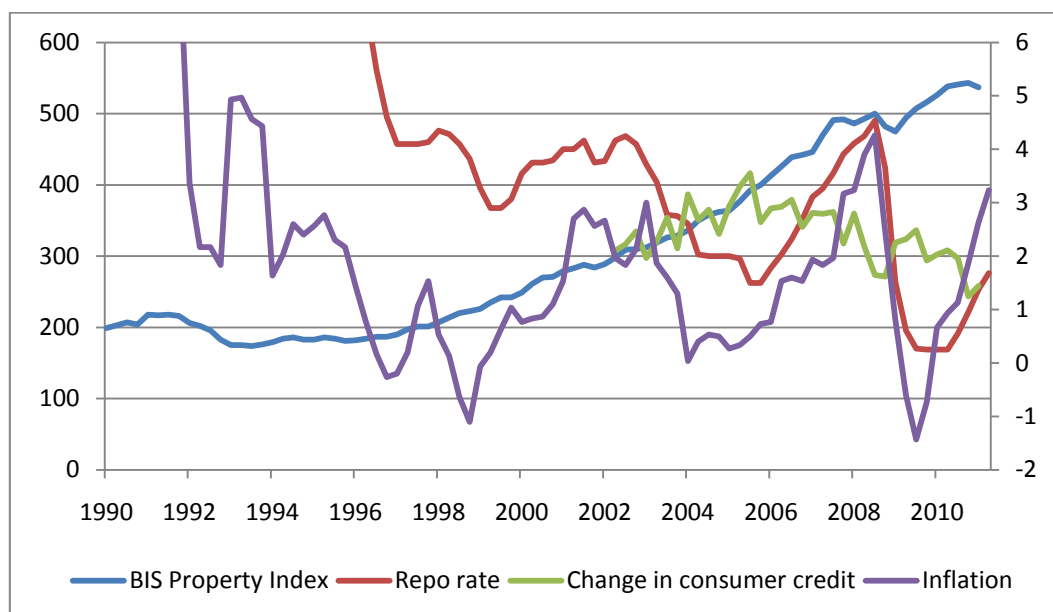
Sources: BIS, European Central Bank and Eurostat

The Euro area is a more diverse economy than most others considering the lack of common fiscal policy, national taxation and fragmented housing market. As such, it provides an average of the constituting 17 nations. Also, the data range is smaller which makes the analysis less clear-cut. Overall housing price developments have been less dramatic compared with the US and UK (although individual examples like Spain and Ireland exist). It seems though as if the moderate increase in housing prices stopped from 2007 when the ECB had hiked the interest rate to four per cent. On the other hand, prices should have increased once again when the interest rate was slashed in 2009 if that was the only determinant of the price level. One should probably attribute the stabilisation of housing prices to the financial crisis and the generally worsened economic outlook rather than the monetary policy stance of the ECB. Consumer credit looks more volatile in this figure because of the shorter time horizon, but is rather stable around 1.5 per cent per quarter until 2007. In 2007-08 however, consumer credit quite counter-intuitively increases when the interest rate goes up and falls subsequently when the rate goes down – by significant figures. In 2010, credit then soared again but only to fall once more. Independent of the reasons of this development, it does not indicate any effect on housing prices.

¹³ The definition of the monetary policy steering rate changes in the sample, starting as fixed rate tenders from January 1999 to May 2000. Variable rate tenders were used from June 2000 to July 2008 and then fixed rate tenders once again from August 2008. The consumer credit indicator is provided by the ECB and shows loans denominated in Euros to euro area residents in outstanding amounts from monetary financial institutions excluding the Eurosystem reporting sector. Inflation data is provided by Eurostat and is the Harmonised Index of Consumer Prices' (HICP) overall index.

2.4 Sweden

Figure 4 – Property prices, monetary policy, consumer credit and inflation in Sweden 1990-2011



Property prices along the left-hand scale (1980 = 100) with the monetary policy steering rate, the change in consumer credit and inflation in per cent along the right-hand scale.¹⁴

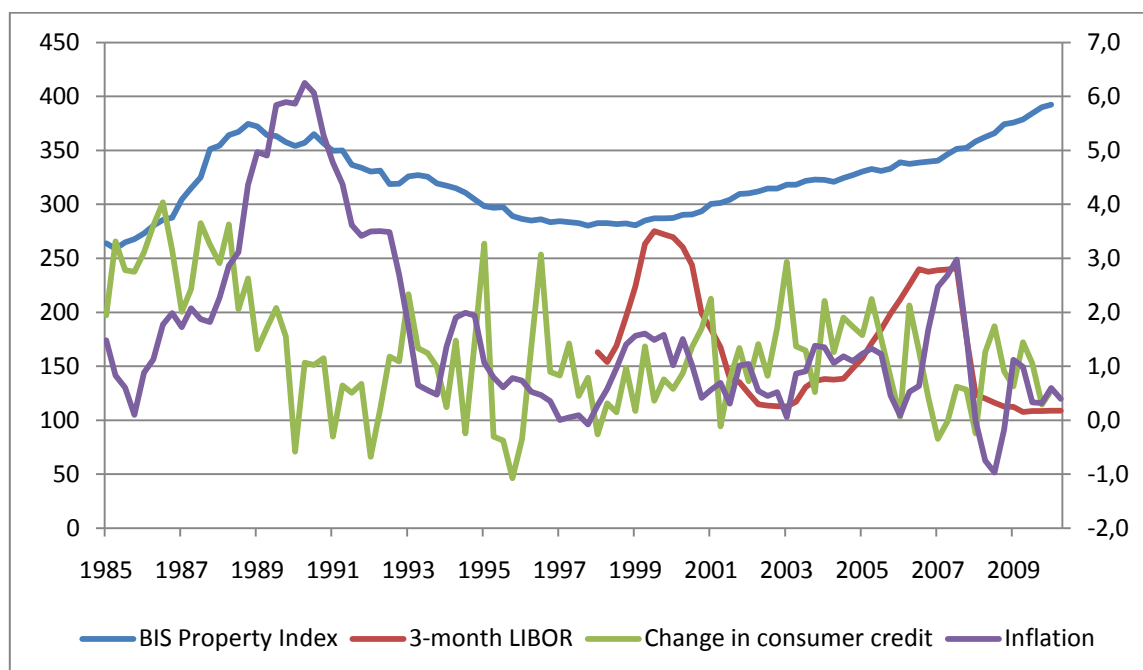
Sources: BIS, Sveriges Riksbank and Statistics Sweden

Sweden faced a severe financial crisis in the early 1990's, whereby the commercial property sector played a central role. The slight decrease in 1992-93 depicts this phase. As in the US and UK examples, housing prices begin to deviate from their previous trend around 1998. This onset of the continuous increase started off as interest rates came down to what can be labelled normal levels and seem to have got further momentum around 2005 when the interest rate was brought down to 1.5 per cent. However, the normalisation up to 4.5 per cent in 2008 does not seem to have affected prices at all. Whether the current upward interest rate path will curb housing prices remains to be seen. The credit expansion has been large also in Sweden, averaging around three per cent per quarter or 12-13 per cent per annum in 2002-08, which might have contributed to higher housing prices. A longer time series for consumer credit would have been beneficial in order to see whether this higher number is a deviation from the long-term average.

¹⁴ The definition of the monetary policy steering rate changes in the sample, starting with the marginal rate until 1994Q1 and then followed by the current repo rate. Interest rates in Sweden were extremely high in the early 1990's following intense defence of the then-prevailing currency peg. The marginal rate peaked at 500 per cent in 1992. The right-hand scale has been adjusted to exclude these extreme values. The consumer credit indicator is based on data from Statistics Sweden's Financial Market Statistics and indicates the change in total lending of monetary financial institutions to Swedish households (including not-for-profit organisations). Inflation data is also provided by Statistics Sweden.

2.5 Switzerland

Figure 5 – Property prices, monetary policy, consumer credit and inflation in Switzerland 1985-2011



Property prices along the left-hand scale (1970Q1 = 100) with the monetary policy steering rate, the change in consumer credit and inflation in per cent along the right-hand scale.¹⁵

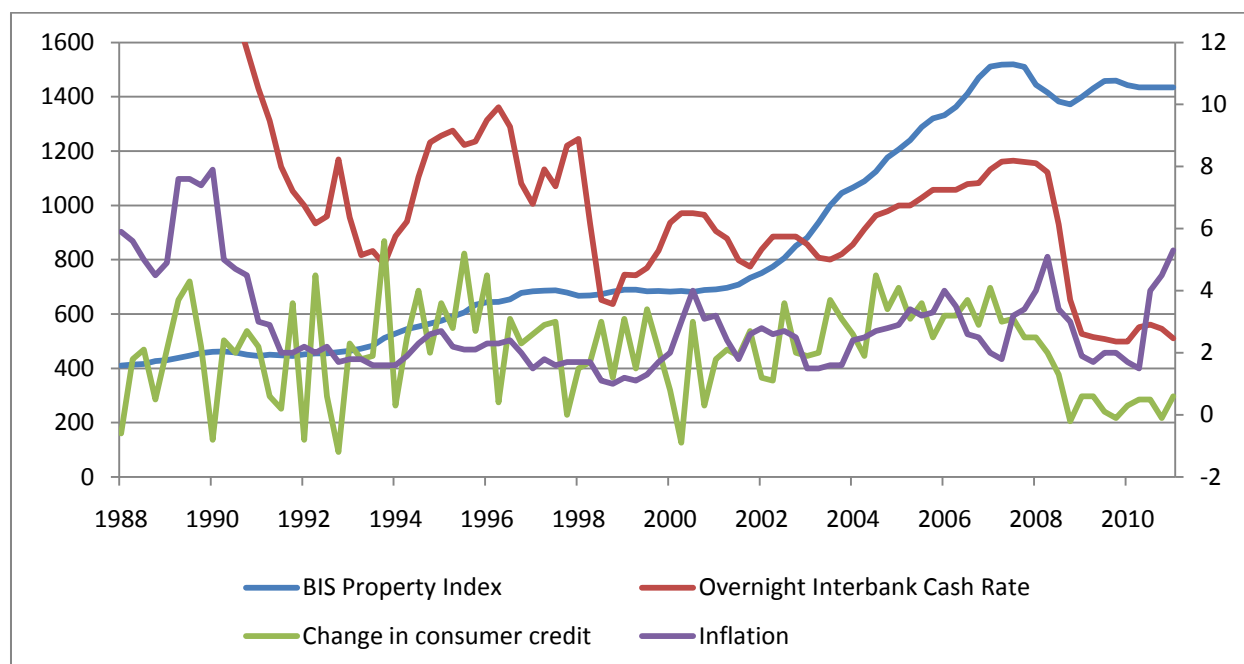
Sources: BIS and the Swiss National Bank

Switzerland is the only country in the sample where housing prices have been falling for a prolonged period. Since this was before the current inflation-targeting regime was implemented, and thereby outside the scope of this thesis, the author refrains from drawing any conclusions from this. Looking at the period from 2000 onwards though, monetary policy does not seem to affect prices to any greater extent, although a slight increase in prices occurs as the interest rate is brought down from 3.5 per cent in 2000 to some 0.25 per cent in 2004. Speaking against such a theory though, the subsequent LIBOR increase from late 2004 did not have an adverse effect on prices. The change in the volume of consumer credit seems to be a little more volatile in Switzerland than in previous sample countries but does not have any self-evident effect on housing prices.

¹⁵ The monetary policy of the Swiss National Bank (SNB) until 1999 was to target the seasonally adjusted monetary base, i.e. a monetary aggregate target. For this reason, there is no data on the steering rate in previous years. An inflation target of “less than two per cent” was adopted as of the year 2000 and the SNB uses the Swiss 3-month LIBOR as steering rate. Olivei (2002) provides further details on Switzerland’s slightly uncommon monetary policy. The credit volume statistics is provided by the SNB and consists of the provision of domestic credit to private households. Inflation data is the SNB All items index.

2.6 New Zealand

Figure 6 – Property prices, monetary policy, consumer credit and inflation in New Zealand 1988-2011



Property prices along the left-hand scale (2003Q4 = 1000) with the monetary policy steering rate, the change in consumer credit and inflation in per cent along the right-hand scale.¹⁶

Sources: BIS, Reserve Bank of New Zealand and Statistics New Zealand

Housing prices in New Zealand seem to have gone through four specific periods during the last two decades: 1988-93, 1994-2001, 2002-07 and 2008 onwards. Nominal prices were stable in the first period and then rose moderately in the second. Prices then shot off substantially in the third period of 2002-07, followed by a stabilisation during the last years. There is no obvious connection to monetary policy, other than the fact that interest rates came down from double digits in the early 1990's and then stabilised around six-seven per cent. However, if interest rates had a profound impact on housing prices the sharp decrease in late 1998-1999 from almost 8.5 to 3.5 per cent should have had an effect, not least considering the fact that real rates go down from 6.5 to 2.5 per cent. No such effect seems to have appeared though. Consumer credit growth has been stable in the two-four per cent trajectory since the mid-1990's and does not seem to have any specific correlation with housing prices.

¹⁶ Data on consumer credit is provided by the Reserve Bank of New Zealand (RBNZ) and consists of the sum of the RBNZ's and M3 institutions' New Zealand dollar claims on New Zealand residents, excluding inter-institutional claims (PSC(R) in RBNZ lingo). Inflation data is provided by Statistics New Zealand and is the CPI excluding interest rates.

2.7 General remarks on the empirical overview

The conclusions drawn from a basic study of this kind should not be too heavily relied upon, but there are some interesting patterns which can be seen from this ocular investigation. The first one is the Taylor proposition of too easy monetary policy as the cause of housing bubbles. His study considers the US only, but considering the universality of his argument (monetary policy affecting housing prices) one should be able to test it on other countries as well. However, when looking at the other sample nations there is no obvious corresponding case. Possibly the UK and, to some extent, Sweden but what is most interesting to note is that there are no clear cases, including the US, where a sharp increase in interest rates has halted accelerating prices or brought about a fall (the price falls in some countries in recent years is most probably to be attributed to the financial crisis and generally worsened economic climate).

Another trend though which seems to be more consistent is the accelerating pace by which housing prices take off in the late 1990's. This can be clearly seen in the US, UK and Sweden – and some years later in the case of New Zealand. Interest rates and the growth of credit do not seem to explain this pattern however. Low inflation figures also mean these are cases of significant real price increases.

3 Analytical review of the literature

This section outlines, presents and structures the academic debate on monetary policy and asset prices in an analytical way. It provides a brief historic account of how the scope of monetary policy has shifted through the 1900's with regards to the task of achieving price stability and, especially, the modern form of inflation targeting. It describes the “Jackson Hole Consensus”, which emerged in the 1990's and came to dominate the debate until the financial crisis of 2008. By that time, the old debate on how to approach asset prices was reinvigorated and old as well as new arguments associated with the “leaning against the wind” approach are presented in the subsequent section. The financial crisis also triggered new research into what has been labelled macroprudential policy as an alternative response to the crisis. An account of that part of the debate is also provided. Finally, a summary of the policy options derived from the literature concludes this section.

3.1 Inflation targeting in a historical perspective¹⁷

The concept of inflation targeting was first introduced in a practical way by the Reserve Bank of New Zealand (RBNZ) in 1989. The virtues of monetary stability are, however, by no means a recent discovery. Already in the late 1800's, during the heydays of the gold standard, Swedish economist Knut Wicksell (1898) argued that price stability should be the target of monetary policy and that central banks should be responsible for achieving this by steering short-term interest rates, counteracting inflation as well as deflation. Economists of today consider him the pioneer of the field and something of a father of today's inflation targeting regimes.¹⁸ His theories were implemented into practice already in 1931 as Sveriges Riksbank for a brief period adopted a constant price level target, but were subsequently abandoned. Although first in developing these theories, Wicksell was not alone in his generation of economists in occupying himself with the theme. Irving Fisher (1922), as another example, argued that “It is not too much to say that the evils of a variable monetary standard are among the most serious economic evils with which civilisation has to deal.” (p N/A) and there are many others, including somewhat more odd contributions like that of Vladimir Lenin.¹⁹

Following the Great Depression of the 1930's however, a new school of thought based on the ideas of John Maynard Keynes (1936) emerged. It attributed less of a role to monetary policy and instead focused on fiscal policy as the mean for overall stabilisation of the economic

¹⁷ This section is by no means intended to cover all of the aspects of the development of monetary policy over the last 100 years, but merely the major shifts in practices and theory. For more detailed accounts, please see for instance Cobham et al. (2010).

¹⁸ See for instance Jonung (2010), Orphanides (2010) or Bordo (2008).

¹⁹ Keynes (1919, p N/A) claims that Lenin once said that “[...] the best way to destroy the Capitalist System was to debauch the currency.”

development. Thornton (2010) speaks of a “monetary policy ineffectiveness proposition” which dominated the debate in the 1950’s and 60’s and claimed that changes in the money supply caused by monetary policy had little or no effect on aggregate demand, as an increase in the money supply would be offset by decreasing velocity of money. Moreover, the reign of the Phillips curve, which states the inverse relationship between unemployment and inflation, meant that many central bankers thought they had to “choose” between inflation and unemployment – a choice that often resulted in the former.²⁰ This was conventional wisdom during the post-war era, but as stagflation entered the scene in the 1970’s and the Bretton Woods framework broke down, this Keynesian approach lost credibility and the debate turned once more.

Apart from the emergence of this “Great Inflation” period, new economic thinking from economists like Milton Friedman (1968) and Edmund Phelps (1968) made central bankers once again start caring about inflation and less about control of the real economy. Friedman advocated the need of a rule-based growth rate of the money supply and Phelps demonstrated that the long-run Philips curve is vertical, hence undermining the foundation of the Keynesian framework of monetary policy. Monetary aggregates²¹ instead became the policy target of many central banks, but instable inflation during the 1970’s made the “demand for money function”, upon which the monetarist framework relied, unpredictable and thereby difficult for monetary authorities to achieve their money growth targets. There was also disagreement between monetarist economists on what monetary aggregate to target, as described by Goodhart (1984). These combined difficulties made most central banks abandon monetary aggregates targets during the latter part of the 1980’s and, as argued by Svensson (2007, p 4), today “[...] monetary aggregates matter little, or even not at all, for monetary policy.”

Thornton (2010) mentions three factors as crucial for then creating the shift towards inflation targeting, following the period of monetary aggregates. First, although monetary aggregates were discarded, the example set by Fed Chairman Paul Volcker during his term 1979-87 was crucial for the following period of inflation targeting. By targeting monetary aggregates, he succeeded in bringing down inflation from double digits when he started to four per cent in 1987. Indeed, it was still debated among academics *how* monetary policy affected the real economy, but the experience of the Volcker Fed at least demonstrated that central banks *could* control inflation. Second, Thornton argues that the shift of US fiscal policy from cyclically balanced budgets to persistent deficits left monetary policy alone in claiming the credits for the decreasing rate of inflation and subsequent stable era of the Great Moderation. Third, Thornton credits Robert

²⁰ See for instance Bordo (2008).

²¹ Monetary aggregates are various measures of the quantity of money within an economy, such as M0, M1 and M2 (the exact definitions of these terms differ between countries).

Lucas (1976) for his work, commonly known as the “Lucas critique”²², which made economists realise that if one wanted to tackle inflation, any such attempt had to be credible – i.e. some kind of commitment, today usually a numerical inflation target, would have to be formally made.²³

3.2 Modern inflation targeting²⁴

As previously indicated, inflation targeting in its modern sense was first brought into practice by the RBNZ in 1989, but was subsequently followed by Canada, Chile, Israel, Australia, the UK and Sweden during the first years of the 1990’s. More countries followed, often through gradual transition, and today 26 nations are pursuing an explicit form of inflation targeting.²⁵ As indicated by the term “explicit”, there is a difference in classification. The 26 nations referred to all have an explicit numerical inflation target. However, the three most influential central banks, i.e. the Fed, Bank of Japan (BoJ) and the European Central Bank (ECB), do not have an explicit target. The Fed (2011) states its mission as:

“[...] conducting the nation's monetary policy by influencing the monetary and credit conditions in the economy in pursuit of maximum employment, stable prices, and moderate long-term interest rates.” (p N/A)

Hence, it does not target inflation, but a mix of these three different policy goals. However, it is generally considered that the Fed seeks to keep inflation at around two per cent. This is an example of implicit inflation targeting.²⁶ Another example is the ECB, whose target is to keep inflation close but below two per cent – neither an explicit target. The BoJ, with its somewhat

²² The Lucas critique essentially said that economic agents will change their behaviour when “the rules of the game” are tempered with, for instance when a new monetary policy framework is implemented. A central bank could therefore not “foul” the citizens by saying one thing and then do the other – people would realise and act accordingly. Earlier models did not build upon this premise and would therefore, according to Lucas, give false predictions. Most economists today agree with this. At least the Royal Swedish Academy of Sciences (1995) labeled Lucas’s insights to have become “self-evident” when he was awarded the Sveriges Riksbank’s Prize in Economic Sciences in the Memory of Alfred Nobel.

²³ In addition to Lucas (1976), the work done by Sargent and Wallace (1975) is considered of major importance for the spread and acceptance of the rational expectations framework.

²⁴ The topic of inflation targeting is worthy of several piles of theses and can for obvious reasons not be covered in its entirety here. Multiple accounts are provided elsewhere however, for instance in Bernanke et al. (2001), Cobham et al. (2010) and Bernanke and Woodford (2005).

²⁵ The classification of a country as an “inflation targeter” is not universal. These years of adoption are found in the classification made by Schmidt-Hebbel (2010). Rose (2006) says 23 central banks adhere to the principles of inflation targeting (which could also be a question of the studies having been carried out some years in between). Be the absolute figure as it may, inflation targeting did indeed win wide-spread support during the 1990’s. This was not least demonstrated by a survey conducted in 1998, presented in Fry et al. (1999), in which 44 out of 77 central banks in developed and developing countries said the inflation target was the centerpiece of their monetary policy; the corresponding figure in 1990 was four central banks.

²⁶ However, there seems to be a mounting discussion on the Fed’s target variables as demonstrated for instance by the views of David Plosser, President of the Federal Reserve Bank of Philadelphia, who has publicly stated his opinion that the Fed should adopt a numerical inflation target in order to better maintain price stability (Salas (2011)).

unique experience in the modern sense of periods with persistent deflation, has not adopted an inflation target at all. Rather, Pinto de Andrade and Divino (2005) argue that targeting the exchange rate has been the practice of choice in Japan.

The examples of explicit and implicit inflation targeting are, however, probably more of a theoretical curiosity than meaningful classification today. Bernanke (2003) argues that during the early days of inflation targeting some central banks were indeed targeting inflation and inflation only, but as the practice developed during the 1990's, a slightly broader concept of "flexible inflation targeting" emerged as the predominant framework under which central banks were operating.²⁷ Mervyn King (1997) of the Bank of England (BoE) famously stated that central bankers were no "inflation nutters".²⁸ Instead, in addition of stabilising inflation around its target, central bankers also aim at stabilising the real economy, for instance as defined by Svensson (2009):

"[...] stabilizing resource utilisation around a normal level, keeping in mind that monetary policy cannot affect the long-term level of resource utilisation." (p 1)²⁹

Bernanke and Gertler (2000) outline three characteristics as the core of the now-prevailing flexible inflation targeting regime:

1. Monetary policy is committed to achieving a specific level of inflation in the long run;
2. Remaining committed to the long-term goal above, the central bank has some leeway to pursue other goals, such as output stabilisation, in the short run;
3. The work of achieving these goals is carried out in a fairly open and transparent way, for instance by regularly providing reports and accounts of the policy setting body's assessment of inflation risks and options.

In addition to these characteristics, it is considered equally important to avoid deflation – not least considering the Japanese experience in the 1990's and early 2000's. Bernanke (2010) argues that there is a consensus among researchers that when faced by the risk to hit the zero lower bound, i.e. inflation getting close to zero, interest rates shall be lowered preemptively.

²⁷ As explained also by Issing et al. (2001) and Allen and Rogoff (2010) among others.

²⁸ It is widely considered that, with the exception of the very first years, no central banks cared only about inflation, as argued, for instance, by Blanchard et al. (2010).

²⁹ Svensson (1997 and 2005) also argues that inflation targeting is actually a practice of inflation *forecast* targeting, as the implementation lag of monetary policy implies that current price levels cannot be used. This has become a widely accepted proposition.

All in all, the inflation-targeting framework outlined above has become what is considered best-practice for conducting monetary policy, as claimed by Giavazzi and Mishkin (2006), and most central banks of today – i.e. those relevant to this thesis – all adhere to this general approach.³⁰

3.3 The mainstream approach of monetary policy towards asset prices

Asset prices have been a main theme in the history of monetary economics, but only in certain senses. As clearly pointed out by Reinhart and Rogoff (2009) as well as Kindleberger and Aliber (2005), real estate bubbles have been a central theme in many of the great financial crises we have seen over the centuries. The disruptive effect of these crises on the real economy in terms of declining output, rising unemployment and financial distress, even at the sovereign level in the last crisis, has often been severe. Reinhart and Rogoff on their end claim that GDP on average falls by nine per cent and that unemployment increases by seven per cent during the years following a financial crisis (and housing prices on average fall by 36 per cent). IMF calculations in 2009 indicated that the then ongoing financial crisis, in which real estate prices played a dominating role, had cost the world economy as much as USD 11.9 trillion.³¹ The figure has been or will probably be revised, but it is beyond doubt that financial crises caused by asset price bubbles – not least the last one – inflict significant costs upon society and that the prevention of crises hence should be aimed at. As pointed out by Allen and Rogoff (2010), the matter is indeed of great urgency:

“Arguably the most important reform to prevent future crises is to design policies that ensure that asset price bubbles are minimized.” (p 204)

However, as outlined by Borio and Lowe (2002), up until the 1990’s economists more or less exclusively referred to equity prices when they tried to understand the links between asset prices and the macro-economy – not housing prices, although the historic accounts clearly vindicated the often central role played by real estate bubbles. And as pointed out by Rajan (2010), the housing market is special in the sense that it is quite a thin market (few house sales determine the value of the entire market) and it is not possible to take a short position. These two

³⁰ Differences of course exist and, as outlined by Allsopp (2010), Singapore provides an interesting example of a slightly different approach as it uses the exchange rate, not the interest rate, as its main tool for pursuing its monetary policy. Also, he argues that the choice of entrusting the central bank with targeting inflation by setting the short-term interest rate is not a decision warranted by outright necessity, but rather a result of pragmatism. Theoretically, it could as well be a fiscal authority, such as the Ministry of Finance, using a fiscal tool for maintaining price stability. However, this thesis will not dig deeper into this discussion but only take note that the way in which inflation targeting is – or could be – pursued vary.

³¹ This figure has been widely reported in the financial press, for instance by Conway (2009).

characteristics in combination pave the way for prices to deviate from fundamentals to a larger extent than in other markets. Hence, the argument is, there is a case for directing more attention to the matter of housing prices from a monetary policy perspective.

Starting from a little broader perspective though, Alchian and Klein (1973) were among the first to look deeper into the subject by studying the role of asset prices when measuring inflation in more detail (i.e. not from an outright bubble prevention perspective). They argue that including asset prices in the measure of inflation would give a more correct picture of reality as changes in asset prices have a wealth effect which affects the potential for future consumption. Goodhart (2001) claims this is still considered conceptually correct, but also notes in his later development of the framework of Alchian and Klein that it is very difficult to turn their insight into practice. This since it is hard to tell what weight asset prices should be given if they were indeed to be included in the measurement of inflation. What he does conclude with more certainty though, is that housing prices in any event are more important than share prices:

“What does, I believe, emerge from the empirical studies which have been done is that the links between equity prices (and exchange rates) and subsequent movements in output and (goods and services) inflation are weak. In contrast, the relationship between housing price movements and subsequent output and inflation is much stronger. So, the appropriate methodology for incorporating measures of housing price inflation into our overall statistics for inflation remains an urgent and important issue. It cannot be dismissed or ignored. It has to be addressed.” (p 21)

In addition to the problem of assessing the correct weighting formula, Dillén and Sellin (2003) also note the higher volatility of asset prices compared to those normally included in a consumer price index, which makes them harder to control for.

Although Goodhart was not alone in arguing that more interest should be directed towards real estate prices, the mainstream view among economists which emerged in the late 1990's headed in a different direction. Issing (2009) labels this mainstream view the “Jackson Hole Consensus”³² (hereafter JHC), and names former Fed chairman Alan Greenspan and Professors Alan S. Blinder, Ricardo Reis and Fredric Mishkin as the main proponents of this “consensus” view.³³ In short, their argument is that central banks should not endeavour in targeting asset prices in the same way as they target inflation, i.e. to try to diffuse perceived asset

³² Labeled “Jackson Hole” after the yearly and famous conferences organised by the Federal Reserve Bank of Kansas City in this Wyoming resort.

³³ Issing primarily refers to these three publications when pointing to the “Jackson Hole Consensus”: Greenspan (2002), Blinder and Reis (2005) and Mishkin (2007). Issing is not alone in considering this to be the predominant view of the subject. Dillén and Sellin (2003, p 134), for instance, note that: “This has been the dominant view to date in the central bank world”.

price bubbles whilst they build up. Instead, the central bank shall be prepared to “mop-up” afterwards by easing liquidity and thereby limit the effect of the price fall on other sectors of the economy. However, a closer look at this view is necessary.

During the latter part of the 1990’s, share prices were soaring in the US as the IT sector had come into full bloom. Greenspan (2002) says the Fed did start to look into issues related to what could be an asset price bubble at this time, but concludes:

“As events evolved, we recognized that, despite our suspicions, it was very difficult to definitively identify a bubble until after the fact--that is, when its bursting confirmed its existence. Moreover, it was far from obvious that bubbles, even if identified early, could be preempted short of the central bank inducing a substantial contraction in economic activity--the very outcome we would be seeking to avoid. Prolonged periods of expansion promote a greater *rational* willingness to take risks, a pattern very difficult to avert by a modest tightening of monetary policy. In fact, our experience over the past fifteen years suggests that monetary tightening that deflates stock prices without depressing economic activity has often been associated with subsequent *increases* in the level of stock prices.” (p 4-5)

Nor does Greenspan believe there is a way to make the bubble and ensuing crisis less fierce:

“It seems reasonable to generalize from our recent experience that no low-risk, low-cost, incremental monetary tightening exists that can reliably deflate a bubble. But is there some policy that can at least limit the size of a bubble and, hence, its destructive fallout? From the evidence to date, the answer appears to be no.” (p 5)

Blinder and Reis (2005), on their end, outline five points as implicitly assumed if one seeks to prick an asset price bubble:

1. Bubbles – defined as misalignment between actual prices and market fundamentals – do exist;
2. When bubbles inflate and then burst, they can (a) distort resource allocation, (b) affect the central bank’s target variables (such as inflation and output), mainly via wealth creation and destruction, and (c) threaten financial stability;
3. Central banks have a responsibility for financial stability;
4. Bubbles can be identified early enough to do something about them – without trying to prick a bubble that is not;

5. Central banks have the instruments necessary to deflate the bubble without distorting its other objectives.

They accept points one to three, but claim that proposition number four does not hold (nor does number five as subsequently explained):

“The argument for bursting bubbles implies that the [central] bank can perceive them – with a reasonable degree of accuracy – well before the market does. The truth is that this is very difficult, if not impossible, to do. For example, even at the top of the biggest (and therefore most obvious?) bubble in history, real buyers were paying real money for the ‘ridiculously overvalued’ NASDAQ stocks that others were selling – and volume was high”. (p 66)³⁴

They furthermore quote Greenspan’s famous statement of markets being “irrationally exuberant” in December 1996 when the Dow Jones Industrial Average (DJIA) was at 6 400 – a level to which it has never returned. Apparently, Blinder and Reis argue, Greenspan as the incumbent Fed chairman would have acted against soaring stock prices at that time if so had been his mandate, which one today would have deemed far too early knowing that the DJIA trades at some 11 200.³⁵ Kohn (2009) further notes that even if one could indeed tell when a bubble is occurring, the answer to the question when to act remains to be found, not least considering the time lag commonly associated with the implementation of monetary policy, with an obvious risk of increasing the adverse effect instead of mitigating it if one acts at the wrong time.

Also, Blinder and Reis oppose the idea laid out by proposition number five above as the central bank is “equipped only with a sledge hammer (the general level of short-term interest rates), not a surgical scalpel that can be aimed, specifically and selectively, at the bubble.” (p 68). The magnitude of the interest rate hikes needed to diffuse a bubble would also, according to their view, have to be so extensive that it would inflict serious damage to other sectors of the economy, which might in fact not be subject to a bubble at all.³⁶ Commenting on the debate on the Fed’s potential part in boosting US housing prices in the recent crisis, Greenspan (2008) continued on the issue of tackling bubbles that might not be, but also added a political dimension to the calculation:

³⁴ Bernanke (2002), Gertler (1998) and Issing (1998) argue in a similar way.

³⁵ Another historical example is the crash of 1929. Malkiel (2010) argues, based on another study by Bierman (1991), that it was far from obvious that stock prices were overvalued in 1929 as it for the moment seemed like the US economy was strong and would continue to grow. He further notes that both John Maynard Keynes and Irving Fisher, the leading economists of the time, considered stock prices to be reasonably valued shortly before the crash.

³⁶ This argument is supported by a broad account of empirical as well as theoretical studies. See, for instance, Assenmacher-Wechse and Gerlach (2010), Walentin and Sellin (2010), Bean et al. (2010) or Dokko et al. (2009).

“[...] I am increasingly persuaded that governments and central banks could not have importantly altered the course of the boom either. To do so, they would have had to induce a degree of economic contraction sufficient to nip the budding euphoria. I have seen no evidence, however, that electorates in modern democratic societies would tolerate such severity in macroeconomic policy to combat a prospective problem that might not even materialize.” (p 523)³⁷

In addition, Greenspan (2010) points to the de-coupling trend between short-term and long-term interest rates which has emerged in the past decade. According to Greenspan, the correlation between the federal funds rate and the 30 year mortgage rate was 0.83 during the period of 1963-2002, but dropped to 0.17 in the years 2002-05. As housing prices typically are driven by long-term rates, Greenspan claims that “[...] the funds rate exhibited little, if any, influence on home prices.” (p 40).³⁸

Instead, Greenspan has been a proponent of the earlier mentioned “mop-up” strategy. In his memoirs (2008) he broadly outlines his preferred alternative:

“I have therefore argued that being unable to effectively thwart the waves of speculation, the best strategy is to ensure that our markets at all times have enough flexibility and resilience, unencumbered by protectionism or rigid regulation, to absorb and mitigate the shock of crises.” (p 523)

In his congressional testimony, Greenspan (1999), when commenting on soaring share prices, said the role of economic policy makers should be to “[...] mitigate the fallout when it occurs and, hopefully, ease the transition to the next expansion.” (p N/A). In practical terms this means providing liquidity, primarily by decreasing the federal funds rate – a strategy adopted at the burst of the IT bubble in 2000-01 when Greenspan slashed the funds rate from around 6.5 per cent in late 2000 to 1.75 at the end of 2001 (and then subsequently down to one per cent in mid-2003). The idea was that this extra liquidity should stabilize financial markets and prevent the fall in equity prices to spread to the rest of the economy. Blinder and Reis (2005) note that USD eight trillion worth of wealth vaporized through that crash, but that the ensuing recession was comparatively mild with no bank failures occurring. They see this as a reason to consider the

³⁷ A similar argument is made by Goodhart and Persaud (2008) who claim that “the level of interest rates required to prick a bubble might eviscerate the rest of the economy”.

³⁸ Curiously though, in his memoirs Greenspan (2008, p 378) comments on his testimony in Congress in April 2004, in which he clearly signaled that interest rates would have to be hiked in order to prevent price inflation from emerging, by saying that: “Our hope was to raise mortgage rates to levels that would defuse the boom in housing, which by then was producing an unwelcome froth.” He does not provide any further explanation to this, in relation to the above, seemingly contradictory policy stance.

mop-up strategy successful. Greenspan (2005) further holds the view that the mild fallouts from the 1987 crash, the early 1990's recession, the IT crash as well as periods of spikes in oil and gas prices indicate that the American economy has become increasingly resilient and able to resist economic strains:

“Enhanced flexibility provides the advantage of allowing the economy to adjust automatically, reducing the reliance on the actions of monetary and other policymakers, which often have come too late or been misguided.” (p N/A)

Fredric Mishkin (2008), on his end, very much argues along the same lines. He outlines his general attitude towards monetary policy's reaction to asset price bubbles:

“To be clear, I think that in most cases, monetary policy should not respond to asset prices per se, but rather the changes in the outlook for inflation and aggregate demand resulting from asset price movements. This point of view implies that actions, such as attempting to ‘prick’ an asset price bubble, should be avoided.” (p 5)³⁹

In what has become a famous study, Bernanke and Gertler (2000) formalised the above framework advocated and practiced by the Fed under Alan Greenspan and included it in the overall inflation targeting concept.⁴⁰ They base the analysis on a small-scale macroeconomic model developed by Bernanke, Gertler and Gilchrist (1999) to simulate different scenarios of asset price bubbles and different policy responses to see which approach is most beneficial in different bubble situations. Although they note the uncertainties surrounding such a complex task, the overall conclusion of the paper is clear:

“In brief, it is that flexible inflation-targeting provides an effective, unified framework for achieving both general macroeconomic stability and financial stability. Given a strong commitment to stabilizing expected inflation, it is neither necessary nor desirable for monetary policy to respond to changes in asset prices, except to the extent that they help forecast inflationary or deflationary pressure.” (p 45-46)

³⁹ Mishkin here refers to active policies pursued by the central bank through interest rate interventions. He is, for instance, open to discuss other means, such as adjustable bank capital requirements.

⁴⁰ This study was carried out mainly on the examples of the US and Japan, i.e. large economies. The authors note this weakness when applying the conclusions on small economies and call for further studies to be conducted. Considering the wide-spread practical implementation of this framework, also in small countries, this does not seem to have been a concern among central bankers in practice.

This view was reiterated in another paper by Bernanke and Gertler (2001), where they added another reason for concern against central bank policies that aim at targeting asset prices, namely its potential effect on market psychology. Further, the previous study cited above simulated a severe economic downturn and this latter one instead took its departure in more normal economic circumstances, i.e. by using stochastic simulations but in the same model. The results from the first study were however confirmed: when the goal variables are the stabilisation of output and inflation, the best policy response to asset price bubbles is an aggressive inflation targeting approach where asset prices are only accounted for to the extent they have an effect on the inflation forecast.

This all being said however, proponents of the JHC also acknowledge the risks associated with real estate bubbles. And although they argue monetary policy should not be the weapon to counter such risks, they neither deny there are other alternatives – some of which are not necessarily within the competence of the central bank. For instance, Bernanke (2002) argues that the supervisory and regulatory powers of the central bank shall be used. Specifically he outlines the main defence lines as monitoring bank capitalisation, stress-testing their balance sheets, promoting transparent accounting rules and, finally, stand ready to take extraordinary measures to protect the payment and settlement systems by increasing liquidity in the event of a serious financial crisis.⁴¹

All in all, the following could be said to summarise the JHC view and why asset prices shall not play a main role when conducting monetary policy:

1. The existence as well as on-set of a bubble in asset prices is very difficult to tell;
2. Telling when such a bubble has become “too large” is, perhaps, even more difficult, except in retrospect;
3. There is no reason to expect that central bankers should be better at estimating fundamental and excessive values than other market actors;
4. Central banks main policy instrument is steering overnight bank rates, which is too blunt an instrument to hit sector- or asset class-specific bubbles;

⁴¹ In a more recent paper, Bernanke (2010) reiterates this view also when including the experience from the last financial crisis of 2008-09. He considers the significantly increasing volume of exotic adjustable-rate-mortgages (ARMs) during the early 2000's to be the main explanation, whilst he rejects the view held by Taylor (2007 and 2009) and others who blame the Fed for having pursued an excessively expansionary monetary policy 2002-04. Bernanke further argues that since the price increase began already in 1998, according to a study by Shiller (2007) which he quotes, and since monetary policy operates with a time lag from decision to effect on the economy, low short-term interest rates cannot be the main explanation of the US housing price bubble. This view is also held by his Fed colleague Kohn (2009).

5. The effect of short-term interest rates on asset prices, particularly real estate and housing, is uncertain;
6. Trying to prick a bubble, by increasing interest rates, might risk to cause the financial turbulence one seeks to avoid;
7. Regulatory and supervisory instruments are better suited to prevent bubbles than using the policy interest rate;
8. If a bubble bursts, central banks shall stand ready to provide liquidity by lowering the interest rate (“mopping up”).

These views very well depict the core of the approach towards asset prices favoured by central bankers: do not target or react to asset prices more than to the extent they risk to affect the inflation forecast. At least, this was the dominant view until last years’ debate following the global financial crisis of 2008-09.⁴²

3.4 Questioning the “consensus” – the case for intervention

As has been outlined above, the mainstream attitude towards asset prices from a monetary policy perspective has been that central banks shall react to them only to the extent they affect the inflation forecast. However, there has by no means been an absolute consensus on this issue. On the contrary, many who advocate the mainstream view still acknowledge the problems associated with booming asset prices which are followed by a bust. Donald Kohn (2009), Vice Chairman of the Board of Governors of the Fed and a strong defender of the view outlined in 3.3, for instance notes:

“Although I was concerned about the potential fallout from the collapse of the housing market, I think it is fair to say that these costs have turned out to be much greater than I and many other observers imagined.” (p 33)

Kohn also continues by acknowledging problems with the Greenspan approach of mopping-up after the bust:

“[...] mopping-up after this asset price bubble (i.e. the 2008 crash, author’s remark) has turned out to be much harder because of its greater magnitude, the centrality of residential housing and finance to our economy and financial system, and the surprising ways obscure and complex

⁴² Considering the merits and importance attributed to the work carried out by Ben Bernanke and Mark Gertler, one should probably name them as main proponents of the JHC as well, although this was not done by Issing (2009) who, according to the knowledge of the author of this thesis, was the one who phrased the term.

financial transactions have exposed banks and other financial institutions to heavy losses. [...] The severe fallout may indicate a larger potential gain than I had anticipated to leaning against excess exuberance in asset markets.” (p 34)

This has been one of the main concerns of those who question the JHC: letting bubbles build up and then burst inflicts substantial costs on the economy and risks threatening the overall financial stability – as demonstrated in the last financial crisis. And, secondly, as noted by Borio and Lowe (2002) among others, price stability has not been enough to prevent the accumulation of imbalances leading to financial instability.

Although the recent crisis has reinvigorated the debate, the arguments for actually taking some account of asset prices when conducting monetary policy are not necessarily as new. Alchian and Klein (1973) and their approach of including asset prices into the inflation measure was quoted earlier, but already three years earlier Poole (1970) argued that monetary policy shall “lean against the wind” (hereafter “leaning”) if asset price movements of significant magnitude stem from asset markets themselves so as to dilute such movements. If it comes as a result from disturbances in the non-financial economy however, asset prices shall be allowed to adjust in order to facilitate stabilisation of the real economy (i.e. making a difference between non-fundamental and fundamental values).

Bernanke (2002) refers to two main “camps” of economists who oppose the views held by him and the other proponents of the JHC, where the leaning approach, although manifold and divergent in its priorities and details, has become the main alternative. The other camp consists of those who advocate active bubble popping strategies.

Starting with the first group – the leaning approach – the argument is that the central bank should be ready to hike the interest rate a little more than what would be motivated by a strict inflation targeting line if it considers asset prices to be increasing in an unstable fashion. Bäckström (2010) provides a good summary of this general leaning reasoning:

“The argument is not that central banks should target asset prices per se. Stock and real estate prices can rise and fall for many reasons. The argument is rather that a central bank must be observant if significant increases in asset prices indicate that imbalances are accumulating, even if inflation in goods and services markets does not reflect such a development. Such imbalances can be a combination of a hefty credit expansion, quickly increasing investments and a marked deterioration of the private sector’s financial saving. I am not saying that it is easy to tell when such a situation is prevailing. My point is that monetary policy should not be excluded in such a situation. There are plenty of other difficult judgments that central banks have to make. I am here

referring to variables like the economy's potential output, output gap and NAIRU etc. Why should it be more difficult to identify deviations in asset markets, excessive credit growth and a fast decline in the private sector's financial saving than variables like these?" (p 21-22)⁴³

Heikensten (2008 and 2010) provides a practical example of this when he says it was the practice of choice on some occasions during his reign as Governor of Sveriges Riksbank 2003-05. He further notes, however, that leaning in this fashion probably not will be sufficient in all circumstances. Also when Heikensten had been succeeded did the Riksbank continue to lean against asset prices, as noted by Ingves (2007). Nyberg (2010), also on the board of the Riksbank, mentions the example of the Reserve Bank of Australia (RBA) in 2002-04 as another leaning case.⁴⁴ The goal of the RBA, according to Nyberg, was to ease the price pressure in the housing market by increasing the interest rate. As observed by Allen and Rogoff (2010), however, these two examples are the only central banks thus far where the leaning approach has specifically been put into practice.

From a somewhat more formal standpoint, the work of Cecchetti et al. (2000) has become one of the main contributions to the leaning approach. They address a number of the arguments brought forward by the JHC where they reach contradictory, or at least different, conclusions.⁴⁵ Generally speaking, they make five points:

1. An inflation-targeting bank seeking to minimise the volatility of inflation and output is likely to achieve a better outcome if it adjusts the interest rate not only according to the inflation forecast and output gap, but also to asset prices;
2. Although it is indeed difficult to measure asset price misalignments that is no reason to ignore them;
3. A significant role should be given to housing prices in the measurement of inflation;

⁴³ The argument that asset prices are not more difficult to measure than NAIRU or the output gap is presented by many others as well, for instance Wadhvani (2008) who quotes a study by Orphanides (1998) whereby it was shown that the average real time estimate of the output gap during the period of 1980-92 was minus 3.99 per cent. The revised actual figures later showed that the average had in fact been minus 1.64 per cent, which according to Wadhvani would have implied a 100 basis points difference in the interest rate.

⁴⁴ Please note that there is no specific reason why the views of four Swedish current and former central bank officials are presented in the same section other than the author's attempt to group the arguments together in a logic fashion.

⁴⁵ In the introduction of their paper, Cecchetti et al. states the following: "It is important to emphasise a number of points we are not making. First, this study is aimed at improving the normal functioning of central bank policy. It is not intended to deal with asset crisis management issues. Thus, we make no explicit recommendations concerning either identifying or bursting asset bubbles should they come into being, or the appropriate response to a sharp deflation in asset prices. Second, we do not recommend the targeting of asset prices by central banks, or the inclusion of asset prices into the monetary policy objective" (p 3). Thereby, it is rather in a structural sense that they seek to modify the framework and not from a crisis mitigation perspective.

4. Asset prices contain information of future inflation and should be included in the inflation forecast;
5. There is little evidence suggesting that changes in margin requirements or other forms of non-conventional policy tools will be successful in decreasing asset price volatility, eliminating the scope of using such tools instead of traditional monetary policy.

In more detail, they explore the model of Bernanke and Gertler (1999)⁴⁶ and make a number of modifications to it, such as including an output gap in the policy rule, interest-rate smoothing (i.e. adding the lagged interest rate to the policy rule), changing the degree to which the public sector is backward-looking and varying the level of leverage in the model economy.⁴⁷ They conclude:

“[...] we are left concluding that things are not as clear-cut as Bernanke and Gertler suggest. In fact, the overall lesson from our numerous simulations is that you have to work hard to find a case in which policy should not react to asset prices in the presence of a bubble. In the vast majority of cases we study, it is strongly advisable for interest rates to respond.” (p 25)

Further, they build on the work of Stock and Watson (2001) who reviewed the Bernanke-Gertler proposition that asset prices shall only be taken into consideration to the extent they affect the inflation forecast. Even if one accepts that view one cannot remain agnostic as to why asset prices are changing, Stock and Watson concluded. The reason for this is that the signals sent by asset prices will differ in accordance with their origin: a change in fundamental values or a bubble building up? Following this insight, Cecchetti et al. (2002) argue that even a purist JHC stance would force policy makers to try to identify what is driving asset prices in order to correctly account for them in the inflation forecast.

But if there is a case for the central bank to intervene, as argued above, there is an obvious need to address the question *when* to react, i.e. how does one tell a bubble? Also, *which* indicators should be used? The number of systematic studies conducted on this subject is not very impressive though, but attempts have indeed been made.

One recent attempt to shed light on these two questions is presented in IMF (2009). In this study, a straightforward methodology based on Bordo and Jeanne (2002) is applied whereby an asset price bust is defined as periods where the four-quarter moving average of the annual growth rate in asset prices falls by certain threshold levels: five per cent for housing and twenty

⁴⁶ In the paper by Cecchetti et al. (2000), the reference made to “Bernanke and Gertler (1999)” is not presented in the reference list. The exact study they refer to is hence unknown, although the author of this paper assumes that it is an earlier version of the paper labeled “Bernanke and Gertler (2000)”, which is in the reference list of this thesis.

⁴⁷ See Cecchetti et al. (2000) section 2.2 for further details.

for share prices.⁴⁸ Using these thresholds on data for 21 advanced economies between 1970 and 2008, they find 47 housing price busts and 98 busts in share prices in total. Housing price busts on average inflict a fall in output of 4.3 per cent and 1.3 per cent for share price busts, which makes the paper focus on housing prices.⁴⁹ Most of the busts appear in a common pattern across countries in four distinct waves: 1974-75, 1983, 1992 and 2008. The analysis suggest that as financial liberalisation occurred from the mid-1980's and the simultaneous onset of the Great Moderation, financial preconditions changed fundamentally in such way that the pre-1985 period is less interesting when comparing with the situation today. Looking primarily at the post-1985 period in this sense, the IMF paper suggests that three general patterns have been consistent in the run-up to housing price busts: higher-than-normal growth rate of credit relative to GDP, significant deteriorations in current accounts and higher-than-normal ratios of investment-to-GDP.⁵⁰ Having identified these leading indicators, IMF goes on to investigate their predictive power. For this exercise, they employ the framework developed by Kaminsky et al. (1998) and Kaminsky and Reinhart (1999) in which it is examined whether movements of different magnitudes in particular asset prices are followed by busts. This involves a crucial trade-off in setting the “alarm level”, as a very low level will cause false alarms and a high level will make the analysis miss what might be a significant bust.⁵¹ Trying a number of different simulations, they find that a large deviation in the credit-to-GDP ratio, for instance, is associated with a 28 per cent probability of an asset price bust in one to three years in the future. Correspondingly high figures are found for current account and residential investment deviations. On the occasions where all three ring alarms, there is a 56 per cent risk of a housing price bust within a one to three year horizon. However, testing the model on the real world outcome, current account and investment deviations only predict between 25 and 50 per cent of all bubbles, whereas credit to GDP is somewhat more reliable at 50 per cent. With this in mind, the IMF study concludes:

“In summary, large booms in credit and investment, as well as deteriorating current account balances, substantially increase the probability of a bust occurring in the near future. When these indicators raise an alarm, the probability of a bust is more than twice the unconditional probability. Nonetheless, even the best indicator failed to raise an alarm one to three years ahead of roughly one-half of all busts since 1985. Thus, asset price busts are difficult to predict.” (p 102)

⁴⁸ A higher figure for shares is motivated since they are typically more volatile than housing prices.

⁴⁹ These figures mirror the result of earlier studies, such as IMF (2003 and 2008) and Claessenes et al. (2008).

⁵⁰ Other variables tested are housing price growth, stock price growth, general economic growth and inflation.

⁵¹ See IMF (2009) for further details.

An earlier study with the same ambition is Borio and Lowe (2002). They do not admit to the JHC view that difficulties in the detection of asset price bubbles warrant a non-action stance. Based on a study of the development of equity prices, residential real estate, commercial real estate and an aggregate of the three from 1970 to 2000, Borio and Lowe draw three main conclusions:

1. Equity prices tend to peak one to two years before real estate prices do, with residential real estate being the last to turn. The conclusion on troughs is less obvious though;
2. The relationship between major swings in asset prices and ensuing instability in the financial and real economies is very clear;
3. Credit expansion and swings in asset prices in the medium-term demonstrate a close relationship.

However, according to Borio and Lowe the bulk of empirical studies carried out in this field have ignored asset prices, primarily because of lack of reliable and consistent data – especially on a cross-country basis. Credit, on the other hand, has been studied in far more detail in relation to financial instability, but not in combination with asset price development. They argue that soaring asset prices or expanding credit separately do not necessarily constitute a threat. The combination of the two nevertheless does, according to their findings.⁵²

From this perspective, Borio and Lowe use a model based on Kaminsky and Reinhart (1999) – i.e. the same framework used by the IMF above.⁵³ Their aim is to investigate whether the occurrence of a boom in asset prices, credit or investment can serve as useful warning indicators of future financial instability, by setting threshold values for each indicator and considering surmounting values as a “boom” phase. They focus on a cumulative process, whereby imbalances build up over time. A boom, for instance in credit, is defined as a deviation of the credit-to-GDP ratio above its historic trend, thus resulting in a “credit gap” (and with corresponding logic for asset prices and investment). Furthermore, they apply a Hodrick-Prescott filter so that only ex ante-data is used (i.e. the asset price gap for 1990, as an example, is calculated using data only up to 1990). From this model, they conclude that a combination of a credit gap and an asset price gap provides the best indication of mounting instability, with investment playing an insignificant role. Although they underline that the exact figures are only of an indicative nature, their calculation indicates that a situation where the credit gap reaches 4-5 per cent and the asset price gap 40-50 per cent above their trends, is “more than usually vulnerable to problems in the

⁵² This finding is supported by similar conclusions in Detken and Smets (2004) as well as Allen and Gale (2000 and 2007).

⁵³ See Borio and Lowe (2002) for detailed model specifications.

financial system” (p 17). So their overall conclusion is that it is indeed possible to identify at least the “set of conditions that are likely to generate significant strains in the financial system” (p 26) and that the JHC over-estimates the difficulties in identifying financial imbalances through ex-ante data. Thus, pre-emptive action is possible. Not as in pricking the bubble, but in the sense of seeking to avoid the build-up of imbalances that eventually might spur the bubble.⁵⁴

Notwithstanding their results, Borio and Lowe bring up another potential problem by reflecting on the different types of errors that policy makers could risk committing. A type I error would be to miss the bust because the threshold levels are set too high, whereas the opposite may risk to increase the nosiness of the model, i.e. the policy maker crying “bubble” too often (a type II error). They argue that the perceived severity of these problems probably would depend on who committed them: the monetary policy maker would probably be more concerned about hiking interest rates in response of an estimated bubble when there in fact was none (type II), whereas the financial supervisor would be more cautious in risking to miss a bubble (type I). The argument for this difference in concerns, Borio and Lowe claim, would stem from political economy considerations, where a central bank hiking rates risk to contract the economy if reacting too much with ensuing public protests. Meanwhile, the prudential authority would not be very popular if it set its standards so low that it missed the crisis.

Acknowledging this problem, Borio and Lowe nonetheless conclude:

“A policy response worthy of serious consideration would be a strengthening of the system-wide focus in the prudential framework coupled with a greater willingness of monetary authorities to respond to the occasional development of financial imbalances that pose a threat to the ongoing health of the macroeconomy.” (p 27)

As demonstrated by these examples, IMF (2009) and Borio and Lowe (2002), there are ideas on how to try to detect bubbles, i.e. when and what to react on. Obviously though that is not enough in order to provide a complete leaning response: one would also need to supply an answer on *how* to implement it. On this issue, a number of practical ways have been explored in the literature. Cecchetti et al. (2000) name two of interest: an augmented Taylor-rule and an adjusted inflation measure.

Looking at their first approach, it is based on the framework presented by Taylor (1993), to which an asset price component would be added (in bold brackets):

$$(1) \quad i_t - \pi_t = i_t^* + \beta_\pi(\pi_t - \pi^*) + \beta_y(y_t - y^*) \text{ [+ } \beta_s(s_{t-1}) \text{]}$$

⁵⁴ A conclusion also reached by Borio et al. (2003).

where i_t is the Fed funds rate, π is the inflation rate, i_t^* the assumed equilibrium interest rate, $(\pi_t - \pi^*)$ the deviation of actual inflation from the inflation target, $(y_t - y^*)$ the output gap and s_{t-1} is the percentage deviation of the inverse of the current equity risk premium from a twenty year lagged moving average (this latter component could of course be adjusted to fit housing as well). A crucial factor in this attempt, the author of this thesis notes, is to assess the correct weightings, i.e. the β values, especially for the asset price component as its deviations risk to be particularly large. Assessing those weightings is an empirical task, which Cecchetti et al. do not explore in any further detail.

Another way, also in their paper, would be to adjust the inflation measurement to include also an asset price indicator. They take note of work by Alchian and Klein (1973), but discard it for the same reasons as Goodhart (2001): it is simply too difficult from a practical point of view to account for future consumption through the wealth effect associated with asset prices.⁵⁵ Instead, they focus on current inflation and the scope of adding asset prices to this index. More specifically, they seek to find the asset component in which relative price changes are as small as possible.⁵⁶ They look at share prices and housing prices respectively and conclude that the former are much more volatile than ordinary consumer prices, which make them a less suitable component. Housing, on the other hand, is a more stable indicator and therefore reflects core inflation.

Another suggestion in this direction is provided by Bean (2003), who states that flexible inflation targeting should rather be thought of as an objective function of the central bank and not a specific monetary policy reaction function. As abruptly unwinding asset prices will have an impact on macroeconomic stability, which is one of the central bank's main concerns, there is no need to specify an additional response of monetary policy towards asset price bubbles – they are by definition within their scope. The implication of this is that central bankers need not specifically say they react to asset price x at level y as that is anyway within their mandate. In this sense, Bean argues that an asset price component could be added to the inflation forecast-targeting rule:

$$(2) \quad i_t = i_t^* + \beta_\pi E_t \pi_{t+k} + \beta_q q_t$$

⁵⁵ Please refer to section 6.1 of Cecchetti et al. (2000) for further details of this argument.

⁵⁶ Relative nominal price changes between different products mirror changing consumer patterns, which are real in their nature. For a central bank, it is rather the overall inflation – or core inflation – rate that is interesting as it should not account for changes in consumer preferences.

where i_t is the policy interest rate, i^* , the natural interest rate, E_t denotes the mathematical expectation of inflation, π , conditional on the information available to the central bank at time t and k is some assumed time horizon. Finally, q_t is the asset price component. The task of the central bank would then, in short, be to find values for the coefficients that minimise the loss function (i.e. the deviation of inflation from its target and the size of the output gap). A related argument is proposed by Goodhart et al. (2010), who following a data-intensive study on inflation versus asset price targeting, conclude:

“[...] we suggest that central banks operating in an inflation-targeting regime should take into account the behavior of housing prices by including them in the targeted price index. This enables them to balance better the trade-off between price and financial stability without jeopardising their credibility.” (p 228)

In addition to the JHC and leaning approaches, Ingves (2007) mentions the extension of the time horizon over which the central bank seeks to implement its policy as another option sometimes favoured for approaching asset price bubbles. In practice this would mean deviating from the normal two-three year horizon in order to capture longer-run effects and misalignments.

Finally, it is now time to explore the second of the two camps defined by Bernanke (2002): the hard-line bubble bursting advocates. Although Bernanke specifically name them as one group, the examples are not very easily found, especially not if the phrase pricking bubbles is taken literally. Roubini (2006) is one example though, even though his conclusions are not as outright as the title of his paper (“Why Central Bankers Should Burst Bubbles”). He consistently argues that intervention through the policy rate is warranted, but nonetheless concludes:

“This paper does not suggest an aggressive monetary policy approach to asset bubbles. The uncertainties about bubbles and the other factors discussed above suggest that monetary policy should respond to asset bubbles in a cautious and moderate manner. Thus, some of the arguments presented by Fed officials to justify their resistance to fighting rising bubbles have logic and legitimacy.” (p 105)

Another example which is more clear-cut, although the terms “prick” or “burst” are not used, is Åslund (2010) who takes his departure in the current Swedish debate on housing prices.⁵⁷ Åslund is directing heavy criticism towards the Swedish central bank for not countering soaring housing

⁵⁷ There is currently an ongoing debate in Sweden on the sustainability of housing prices and a potential bubble, especially in the Stockholm area where prices have been increasing by some nominal seven per cent annually since the early 2000's. An extensive account on this debate is provided in Sveriges Riksbank (2011a).

prices, which according to data quoted by Åslund increased by four per cent during the three months preceding his article:

“Instead of letting this bubble grow even bigger the Riksbank should immediately hike the interest rate at a reasonable pace towards five per cent, whereas the investment bank JP Morgan prognosticates that Sweden will have a policy rate at 2.75 per cent at the end of next year. That is far too low and will make the real estate crash even more severe.” (p N/A)⁵⁸

Åslund warns that the Riksbank is committing the same mistake as he claims the Fed did under Greenspan by letting the real interest rate be in negative trajectory. Åslund labels the monetary policy pursued by the Fed from 2002 up to the crisis “[...] the worst economic mistake the world has seen since the fall of communism.” (p N/A). However, Åslund is quite alone in advocating such an aggressive use of the policy interest rate, at least as far as the author of this thesis has been able to tell. Even those who would like to see further focus on asset prices in monetary policy question the suitability of the policy interest rate. Issing (2011) notes:

“As already discussed, notwithstanding the fact that macroprudential tools should play a major role, the challenge for monetary policy is how to integrate asset price considerations – that is, ‘leaning against the wind’ – into the monetary policy strategy. For inflation targeting this seems very hard to do. Inflation targeting, with all its refinements, is based on a forecast for (goods price) inflation using models in which monetary factors do not play an active role. [...] The fundamental problem of inflation targeting becomes obvious in a situation in which the forecast for (goods price) inflation signals ‘no need to change the central bank interest rate’ or might even indicate downward risks, whereas credit (and money) are rising together with asset prices.” (p 9)⁵⁹

But even if the views among the “leaners” are divergent on the extent to which the policy rate can be used preventively, they are more or less unanimous in their skepticism towards Greenspan’s mop-up strategy through ample liquidity provision, not least from a moral hazard perspective.⁶⁰ Buiter (2008) acknowledges that bubbles indeed are asymmetric in their nature –

⁵⁸ The level of the Riksbank’s main policy rate was 1.25 per cent at the time of this article.

⁵⁹ It should be noted that Otmar Issing is a long-standing critic of inflation-targeting and rather an advocate of the Deutsche Bundesbank’s monetary aggregate targeting regime.

⁶⁰ Rajan (2010) provides a good summary of this commonly held argument, i.e. that Greenspan, and later Bernanke, in his capacity as Fed Chairman issued a “put” to the market when he in 1999 practically stated the policy of mopping-up any mess that would emerge if prices were to fall by lowering interest rates. Through such an approach, the claim is, financial firms would be encouraged to take risky bets as the Fed would bail them out in case of any downside movement. Rajan further notes that this was not only an asymmetrical approach, it was also dangerous as the incentive for market participants clearly was to take risky positions en masse and thereby force the Fed to bail them out since the aggregated position would then have become systemic.

slow build-up, quick burst – which warrants an asymmetric response, but he as well as Issing (2011) question the magnitude of the interest rate adjustments made by both Greenspan and Bernanke in countering falling asset prices. In the heavily critical words of Buiter:

“Both the 1998 LTCM and the January 21/22, 2008 episodes suggest that the Fed has been co-opted by Wall Street – that the Fed has effectively internalised the objectives, concerns, world view and fears of the financial community. This socialisation into a partial and often distorted perception of reality is unhealthy and dangerous. It can be called *cognitive regulatory capture* (or *cognitive state capture*), because it is not achieved by special interest groups buying, blackmailing or bribing their way towards control of the legislature, the executive, the legislature [sic!] or some important regulator or agency, like the Fed, but instead through those in charge of the relevant state entity internalising, as if by osmosis, the objectives, interests and perception of reality of the vested interest they are meant to regulate and supervise in the public interest.” (p 37)

Not only did the Greenspan approach induce a significant risk of moral hazard into the financial institutions, as argued also by Issing (2009), Taylor (2007), Roubini (2006) and Stiglitz (2008), but he did also turn his back to the public good, at least according to Buiter.

In addition to this potential drawback, White (2006) also mentions the difficulty of exiting the emergency liquidity provision measures. Especially he considers the Japanese experience in the 1990's and early 2000's where both the zero bound of interest rates was reached and quantitative easing policies were implemented as a prime example why devising a credible exit strategy can be quite a challenge for the authority responsible for monetary policy.

3.5 Macprudential alternatives

In addition to the somewhat older debate on the optimality of monetary policy for bubble prevention and mitigation, a more or less new stream of policy options has emerged as a result of the financial crisis of 2008-09: macroprudential policy.⁶¹ The concept is wide and is interchangeably used in the public debate, but generally boils down to aspects concerning the stability of the financial system, procyclicality of the same, systemic risk and vulnerabilities linked to the macroeconomy.⁶² It can generally be seen as some middle way between institution-specific supervision and the maintenance of macroeconomic stability, thus entering the classic fields both of the financial supervisory authority and of the central bank, as noted both by Bäckström (2010)

⁶¹ Clement (2010) provides an interesting figure on the recent popularity of the term: 123 000 Internet references have been made to the word “macroprudential” since 2008, whereas the corresponding figure for the period 2000-07 was only 5 000.

⁶² See, for instance, Bank of England (2009) or Clement (2010) for further accounts on the definition of the concept.

and Blanchard et al. (2010). Independent of the exact definition of the scope, however, there are a number of tools and measures associated with it and a broad classification of the options at hand is provided in Christensson et al. (2010):

1. Countercyclical regulatory policies;
2. contagion control;
3. discretionary measures;

whereby the first primarily involves countercyclical capital requirements for the banks, the second enhanced surveillance of counterparty risk and financial infrastructure and the third the timely involvement of policy makers and supervisors. A natural point of departure according to their study is the publication of financial stability reports which are today produced by some 50 central banks worldwide. Many of those did indeed identify many of the risks which triggered the crisis of 2008-09, but they failed in attributing correct probabilities of them actually materialising. Hence, financial stability reports in themselves are not enough, Christensson et al. conclude.

IMF (2009) employs a model in order to evaluate the scope for a macroprudential tool as a way to address asset price bubbles. A standard Taylor-rule is used as the baseline scenario, but the model also includes an augmented Taylor-rule which accounts for changes in nominal credit growth as a second regime. The third regime includes the macroprudential tool, which is one that requires banks to set aside extra capital as asset prices increase and thereby raises the margin banks need to charge over their funding costs, i.e. number one in the categorisation of Christensson et al. above. The macroprudential tool is used in combination with the augmented Taylor-rule. A fourth regime is a modification of the third, under which the weighting is adjusted between the variables. The model is respectively subjected to different scenarios including a financial shock, a productivity shock and a combination of the two. Looking at the results, they suggest that the macroprudential tool is indeed helpful in mitigating the economic distortion in a significant way when the shock is financial. This leads to the overall conclusion of this study:

“The findings in this chapter do not support the idea that central banks should react automatically to changes in asset prices, still less that they should try to determine some appropriate level for asset prices. But they should examine what is driving asset price movements and be prepared to act in response. This applies particularly to housing, which represents a larger share of wealth than equities for most households and typically involves significant levels of debt. One possibility is that central bank mandates be expanded to include concern for financial vulnerabilities. In

addition, macroprudential tools could be used to help tackle problems in financial markets, which may help limit the need for aggressive monetary policy reactions.” (p 116)

Allen and Rogoff (2010) make further attempts to identify the options at hand. Apart from the countercyclical capital requirement above, introducing a mandatory reduction in the loan-to-value (LTV) ratio, i.e. the level of debt an individual is allowed to take on relative the value of the house (or apartment) would be one option. They also point to introducing and/or varying taxes on real estate transactions and real estate generally as the bubble builds up. In addition, an outright restriction on the allowed LTV ratio could also be implemented, which is also noted by Blanchard et al. (2010).

Andersson et al. (2011) explore these measures in further detail. They start by making the distinction between static and dynamic measures, whereby the difference is whether they are meant to be adapted over time or not. A further difference is made between discretionary and automatic/rule-based tools and a third segregation is made between quantitative and price steering tools. A quantitative tool is one that sets a limit in absolute terms and thereby forces the financial institution or consumer to change their behaviour, whereas price steering implies relative measures that would encourage the agent to behave in certain manners. Finally, one should also separate measures directed towards financial institutions and those focusing on mortgage holders.

Starting with the latter of these two, Andersson et al. move on to discuss the LTV ratio, which can be designed in different ways. Either it can be defined as a minimum equity requirement, i.e. an upper limit on the mortgage in relation to the value of the home, as is the case in Canada and Hong Kong. Also Sweden recently entered that path as the financial supervisory authority Finansinspektionen (2010) implemented such a provision from 1 October last year, limiting the allowed LTV ratio at 85 per cent.⁶³ In order to make such a regulation effective however, Andersson et al. argue that it should be used dynamically in relation to credit growth. Also, it should be an absolute upper limit as it can otherwise be circumvented by uncollateralised loans, which might increase risks rather than reduce them (as the households get more sensitive to interest rate adjustments since uncollateralised loans typically are subject to higher interest rates than collateralised ones).⁶⁴

⁶³ In Sweden this is no quantitative measure though as additional financing through loans can be used, although not with the house or apartment as collateral.

⁶⁴ This seems to be the case in Sweden, as for instance observed by Carlén (2011), where retail banks in excess of the FSA's 85 per cent rule grant mortgage holders an uncovered loan on the surpassing amount. However, it should be noted that data only cover a six month period.

Another way to design the LTV ratio would be to set the upper limit of the mortgage in relation to the borrower's disposable income, as in South Korea, the Netherlands and Hong Kong (again) and/or wealth. Andersson et al. suggest this would be more effective in moderating debt-incurrence and housing price increases as the income generally is a more stable parameter than housing prices (as in the previous set-up). However, a crucial question is to decide what income to use in that case (i.e. whether only permanent income should be used or temporary as well, for instance).

Another measure covered by Andersson et al. is adopting mandatory amortisation, which would generally mean a maximum time to repay the loan or a part of it.⁶⁵ This is a form of saving as it increases the mortgage holders' net wealth, but also decrease their potential consumption accordingly. If adopted, concern should be taken to the mortgage holder's general financial situation as it would otherwise risk to be excessively contractive, Andersson et al. argue.

Finally, on the consumer side, they look into different kinds of insurance schemes, such as insuring against a fall in housing prices which would enable the mortgage holder to repay the loan even if a significant drop in the value of the home would occur.⁶⁶ This would decrease the probability of credit losses for the lending institutions, and insured borrowers should benefit from a correspondingly lower interest rate. However, Andersson et al. note that the effect on housing prices should be quite small if such an insurance is correctly priced: it is only a transfer of credit risk from the bank to the insurance company and should not provide an arbitrage opportunity (not in theory, at least).

Two fiscal aspects are also brought up by Andersson et al. (2011), as well as by Allen and Rogoff (2010) and Svensson (2010): taxation of housing and deduction of interest rate costs. One way to limit a rise in housing prices would be to implement/increase the real estate tax or put a stamp duty on house transactions. Further, in those countries where interest rate costs are deductible, such provisions could be looked into.⁶⁷

On the part of lending institutions, Andersson et al. primarily turn to two instruments: capital requirements and reserve requirements, whereas the former is capital held by the bank itself in relation to the risk-profile of its balance sheet and the latter capital that financial institutions are forced to place with the central bank.

⁶⁵ One example is the Swedish Bankers' Association (2010), the industry association of the Swedish banking sector, which issued a general guideline to its members last year in which it recommends mandatory amortisation of all mortgages above 75 per cent LTV. Canada and Hong Kong also employ this measure.

⁶⁶ This is less relevant for the US and other markets where non-recourse loans and similar schemes are prevalent. Non-recourse debt is a collateralised loan where the creditor may seize the collateral if the debtor cannot fulfil his obligation, but cannot seek out any further payments from the borrower even if the collateral does not fully cover the amount owed. In other countries, like Sweden, the debtor will have to repay also the difference in a corresponding situation.

⁶⁷ More information on these provisions will be provided in section 4.

On capital requirements, substantial changes are currently carried out within the framework of the Basel Committee on Banking Supervision.⁶⁸ In relation to asset prices, the idea is that the amount of capital that banks are forced to hold in order to receive a banking license affects the banks' financing cost and thereby indirectly their ability to provide credit to consumers, which then affects housing prices (although influencing housing prices is not the main intention, but rather the stability of the banking sector). For asset prices though, Andersson et al. note that the Basel proposals will have significant importance as one of the main suggestions is the implementation of a countercyclical buffer component. The intention is that this mandatory buffer will be increased when credit is amply provided and then inversely adjusted when times turn worse, which – in the reasoning of Borio and Lowe (2002) above for instance – would then exercise substantial influence on housing prices. However, using this universal dynamic component for asset prices only will not be possible as it will affect bank lending generally. Instead, one would have to look at the risk-weighting of mortgage-related holdings if this mean is to be used.

As a final mean, Andersson et al. turn to the above introduced concept of reserve requirements. The set-ups between different central banks are not exactly the same, but generally speaking there is a mandate to force commercial and investment banks, which have central bank access and are covered by its lender-of-last-resort umbrella, to place a certain amount of capital with the central bank. This can either be with or without interest and is based on the entirety or a part of the bank's balance sheet. One such component could be the stock and quality of mortgages held by the bank. This would be another way to affect the price of credit with the same logic as capital requirements, but in a more targeted manner.

A somewhat different approach is taken by Tucker (2009), Deputy Governor for Financial Stability of the BoE which has been one of the leading institutions in this debate. He is not primarily concerned by the detection of bubbles, but rather the psychological difficulties in going against the herd:

“Not a few senior market participants felt from at least 2006 that financial risk was underpriced, and that conditions in, for example, the leveraged loan market were silly. But they also had no conviction about when, or indeed whether for sure, the music had to stop, and so feared individually that stepping away from the dance “too early” would crystallise business risk, as the dance would simply go on without them and their franchise would be undermined as customers migrated to their competitors.” (p 9)

⁶⁸ Please refer to the Basel Committee on Banking Supervision (2011) for the final report on a revised structure for bank capital.

With this in mind, Tucker considers three options for mitigating financial instability: quelling asset price bubbles, limiting credit growth or increasing the resilience of the banking system. He out-rules the two first, as asset bubbles which are not built on over-indebted financial institutions do not constitute a threat to financial stability. Meanwhile, the growth of credit is difficult to influence since the demand for credit cannot be influenced to any significant extent by macroprudential tools, and even if domestic actions are taken, free capital flows will imply that the central bank in any case will not be able to control total credit supply. Instead, considering that most booms are concentrated to certain sectors of the economy, varying the capital requirement risk-weighting in that particular sector and the minimum collateral haircuts on secured lending might be a way forward.

A final question regards the allocation of responsibilities for macroprudential and monetary policy tasks and mandates. Hamilton (2011), Blanchard et al. (2010) as well as Goodhart (2009) argue that adding additional target variables, such as further focus on asset price stability, to the set of tasks delegated to the central bank may result in a situation where one of the goals is fulfilled, say stable asset prices, whereas the other, inflation, misses its target. Has the central bank then fulfilled its mission? Is it from a democratic perspective acceptable to delegate such an important power as monetary policy to an independent technocrat body like the central bank if its work cannot be properly evaluated by its overseers, i.e. the national parliament or finance ministry? Also, is there a risk that the central bank will take its price stability target less strictly if its mandate was made more versatile? Clearly, Hamilton and Goodhart argue, the more variables the more difficult it will be to evaluate whether the mission has been accomplished or not, whereas Blanchard et al. conclude that separate monetary and regulatory authorities are preferable.

3.6 Summary of the policy options derived from the literature

Following this fairly broad account of the academic debate on the potential for monetary policy to react against asset price bubbles, attempting a categorisation of all the options identified and described above will hopefully make the forthcoming interview section as well as subsequent policy recommendations easier to follow.

As a first category, there are tools which can be labeled *traditional monetary policy*. These include the policy interest rate and reserve requirements. Looking at the first, the traditional strategy has been to use the policy rate ex-post in order to mitigate the fall-out of an asset price bust (as outlined by Greenspan (1999) and Bernanke (2002) for instance). On the other hand,

there are also a number of examples above where the argument is that the central bank could, and should, use the main policy interest rate also ex-ante, i.e. in such a way that it does not only account for consumer price inflation but also non-fundamental deviations of asset prices (such as Borio and Lowe (2002), Cecchetti et al. (2000) and Heikensten (2010)). As a first step, the central bank could engage in “open mouth operations” by warning of soaring asset prices (as argued by Bäckström (2010)). If the central bank would seek to use the interest rate also, a practical way to do so would be to add an asset price component to the Taylor rule.⁶⁹ A hard-line approach would be for the central bank to actively seek to prick perceived bubbles by substantial increases in the overnight interest rate (as indirectly proposed by Åslund (2010 and partly by Roubini (2006)). Also, the central bank could set reserve requirements in relation to the asset-related components of the banks’ balance sheets (as outlined by Andersson et al. (2011)).

In addition to the traditional range of monetary policy, a number of measures within the scope of the central bank but *outside the classic trajectory of monetary policy* are also considered. One such thing would be to adjust the inflation measure in such a way that it also includes an asset price component (as proposed by Bean (2003) and Goodhart (2001) and Goodhart et al. (2010)). Another way with the same intention would be to extend the horizon over which consumer price inflation is to be stabilised, thereby allowing for other (asset price) considerations (as outlined by Ingves (2007)). Varying the levels of required bank capital is another way forward, which would presumably be a tool commanded by the central bank, in order to steer credit provision and indirectly asset prices (as outlined for instance by IMF (2009) or Allen and Rogoff (2010)). A variation of this proposition would be to alter the risk-weighting of the capital requirements in relation to house-price related exposures (as argued by Tucker (2009)).

Besides these various approaches and tools more or less within the scope of monetary policy, a number of other measures *not necessarily within the central banking framework* have been proposed in order to mitigate asset price bubbles. Generally speaking many support enhanced levels of supervision, such as stress-testing the balance sheets of the banking sector with the aim to identify potential vulnerabilities (as described by Bernanke (2002)).⁷⁰ Speaking in more specific terms, three main regulatory reforms have been proposed (for instance by Andersson et al. (2011), Blanchard et al. (2010) and Allen and Rogoff (2010)). Firstly, the introduction of LTV ratios with regard either to the value of the home at hand or in relation to the mortgage holder’s

⁶⁹ It should be noted that central banks do not follow the rule proposed by Taylor (1993) slavishly. It is rather to be seen as an illustration of the central bank’s decision rule. Mishkin (2007) provides an interesting elaboration on this.

⁷⁰ Whether such tests are to be carried out by the financial supervisory authority, finance ministry or central bank depends on which jurisdiction one considers and probably remains to be defined. When the EU-wide stress tests were conducted in the summer of 2010 it was through close cooperation of the Committee of European Banking Supervisors (the predecessor of the current European Banking Authority), national regulators and the ECB.

income and/or wealth. Secondly, mortgage holders could be subject to different forms of mandatory amortisation. Thirdly, insurance schemes could be put in place which would compensate the mortgage holder in case of a price fall. Two additional measures from the fiscal policy side regard taxation of housing as well as transactions of housing and deductibility of interest rate costs (as outlined by Allen and Rogoff (2010) and Svensson (2010)).

4 Interviews

Having depicted the academic and theoretical debate at great length in section 3, a closer look at the practical implications may also be warranted. The author has interviewed a number of Swedish private sector economists who are all active financial markets practitioners as well as one politician with the purpose to get an overall picture of their views on the subject.⁷¹

4.1 Account of interview results

The questionnaire used for these interviews is attached in appendix 8.1 and generally focused around three issues: the financing forms of housing, the merits and flaws of different policy tools in affecting housing prices and finally the allocation of tasks and responsibility between the central bank and the financial supervisory authority. The main focal point has been the second issue, whereby the broad categorisation outlined in section 3.6 has been used to structure the interviews.

The economists interviewed are (in chronological order):

- Carl B Hamilton, Member of Parliament and professor of economics (29.4.2011 in Stockholm)
- Tomas Pousette, Chief Economist at the publicly owned mortgage company SBAB (19.5.2011 in Stockholm)
- Annika Winsth, Chief Economist at Nordea (27.5.2011 in Stockholm)
- Anders Brunstedt, Senior Economist at Svenska Handelsbanken (27.5.2011 in Stockholm)
- Johan Hansing, Head of the Economics Department at the Swedish Bankers' Association (11.6.2011 in Stockholm)
- Roger Josefsson, Chief Economist at Danske Bank (17.6.2011 in Stockholm)
- Robert Bergqvist, Chief Economist at SEB (17.6.2011 in Stockholm)
- Cecilia Hermansson, Chief Economist at Swedbank (23.6.2011 by telephone)

The background of the first question is the argument made by Bernanke (2010) and Greenspan (2010) where it is claimed that the share of “exotic” financing schemes in the US housing market increased significantly during the early 2000’s, with advanced forms of adjustable-rate-mortgages and subprime lending, which made the transmission mechanism less effective in having an effect on housing finance – and thereby monetary policy as such.

⁷¹ The reason why they are all Swedish economists is simply of a practical nature, as this is where the author lives.

All of the interviews have given a clear answer to this question: this has primarily been a US phenomenon without a corresponding trend in Europe – possibly with the exception for the UK. From a Swedish perspective, mortgage schemes are fairly straightforward: either fixed-rate or adjustable-rate-mortgages. Nor are the mortgages subject to the securitization procedure, which was very common in the US until the crisis. The only new feature in recent years has been the practice to lend without amortisation, which became prevalent during the years before the crisis of 2008-09. Both Pousette and Winsth however point to the fact that mortgage lenders today have to finance their operations on longer maturities as a result of new regulation, for instance regarding bank capital, which has led to higher interest rates.

On the second question, however, the views are a bit more divergent. Starting off with the policy rate, Pousette asks what legislation actually allows the central bank to do. In the Swedish case, the law prescribes that the Riksbank shall “maintain price stability” and “promote a safe and efficient payments system”.⁷² Likewise formulations are used for other central banks and few have an explicit responsibility for financial stability. Hence, it is a question of interpretation. Leaving that argument aside, Pousette, Winsth, Josefsson, Bergqvist and Hermansson all agree that the policy interest rate is a powerful weapon, not least in countries where the share of adjustable-rate-mortgages is high, although it is a blunt tool. Winsth though wants to make a difference between what is done from a cyclical perspective and what is done from a structural perspective. The interest rate, according to her, could indeed be used to stave off a business cycle effect but if the goal is to bring about long-term changes one should rather attempt other measures. Hansing, on the other hand, is less in favour of using the interest rate because he thinks it would take a major increase in order to have an effect. However, both he and also Bergqvist point to the signaling effect of policy rate increases, which could make even minor increases have an important effect. Hermansson underlines that one should primarily focus on housing debt and less on housing prices and even if it is difficult to say which level of debt constitutes a threat, it is reasonable to expect that situations where the debt-to-disposable-income ratio increases quickly and significantly do pose a risk (as in Sweden currently where the debt to disposable income among consumers has increased from 130 to 180 per cent in a few years time). Hence, she sees potential for a leaning approach from the central bank, not least if politicians are unable to undertake other measures which mitigate debt incurrence.

On reserve requirements with the central bank, specially directed to mortgage lending, the interviewed economists are hesitantly skeptical. Josefsson notes that China has been using this for various purposes, but with moderate success. Bergqvist as well as Brunstedt believe it would

⁷² Please refer to the second article of the Sveriges Riksbank Act available in Sveriges Riksbank (2011b).

be difficult to implement and, moreover, possible to circumvent. Hansing argues that measures should be implemented as close as possible to the consumer in order to secure the effect. Reserve requirements would not necessarily hit housing primarily, but could also result in a general increase of banks' rates and/or fees. Similarly, there is broad skepticism towards countercyclical capital requirements for the purpose of housing price mitigation. Pousette and Brunstedt ask who the "good authority" is that will be able to tell when to increase and when to lower required ratios? Hansing further notes that few banks will be willing to peck on their reserves in case of a credit contraction (when ratios would be lowered, according to the proposed Basel III rules). If so, this measure would be more or less useless from a credit provision affecting perspective. Meanwhile, he also notes that the risk-weighting of housing related assets probably has been too easy and that reforms in this direction might be motivated. Hermansson is also of the opinion that risk-weighting has been inferior and that a revision of the Basel II provisions in this sense would be a better measure than imposing reserve requirements or countercyclical capital requirements. Also, she adds that the average duration of bank funding is more important than the level of capital, as demonstrated in the crisis when duration mismatch exposed even solvent banks to significant liquidity problems. One tentative idea could be to formulate the rules so that long-term lending would also need to be matched by long-term financing by the banks, Hermansson says.

Neither a re-definition of the inflation measure is seen as a potential way forward by the interviewed economists. Pousette, Winsth and Bergqvist argue it is already a challenge to explain the concept of inflation to consumers, given the number of indexes used, and adding additional components and/or measures would not make it easier. Josefsson would rather like to see more attention directed to monetary aggregates in the way once practiced by Deutsche Bundesbank (and to some extent the ECB). Through that practice, the central bank would be able to look at more than just the 200-250 components of the consumer price inflation measure, Josefsson argues. Hermansson on her end notes that asset prices generally might be too volatile to be included in the inflation measure, although housing prices are more stable than share prices and therefore might be more suitable. Independent of the inflation measure composition, she argues, clear and open communication on the part of the central bank is the important aspect in this sense.

Turning to regulatory reforms affecting the consumers, putting a cap on the LTV ratio is a mean which is not directly rejected by the interviewed economists but it is also widely acknowledged that it is unlikely to solve all the problems. Bergqvist and Hermansson however add that it can have an important signaling effect to the market. On a general note, Hermansson

underlines that the most important factor is that banks and mortgage lenders do thorough credit assessments of their clients in order to secure that they can bear higher interest rate payments.

Mandatory amortisation, on the other hand, is widely welcomed. Pousette however notes that it will probably force many consumers to decrease saving if they have to amortize. Meanwhile, many of the other economists argue that amortisation is indeed a form of saving, as the net wealth effect is the same, and that this risk hence can be accepted. It is generally accepted by all the interviewees that amortisation is a good principle that should be fostered. Some of the interviewees add that it will probably make it more difficult for first-time-buyers to enter the market as their incomes will not allow for substantial amortisation payments. As this segment often constitutes the marginal-buyer, the effect on housing prices could be quite large. Since a monthly amortisation payment typically would imply a larger outflow of cash than a .25 or .50 per cent rate increase, Hansing argues that mandatory amortisation will be an efficient way forward if one seeks to exert downward pressure on housing prices and debt. Generally speaking, all interviewees agree that this kind of self-regulation, as it has been in Sweden where the Bankers' Association issued such a recommendation to its members, warrants a large degree of coordination. If one bank imposes an amortisation requirement, it will lose customers if such a provision is not also implanted by its peers.

Turning to fiscal measures, Hermansson is clearly in favour of higher real estate taxes (though not in the form of stamp duties) for the purpose of curbing prices, although she notes the considerable political sensitivity of such a measure. From an economic perspective, she claims this would be an effective reform. Josefsson is more skeptical towards taxation for these purposes as he regards it as some form of government involvement in private decisions on resource allocation.

Also on taxation, many European countries have special provisions in national tax laws to facilitate mortgage interest rate payments by allowing for deducting such costs from other taxes paid by the individual. The rules differ across countries, stretching from the Dutch example of full deduction against the income tax to the United Kingdom where such deductions are only granted to "vulnerable" homeowners, i.e. those who receive certain kinds of income-related benefits.⁷³ Through such deductions, financing one's home through borrowed capital is facilitated substantially and, following the financial crisis, this practice has become subject to criticism. Hamilton takes his departure in the Swedish situation where a natural person may deduct 30 per cent of the interest paid on private loans, such as mortgages, from his or her income tax

⁷³ A study into the different national tax provisions has been made by the author with generous help from the European Parliament's Library Service. The study includes the UK, Germany, France, Spain, Italy, Denmark, Finland, Austria, the Netherlands, Belgium, Ireland, Sweden and Estonia.

payment. He argues that a gradual decrease of the size of this deduction could be a surgical way to counter soaring housing prices which threaten to cause a bubble and subsequent risk for financial stability. It would be surgical in the sense that it only affects housing prices and not the economy in total, which would be the case if the policy interest rate was used instead (the “sledge hammer” as earlier argued by Blinder and Reis). Such a gradual decrease is currently being implemented in Denmark where the deductibility of negative net capital income above DKK 50.000 per year will be lowered by one percentage point per year from 2011 to 2019 (from 33.7 per cent to 25.7).⁷⁴ Among the other interviewed economists, there is consensus that such a reform would be very effective and focused directly on housing prices and mortgages. However, they also note the significant political risks associated with an attempt to alter the current rules. Bergqvist, Brunstedt and Josefsson underline the need for long-term “rules of the game”, i.e. such a reform must have broad political backing in order to avoid a situation where the rules change every election. Hansing notes that lowered deductions perhaps could be agreed upon through a broad revision of taxation policies.

Finally on the matter of which public body shall be given which tasks and authorities, the interviewed economists note that more debate and research is needed to find an answer. Generally speaking though, most agree that well-functioning coordination between the responsible authorities is the most important aspect. Hermansson points to the fact that the central bank often has more resources for analysis which could make them more suitable than the financial supervisory authority. Josefsson argues along the same lines although he notes the potential problem of concentrating so much power to one authority. A final answer to this question, however, remains to be found.

4.2 General remarks on the interviews

The first question on the way housing is financed is of significant relevance to the overall topic of this thesis as it affects the monetary policy transmission mechanism. Greenspan and Bernanke argue, as earlier outlined, that exotic forms of financing and increased securitization made monetary policy in the shape of the Fed funds rate less efficient in affecting housing prices. Independent of accepting this proposition, which has been contested, one can leave that argument aside when not discussing the US as other countries were not characterized by these practices.

Hence, it is probably not very surprising that the interviewed economists on a general level are more positively inclined to using the policy rate in affecting housing prices and credit.

⁷⁴ Please refer to Belastingsdienst (2011), Directgov (2011) and SKAT (2011) for references on the country-specific examples above.

The Swedish market, which is naturally their main point of reference, has a high degree of adjustable-rate-mortgages which gives the repo rate, i.e. the Riksbank's policy rate, a relatively high impact. This would not be the same in a country where mortgage rates are fixed or schemes more complex in their set-up.

It is further interesting to take note of the broad skepticism, or lack of enthusiasm at the very least, for most of the non-traditional or macroprudential alternatives outlined in the literature. Reserve and variable capital requirements are deemed non-suitable because of the discretionary element involved and counter-intuitive logic (i.e. lowering capital requirements at a time when banks would rather seek to increase their ratios). Explaining inflation to consumers is difficult as it is and would not be easier if an asset price component was also to be included – and which would also have to be correctly weighted. LTV ratios are not rejected, but there is broad agreement this will not be enough. Rather, structural reforms seem to be the way favoured by the interviewees and, in this sense, primarily in the shape of mandatory amortisation and less generous tax deductions for interest rate costs (leaving political considerations and tactics aside).

Finally on the central bank mandate, one should note that although financial stability might not be explicitly stated as one of its missions it can easily be argued that maintaining a functioning payment system by necessity means that the financial system must be stable. Financial instability could, as seen in the last crisis, mean that institutions collapse and have a strong effect on liquidity and the overall function of the payment system.

5 Policy recommendations

Having studied some basic time series on monetary policy, housing prices and credit, reviewed the academic literature on the subject and interviewed a number of private and public sector economists, it is time to provide an overall answer to the research questions set out in section 1.1.

Starting off with the first question, whether central banks should engage in bubble-prevention with regard to asset prices when implementing monetary policy, the short answer is that it depends on what the central bank is able to do, i.e. what tools does it command and what would their likely effect be? The options, i.e. the answer to the second research question, were outlined in section 3.6. They will each be evaluated shortly, but first some words on why central banks should be concerned at all. Many studies on this subject, Dillén and Sellin (2003) for instance, deals in quite some detail with this, whereas this thesis has not. The reason for this is simple: the financial crisis of 2008-09 showed with all clarity that an asset price bubble can have an almost cataclysmic effect on financial markets, although there was of course much more to it than just asset prices (such as global current account imbalances and highly complex securitization procedures for instance). If central banks have a responsibility for maintaining financial stability, or at least a share in that responsibility, they need to look into the matter of asset prices. And many, also in the JHC camp as exemplified by Blinder and Reis (2005), agree they do.

Given this general starting point, however, the author would like to condition that view along the line above: it further depends on what the central bank is able to do and what tools it can use. On the interest rate, following a look at the now famous argument proposed by Taylor (2007 and 2009) and the data in figure 1, there seems to be a strong case in favour of central bank intervention if one accepts Taylor's view. However, when tested on other countries, as in the rest of section 2, the author of this thesis is not able to find such an obvious relationship. It is true that housing prices start to deviate also in countries like Sweden and the UK when interest rates are brought down from double digits to four and five-six per cent respectively around 1998, but claiming that monetary policy would be responsible for a housing boom at these levels of interest rates is something completely different than giving Taylor right (real rates were also high, as demonstrated in figures 2 and 4). Moreover, and perhaps an even stronger argument against the Taylor view, housing prices actually began their reinforced upward journey in the US already around 1997 and rose from an index level of 195 to 275 before the Fed funds rate, according to Taylor, became "excessively easy" in 2002. That is a 40 per cent increase occurring under a "normal" monetary policy stance. If the Taylor view is to be accepted, this increase needs to be

explained first. Until then though, the author of this thesis will not see the US 2002-04 period as a reason to use the interest rate for bubble prevention.

Should one then proclaim a “monetary policy ineffectiveness proposition” with regards to asset prices? No, that would be a too far-reaching conclusion. But it is undeniable that using the steering rate is indeed a sledge hammer, to use Alan Blinder’s metaphor, which affects the entire economy. To take the current Swedish example, many argue that a bubble has been created in the Stockholm housing market. Few are those however who claim that medium-sized cities like Jönköping, Linköping and Västerås are subject to the same kind of bubble tendency. Should the central bank then use a nation-wide tool to curb a local, or possibly regional, bubble in a situation where the general economy struggles with its recovery? The balancing act is delicate when circumstances call for non-compatible responses. Further, the bulk of empirical and theoretical studies carried out clearly refutes the otherwise intuitive logic that higher interest rates exert a strong pressure on housing prices. One can expect the effect to be larger in countries where mortgages are provided at an adjustable rate, such as Sweden, but studies from the Riksbank (Svensson (2010)) show that a one percentage point increase in the repo rate only brings about a 1.5 per cent fall in housing prices – i.e. one would need an almost draconian interest rate hike of ten percentage points in order to bring down housing prices by fifteen per cent. Still though, the financial sector economists interviewed for this thesis agree that the steering rate does have a major impact, at least on people’s ability to carry and roll-over their mortgages, which would then logically imply an impact on housing prices considering their typical debt profile. An important factor in this calculation from a steering rate perspective is the division between fixed and adjustable rate mortgages. In the US, for instance, 95 per cent of all mortgages are fixed on maturities of 30 years, whereas roughly one half is adjustable on very short terms in Sweden.⁷⁵ Comparing the two might therefore be difficult and there is a need for more research in this field taking national and local specificities into consideration. If the Riksbank figures are correct though, the interest rate impact should not be larger in the US where mortgage rates typically are fixed.

Leaving the impact evaluation of the steering rate aside though, there are a number of other problems associated with traditional monetary policy as a response to asset prices which all boil down to the credibility aspect. The literature reviewed by the author does not really focus too much on this though.

Firstly, there is the potential conflict with the consumer price target. Let us have a look at the Taylor vs Fed-case again. Inflation was low in 2002-04, when Greenspan let the Fed funds

⁷⁵ Figures presented in Sveriges Riksbank (2011a).

rate go down to unprecedented levels, and below the Fed's implicit target of two per cent for roughly half that time period. Hence, the Fed pursued with the orthodoxy and decreased the interest rate in order to avoid deflation which it perceived as a real threat at the time. Assume that the Fed, at this time, instead of keeping interest rates low would have announced an increase as it considered housing prices to be accelerating at an unsustainable pace. What effect would such acting have on the credibility of the inflation target? It is always risky to involve one-self in counterfactual assessments, but it is reasonable to expect that financial markets and mortgage holders would have interpreted such a signal as the Fed being less concerned of consumer prices. If pursuant of such a new policy, the Fed might have been successful in decelerating housing prices but would as well have risked walking into a deflationary scenario. If not pursuant, but wobbling on the other hand, investors and consumers would have been left puzzled and probably more confused with no real impact on housing prices.

Secondly on credibility, there is the problem brought up by Hamilton on democratic control. Monetary policy is one of the most influential areas of public policy making that is left to a technocrat body to implement. Therefore it is crucial that democratically elected leaders are able to properly evaluate the work done by the monetary policy maker. By allotting a number of variables to the basket of considerations to be taken by the central bank, one will always run the risk of having a situation where one goal is fulfilled whereas the other is not. Telling success or failure would then not be a very easy task. In this sense, the classic Tinbergen rule of having one tool for each policy objective seems to hold and according to the author of this thesis, taming inflation should be that goal.⁷⁶

Adding further to such a conclusion is the fact that no one has yet come up with a credible way to measure asset prices or tell when a deviation puts the economy in peril, i.e. when the central bank would need to step in. IMF (2009) and Borio and Lowe (2002) employ the same quantitative framework, but reach partly diametrically opposite conclusions where the former estimates an important role for the investment-to-GDP ratio in predicting asset price misalignments and the former considers it insignificant. If anything, far more research is needed before central banks use asset price estimations as a base for their monetary policy.

What then remains for the central bank is open mouth operations and adjusting the reserve requirements. Whereas warning of risks is indeed something the central bank should do, history provides ample examples of the insufficiency of such a measure – the DIJA did not stop at 6 400 although Greenspan warned of “irrational exuberance”. Reserve requirement, on its end, would be an indirect measure and there does not seem to be anyone who thinks that such

⁷⁶ See Tinbergen (1952) for further details.

adjustments would be enough in itself. Hence, the conclusion so far would seem to be that the JHC view is still valid: take asset prices into account, but only to the extent they affect the inflation forecast. That, however, would be to miss the second part of the consensus: mopping up.

Economic history and previous financial crises have many lessons for current policy and the decisions made today. One of them is the returning problem of moral hazard, which played a role also in the crisis of 2008-09. The problem is that if shareholders and management do not perceive an existential risk there will hardly be any appropriate risk awareness in financial markets. In other words: as long as profits are private and losses socialised it will always be rational for financial institutions to take excessive risks. This is a wide discussion in itself which the author does not want to dig into, but it must be noted that this is a fundamental problem with the JHC approach and, primarily, with the Greenspan/Bernanke “put”: As the central bank says it will always stand ready to mop up whatever mess is created, it does not by definition socialise losses but it does save those who should really be victims of their own actions. Such an order cannot be maintained. A central lesson of the financial mayhem of the last years should, according to the author of this thesis, be that the scope for moral hazard must be reduced and in the light of such a view one cannot proclaim a mopping up strategy ex-ante as the JHC stipulates (what is done ex-post when a crisis has occurred is another matter).

Considering the rejection of the armoury of the central bank above and this latter conviction, the answer to the first research question is: “No, at least not through traditional measures”. If so, what are then the prospects of the other options identified above?

Looking at the second category of unorthodox measures that a central bank could employ, there are two reasons why adjusting the inflation measurement and extending the time horizon over which monetary policy is to be implemented are not seen as viable options by the author. Firstly, although the matter has been researched for more than 40 years, there is still no real idea on how to account for asset prices in a workable way. Also, adding further components to the inflation index would not facilitate the communicative task facing central bankers – quite the opposite. Secondly, since the idea is to extend the time horizon so that the central bank can deviate from the inflation target for some time whilst it tries to curb asset prices, this would merely be another version of the credibility problem above of not knowing what the central bank is focusing at.

Neither variable capital ratios, on their end, are without problems. Assume a situation where inflation is below its target and the steering rate thus kept low but asset prices soar. The policy response to asset prices would then be to increase capital ratios, which would make it more

costly for banks to lend money, i.e. cause a monetary contraction. Although the interest rate has much wider implications on the economy, the central bank would risk being doing two things at the same time: stimulating the economy through low interest rates and contracting the same through higher capital ratios. Once again a delicate balancing act – and not an implausible scenario as demonstrated by the US 2002-04 case.

Hence, also the non-traditional armoury of the central bank appears to be empty. The final answer to the first research question must therefore be slightly modified once more: “No, but *others* should”.

Others, in this sense, would typically be either the financial market supervisor or the finance ministry. In telling which of the measures of these authorities to employ, one need to decide whether it is housing prices per se or the debt causing those prices which is the problem. The literature on monetary policy and asset prices is generally occupied with housing prices as such, but taking a broader look at the history of financial crises it is generally argued that the common denominator has been excessive leverage.⁷⁷ On asset prices specifically, the author would like to point to two reasons why debt should be in focus. First, although the IMF (2009) and Borio and Lowe (2002) studies are divergent in some of their conclusions, they both find evidence that higher than normal credit-to-GDP is a trigger of financial instability. Second, most homes are financed through borrowed capital which provides another reason to focus on debt. For this reason, measures which limit or structurally decrease the level of debt should be prioritised. Among the remaining measures identified in this thesis, a mixture between supervisory and fiscal measures seems to be the most efficient way forward if structural deleveraging is the goal. From the supervisory/macprudential side, LTV ratios and mandatory amortisation have such a profile. Considering the lukewarm views on the LTV ratio among the interviewed economists as well as the fact that banks seem to provide uncovered loans as a replacement when an LTV ratio is introduced, at least in the Swedish case, that measure might provide some positive effect but does not seem to be sufficient. Mandatory amortisation, on the other hand, does seem to bring along a substantial deleveraging effect. Moreover, as proven by the Swedish case such an approach can be implemented on a private sector basis without need for new regulation. The single most efficient measure in bringing down leverage, though, seems to be found in fiscal policy: removing or decreasing the deductibility of interest rate costs. In some countries, like Sweden and Denmark, the deduction possibility is quite generous (33.7 and 30 per cent respectively). Adjusting these levels would incur a direct cost on highly indebted households. For this very reason, however, changes cannot be brought about over-night. It is

⁷⁷ See, for instance, Reinhart and Rogoff (2009) or Kindleberger and Aliber (2005) for their extensive accounts.

often claimed that a real interest rate shock, partly created through a sudden tax reform, was the trigger of the severe Swedish financial crisis of the early 1990's.⁷⁸ New rules would therefore need to be announced well in advance and probably gradually implemented, also in order to give households a fair chance to plan their private finances. In this sense, the Danish case with gradual implementation over a ten year period could provide interesting food for thought.

⁷⁸ See, for instance, Englund (1999).

6 Conclusions and reflections

The financial crisis of 2008-09 reinvigorated the debate on how central banks best respond to non-fundamental changes in asset prices. This is an old debate, dating at least back to the 1970's, which came under the dominance of the “benign neglect” approach typically associated with the “Jackson Hole Consensus”. According to this mainstream view, central banks should only take asset prices into account to the extent they affect the inflation forecast. Although this was the consensus view, a number of economists started to question this approach around the year 2000. The crisis which broke out in the US housing market in 2008 brought the Fed under heavy criticism and rendered the old consensus less self-evident. Many people argued that central banks should use monetary policy to curb excessive asset price developments in order to avoid bubbles in financial market. Some went further and called for active bubble popping, whereas others agreed that authorities should seek to prevent bubbles but use other measures than monetary policy.

This thesis has provided a thorough account of this debate. The idea has been to present, structure and analyse the various arguments in order to reach a conclusion on how central banks could best prevent asset price bubbles in the housing market. The overall conclusion is that central banks are not very apt for this task and that it should be left to others, i.e. the financial supervisory authority and – where applicable – national tax law. It is argued that it is not housing prices per se, but rather the debt which causes those prices which is the problem. Preventing excessive debt incurrence among households should therefore be the ultimate goal. In this regard, a suitable policy response from a European perspective would be to make amortisation on mortgages mandatory and adjust national tax law so that the ability to deduct interest rate costs stemming from personal debt (mortgages) is abolished or at least significantly reduced. However, such provisions would need to be smoothly implemented over time.

As always though, this case is far from closed. There are numerous angles and perspectives where further research would be warranted and the author would like to highlight a number of them. Firstly, independent of one's estimation of the potential to succeed it shall not be excluded that further research into what can serve as leading indicators of asset price bubbles might provide a better base from which bubble prevention strategies could take its departure. For monetary policy though, current knowledge is clearly insufficient. Second, the accelerating pace of house prices in the US, UK and Sweden around 1998 puzzles the author. Studies on other countries to see whether this a common pattern and, naturally, into the causes of these cases would be quite interesting. Third, the crisis has resulted in a number of macroprudential measures being implemented as a response, such as maximum LTV-ratios, amortisation

requirements and, soon, variable capital ratios for the banking sector. The former two have been at work for some time and quantitative evaluations would be welcome in order to see their effect. Meanwhile the author would call for further studies into the linkage and potential conflict with traditional monetary policy before variable capital ratios are used to counter perceived asset price bubbles. Finally, before the suggested policy response of changing tax provisions in order to make them less debt-accommodative, one would need to evaluate the public as well as private costs associated with such a proposal. Especially, the magnitude of the change and the way through which it would be implemented would need cautious consideration. As earlier mentioned though, the Danish case might provide an interesting case study for other countries. The author has not been able to give any detailed recommendation for non-European countries in this regard, since he has not been able to look into the precise tax provisions in countries like the US or New Zealand.⁷⁹ Further studies into these countries' relevant tax provisions in relation to consumer debt would hence be especially welcome.

Looking back at the work carried out in this thesis, the author would like to acknowledge some potential weaknesses. Although it has been a concern from the very beginning and consistently thought of throughout the thesis and although the thesis is quite upper edge regarding its length, it is hard to deny that the topic of the thesis is indeed wide. Some aspects have been subject to quite step motherly treatment because of length consideration and there is surely some interesting arguments and perspectives which have not been presented. Also, a still more extensive empirical part would probably have added some further valuable insights, but space and time has its limits also in this respect. Finally, it is difficult to deny that a slight bias towards the Swedish case exists, not least manifested through the interview section. As earlier indicated though, this is for practical reasons only.

Notwithstanding these and other potential flaws, it is the author's hope and belief that some clarity and new light has been shed on this important topic. Even though economists and financial markets are currently absorbed by the sovereign debt crisis, the debate on central banks and asset prices must not stop. Rather, we must continue to refine the way in which monetary policy, and economic policy in the broader sense if one adheres to the conclusions of this thesis, is conducted in relation to asset prices. Although the author argues they should not be an ingredient of the McChesney Martin punch bowl that is by no means a reason to ignore the topic.

⁷⁹ However, Rajan (2010) argues forcefully that American politicians, from both parties, during the last 30 years have been quite supportive of policies which promote private debt as a way to finance a higher personal living standard and goes as far as claiming this has been an outright tactic to gain voter support. Controversial as such an interpretation is and notwithstanding other explanations of the American situation, it is non-deniable that American consumers are highly indebted and it should, hence, be possible to adjust the taxation system so that it does not promote private debt-incurrence.

7 References

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8 Appendix

8.1 Interview background material

This section includes the material used during the interviews conducted for this thesis. The interviews were all held in Swedish and the compilation made in section 4.1 is made up by translations done by the author.

Stockholm School of Economics
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5210 - Thesis in international economics

Spring 2011

Monetary policy and asset prices

Discussion material with Swedish banking economists and politicians

Background

The objective of this thesis is to map the economic debate on the potential of monetary policy and central banks to respond to bubbles in asset prices, primarily focusing on housing prices, within a given flexible inflation-targeting regime. The point of departure thus is that the overall framework of today for conducting monetary policy shall continue to prevail and that bubbles can emerge and subsequently lead to macroeconomic imbalances and financial instability.

In this thesis I aim at trying to answer the question whether there is a role at all to play for central banks in these aspects and, secondly and thirdly, what tools it could use and finally which tool seems to be most efficient (also from a broader policy perspective, i.e. non-traditional monetary policy). The approach is qualitative and hence it is a question of how these aspects could be viewed upon and not a matter of quantifying bubbles or deviations of other kinds.

Hence, four main points of departure:

1. Flexible inflation-targeting shall remain as the overarching framework together with a floating exchange rate.
2. Proper institutional arrangements are at hand (such as a more or less independent central bank for instance).
3. The analysis is limited to housing prices, i.e. not asset prices in general.
4. The analysis strives to be applicable on a cross-border basis and therefore not limited to Swedish circumstances.

Questions

1. Ben Bernanke has explained the bubble in US housing prices with changed patterns in mortgage financing, especially referring to new funding means such as adjustable-rate-mortgages and other innovative schemes. Have we seen a corresponding change in Sweden? Has the share of “exotic” financing forms in our housing market also increased? If so, what effect does that have on the transmission mechanism?
2. A number of means for influencing housing prices are considered in the economic literature as well as in the public debate. Some of them lie within the traditional trajectory of monetary policy and some do not. What is your view on the potential and effectiveness

for each of these approaches and tools in steering housing prices and which pros and cons are associated with them (from a strict economic perspective)?

- a. “Traditional” monetary policy:
 - i. The policy interest rate (repo rate)
 - ii. Reserve requirements (kassakrav)
 - b. Other measures within the central bank’s scope:
 - i. Adjusted inflation measure (including some index of asset prices);
 - ii. Adjustable capital requirements
 - c. Tools commanded by other public authorities:
 - i. Mortgage ceilings/loan-to-value ratios
 1. Based on the value of the house/flat
 2. Based on the mortgage holder’s income/wealth
 - ii. Mandatory amortisation
 - iii. Real estate tax
 - iv. Stamp duty
 - v. Lowered interest rate tax deductions for private individuals
 - d. Other measures?
3. Does the institutional set-up and allocation of resources and responsibility between the central bank, FSA and finance ministry play a significant role? What benefits and drawbacks would see in a merger between the central bank and the FSA?