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From IT-bubble, to housing bubble, to...?

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Abstract

We ask three research questions: 1) *Did government intervention contribute to the housing bubble of 2008?* 2) *Are the same recovery policies conducted today, on the way out of the housing bubble?* 3) *Are we heading for a new wave of financial crises? What kind and how?* With theoretical perspective of Minsky and the Austrian school of economics we assess the data necessary to explain the course of events and answer our questions in a comparative study of USA, the euro area, and Norway. Through qualitative and quantitative analyses, we find evidence that the government did contribute to the housing bubble through both fiscal and monetary policies. Not only are the same policies conducted today, but also to a much larger degree. The answers of the first two questions lay the foundation for the third, where we conclude; *yes*, we are heading for a new wave of financial crises. In USA we find potential for stock market crisis through a credit crunch. For the euro area we find general potential for malinvestments, and possibility of both credit- and real resource crunch. And, in Norway we find potential for a housing- and stock market crisis through a credit crunch – or possibly a real resource crunch through housing construction. We *do* see possibility of rescue with increased saving. On the side we find Minsky's theories well fit to explain the course of events and the Austrian school valuable in explaining underlying factors.

Foreword

First of all, we want to thank our supervisor Ola Honningdal Grytten, for helping us out with the big picture and the smallest details. We could not have written a thesis this intellectually honest without his rare respect for our views. Our interest in philosophy, economics, and politics – combined with today’s situation – has motivated us to select this topic of financial crises. We both had the course “Crashes and Crises” with Professor Grytten, which also contributed to our motivation, and grew our interest in macroeconomics.

Bergen, 2013

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Contents

1. INTRODUCTION	9
1.1 RESEARCH QUESTIONS	9
1.2 THEORETICAL FRAMEWORK	10
1.3 SCOPE AND LIMITATIONS.....	10
1.4 STRUCTURE.....	11
2. THE MINSKY SCHOOL OF ECONOMICS.....	12
2.1 HYMAN MINSKY ON FINANCIAL CRISES	12
2.2 GRYTTEEN'S MODEL OF "MINSKIAN STAGES".....	17
2.3 SETTING THE TARGET RATE.....	18
2.4 CRITICISM	19
3. THE AUSTRIAN SCHOOL OF ECONOMICS.....	20
3.1 CAPITAL-BASED MACROECONOMICS	20
3.2 THE APPLICATION OF THE MODEL.....	26
3.3 FISCAL AND REGULATORY ISSUES	30
3.4 INVERTED YIELD CURVES	31
3.5 CRITICISM	34
4. METHODOLOGY AND DATA	36
4.1 STATISTICAL METHODS	36
4.2 STATISTICAL TESTS	39
4.3 DATA.....	40
5. PRE-08 GOVERNMENT INTERFERENCE.....	41
5.1 FISCAL POLICIES.....	41
5.1.1 <i>The Austrian perspective</i>	44
5.2 MONETARY POLICIES	44

5.2.1	<i>The Austrian perspective</i>	46
5.2.2	<i>The Minskian perspective</i>	53
6.	POST-08 POLICY SIMILARITIES AND DIFFERENCES	64
6.1	FISCAL POLICIES.....	64
6.2	MONETARY POLICIES	67
7.	FROM IT-BUBBLE, TO HOUSING BUBBLE, TO...?	71
7.1	POTENTIAL BUBBLES.....	71
7.1.1	<i>USA</i>	71
7.1.2	<i>Euro area</i>	74
7.1.3	<i>Norway</i>	75
7.2	SCENARIOS.....	79
7.2.1	<i>Credit crunch</i>	79
7.2.2	<i>Real resource crunch</i>	84
7.2.3	<i>Destiny?</i>	86
8.	CONCLUSIONS	87
	REFERENCES	89
	APPENDIX	100

Figures

Figure 2.1 Financing conditions and investment	15
Figure 2.2 The P_k -money relation	15
Figure 2.3 Borrower's risk and debt deflation	16
Figure 2.4 Supply price greater than demand price	17
Figure 3.1 The market for loanable funds	20
Figure 3.2 The production possibilities frontier	22
Figure 3.3 PPF with contraction, stationarity, and expansion.....	23
Figure 3.4 The structure of production.....	24
Figure 3.5 The macroeconomics of capital structure	25
Figure 3.6 Secular growth	26
Figure 3.7 Boom and bust	28
Figure 3.8 The Wicksell- and Fisher effect.....	32
Figure 3.9 Inverted yield curve	33
Figure 5.1 Surplus and deficit	43
Figure 5.2 Federal funds target rate and M2	47
Figure 5.3 Credit gap – Private non-financial corporations	48
Figure 5.4 Credit gap – Households.....	49
Figure 5.5 Production gap	50
Figure 5.6 Consumption gap	51
Figure 5.7 Yield curves – USA	52
Figure 6.1 Target interest rates comparison	70
Figure 7.1 S&P 500.....	72
Figure 7.2 Oslo Stock Exchange with nominal sight deposit rate	76
Figure 7.3 Stock of orders, Housing – Norway.....	77
Figure 7.4 Real estate prices – Norway.....	78
Figure 7.5 Consumer Price Index.....	80
Figure 7.6 Money supply – USA	81
Figure 7.7 Yield curves – USA	82
Figure 7.8 Yield curves – Euro area and Norway	84
Figure 7.9 Oil prices.....	85

Tables

Table 5.1 Hypotheses	56
Table 5.2 Hypothesis 1	58
Table 5.3 Hypothesis 2	59
Table 5.4 Hypothesis 3	60
Table 5.5 Hypothesis 4	61
Table 5.6 Hypothesis 5	62

“The curious task of economics is to demonstrate to men how little they really know about what they imagine they can design.”

– Friedrich von Hayek

1. Introduction

We live in interesting times. The battle of ideas has gained momentum, and our topic of financial crises has gained a lot of media attention the last years. Starting out with an IT-bubble, and still recovering from a series of crises, this has been a turbulent millennia so far. Jointly, it has been a period of dramatic maneuvers by authorities. After the IT-bubble the Federal Reserve pushed the effective federal funds rate down to a nearly 50 year low. Mainstream economist Paul Krugman stated explicitly in 2002 that the Federal Reserve needs to “create a housing bubble to replace the Nasdaq bubble.”¹ As many Austrian economists expected we got a housing bubble which size matched the intensity of the policies conducted beforehand.² The crisis spread out within the economies, and had severe consequences. Now we are once again recovering from a financial crisis, although some might argue that the recovery is accomplished (which vary among regions). The Federal Reserve is determined to keep the federal funds rate between zero and 0.25 percent for as long as unemployment is above 6.5 percent.³ Earlier in 2013 US mortgage rates hit a new record low, at 2.56 percent.⁴ With expected increases in housing prices, people basically gets paid to lend money. This way, the expectations on prices is self-fulfilling. We are also about to get a new chairwoman of the Federal Reserve, Janet Yellen, who is a supporter of loose monetary policy and doesn't provide any reasons to believe that she carries any new ideas.⁵ All in all, the table is set for the history to repeat itself.

1.1 Research questions

Our objective is to assess whether the actions taken by the central banks – of USA, the euro area, and Norway – on the way out of the IT-bubble did contribute to the housing bubble. From there we will assess whether the same policies of rescue is conducted today, on the way out of the housing bubble. Our findings in this process will be the foundation for the last part of this thesis; whether we are heading for a new financial crisis. From this suspicion, we have come up with the following three questions that we are going to investigate.

¹ Klein (2013)

² Ludwig von Mises Institute (2013b)

³ Board of Governors of the Federal Reserve System (b)

⁴ Christie (2013)

⁵ Fontevecchia (2013)

1. Did government intervention contribute to the housing bubble of 2008?
2. Are the same recovery policies conducted today, on the way out of the housing bubble?
3. Are we heading for a new wave of financial crises? What kind and how?

These are questions many have opinions on. Nobel Prize in Economic Sciences laureates Paul Krugman and Friedrich von Hayek would give completely different answers. Over the course of studying economics, we have found the questions both interesting and controversial. Mainstream thought in Norway is dominated by Keynesianism. This is our contribution to a broader intellectual debate.

1.2 Theoretical framework

Writing from a Keynesian perspective would in many ways be easier, considering the commonly known context it is stated in. However, we think that these ideas are wrong, and the source of present economic problems. We are therefore building our theoretical framework on other set of ideas.

We are mainly going to use a selected part of the Austrian school of economics. Roger Garrison's framework of the business cycle and his understanding of the central Austrian economists Ludwig von Mises and Friedrich von Hayek are essential. To shed some broader light on our topic, we will also include theories of Hyman Minsky.

The combination of these theories provides in our opinion a broad and strong framework. Minsky is well established in academia, and his theories are strong in explaining the course of events. However, we think the deterministic nature of his theories miss some underlying factors. This is where the Austrian school comes in, with its deductive method and focus on primaries. Also, Minsky is a mathematician and the Austrian school is known to have a small mathematic platform. We therefore see value in the combination of the two schools of thought.

1.3 Scope and limitations

We are doing a comparative study of the regions; USA, the euro area, and Norway. The relevant time scope is from the bust of the IT-bubble, which peaked in 2000, to today, and

the near future, i.e. this millennia and the near future. Because of USA's leading characteristics in business cycles, there might be some favoritism towards assessing them against the other regions.

We are going to have a broad assessment, and embarking on such a complex topic in a thesis calls for limitations. We will include fiscal policy. However, we carry the assumption that monetary policy is far more effective and essential to business cycles, and will therefore be our main focus.

The labor market, although interesting and important, will not have any priority in this thesis. We argue that it is not a primary to business cycles, but a secondary to deeper and stronger economic forces.

1.4 Structure

We will start out with two chapters of economic theory. First, chapter two will be primarily on economist Hyman Minsky's theories. Second, we direct our focus to the Austrian school of economics in chapter three, where Garrison's model will be presented together with some applications. Chapter four will be on our data and methodology for research.

These lay the foundation for assessing our research questions. We will have one chapter for each of the three questions, discussing the theories against empirical evidence. The assessments in each chapter are going to be of a somewhat different nature. The first one, chapter five, will be more empirical, with the evidence assessed within the structure of the theories. The second, chapter six, will be much less focused on quantitative empirical evidence and turn to qualitative and a more deductive discussion. The third, chapter seven, will be a combination of the two former in method, and make more room for our own reflections. We will make conclusions in chapter nine.

2. The Minsky school of economics

This chapter will basically consist of theories of Hyman Minsky. We will also include a systemized Minsky model by Grytten. This will be followed by a brief presentation of the loss function and some criticism towards Minsky.

2.1 Hyman Minsky on financial crises

Minsky⁶ states that in the early stages of a boom, the leveraging of investments increases due to an improvement in confidence and credit. Owners of an inherited stock of capital assets find themselves with an unused margin of “borrowing power” due to their liability structures being compatible with a previous stage of confidence. This margin provides, just as well as retained earnings, a basis for the expansion of ownership of capital assets.

Owners of shares might come to view debt-financed share purchases as an alternative to debt financing by the owning organization in positions in capital assets. The same confidences that influence the financing of corporations affect the financing of share ownership. Increasing willingness to borrow to purchase shares is likely to follow the increased willingness to debt-finance acquisitions of capital-assets. Given a fixed supply of shares, the market price of shares is now likely to increase.

The additional debt-financed investments in capital-asset production and in share positions, are likely to come from two sources: 1) *the creation of money* [emphasis added], and; 2) portfolio diversification of wealth owners. Minsky refers to Keynes⁷ who states that banks generally are in the middle of the transition from low to high scale of activity.

Banking could not exist without well-developed loan and security markets among banks. This system allows banks to always speculate in their ability to refinance their positions in assets as withdrawals of deposits take place. During a boom, banks can attempt to finance additional loans by selling out their positions in marketable securities. The securities remain within the economic system as a substitute for cash in some non-bank portfolio. This substitution of cash and securities is made possible by higher interest rates. Banks buy back

⁶ Minsky (1975), will be the primary source of this subchapter, if not otherwise is stated.

⁷ Keynes (1937, p. 668)

their lending ability by selling their investment portfolio to households, corporate holders of cash, and non-bank financial intermediaries.

Further on, Minsky explains that American banks have the opportunity to raise the ratio of bank liabilities to bank reserves by substituting promises to lend (lines-of-credit) for actual loans. This is done by substituting time for demand deposits, and by varying the efficiency in which reserves are utilized through interbank reserve transactions, i.e., transactions in federal funds. The effective quantity of money is determined endogenously. Firms are also able to sell their debts in the open market, resulting in absorption and activation of short-term cash balances of other units'.⁸ These types of commercial paper are in other words quite similar to money as a "fine temporary abode of purchasing power".⁹ Increased external finance results in both an increase in the money supply, and decrease in idle cash balances.

The result of portfolio substitutions by both liability issuers and asset holders is an elastic supply curve of finance being created in the aggregate and in the short run. In the early stage of a boom the terms of financing does not change much. This occurs even though debt-financing is expanding rapidly. However, as the boom develops and the supply curve of finance from portfolio substitution is absorbed, financing terms can rise abruptly. If earlier deals were financed with short-term borrowings, one might witness increased financing charges feeding back upon and adversely affecting the value of said deals as they are refinanced. Banks start to rely more on managing their liabilities with the intention of accommodating borrowers. Borrowing firms will now engage in active liability management to finance their asset position. The progress of a boom sees liability experimentation on three levels:

1. Firms engage in debt-financing to a greater degree.
2. Households and firms cut their cash and liquid-asset holdings relative to their debt.
3. Banks increase their loans at the expense of the holdings of securities, such as government debt.

Another aspect of boom is the layering of debts. Non-bank financial institutions use bank debt, open-market debt, and longer-term bonds to acquire more debts. This debt is built upon a common foundation, namely, the quasi-rents (Q 's) earned by income producing

⁸ Households, firms, and financial institutions are referred to as units

⁹ Minsky (1975, p. 120)

businesses.¹⁰ Another layer of debt is added when households take on more debt based on their income (wages). As financial intermediation and secondary markets grows, even more sets of assets present themselves as liquid assets in portfolios. These assets function as substitutes to money.

As the boom progresses, portfolios will become much more heavily weighted with debt-financed positions. The speculative demand for money will decrease. The owners of capital assets will commit larger portions of their expected cash flows from operations (Q 's) to the payment of financial commitments (CC). Banks will turn to ownership of loans instead of investing, and apply active liability management to increase their scale of operations. Different financial institutions will actively pursue funds which increases their scale of operations. Firms and households will substitute non-money financial assets for money as their liquid reserves.

Operating and financial units, who now possess elaborated liability structures, will develop cash-payment commitments which exceed the cash receipts they will get from the contracts they own on the short term. These commitments are also exceeding the receipts from operations. This creates a scenario where units, in order to fulfill their cash-payment commitments, now must refinance by selling either assets or liabilities. This will in turn lead to a decline in assets prices.

The process of selling financial assets or liabilities in order to fulfill cash-payment commitments is called "position making".¹¹ The *position* corporations have to be finance is the capital assets necessary for production; and for financial firms, the "position" refers to the assets with poor secondary markets.

When a boom develops, units continuously have to undertake greater and greater position-making activity. As the ability to borrow from one source to repay a commitment gets exhausted, one can chose either to slow down (or bring to a halt) asset acquisition, or to start selling out positions. These actions involve, for operating firms, a reduction in debt-financed new investments.

¹⁰ Quasi-rents are defined as income earned on a sunk cost. Farlex Financial Dictionary (2012)

¹¹ Minsky (1975, p. 122)

Increased optimism amongst firms and bankers shifts investments (I) from I_1 to I_2 in figure 2.1. As optimism fades, I is reduced back to I_1 . Units recognize the danger tied up to their liability structures, and attempts are made to sell or reduce assets in order to repay debts, resulting in a fall in asset prices. These actions are the result of the increased speculative demand for money.

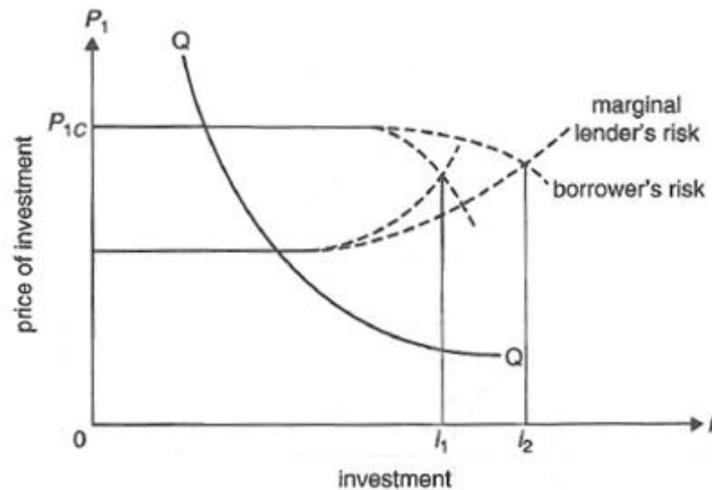


Figure 2.1 Financing conditions and investment. Source: Minsky 1975

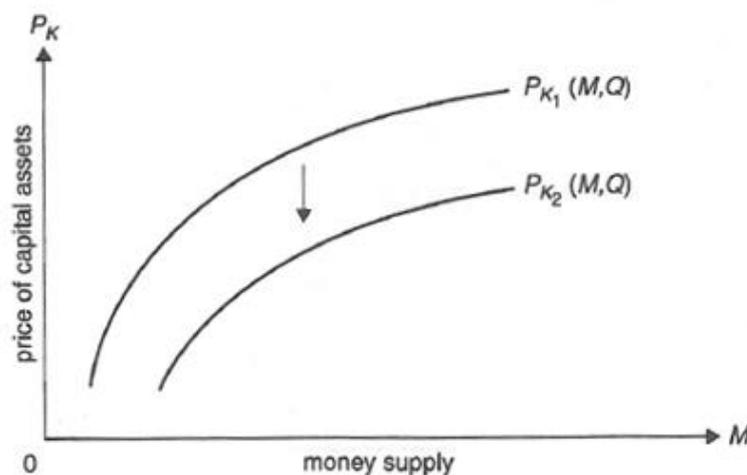


Figure 2.2 The P_k -money relation. Source: Minsky 1975

Price on capital assets expressed as a function of money supply and quasi-rents $P_k(M, Q)$, will now fall from P_{k1} to P_{k2} , depict in figure 2.2, which is what happens in a crisis. Minsky notes that a “decline in share prices is one aspect of a crisis situation”.¹²

¹² Minsky (1975, p. 122)

Minsky¹³ presents two types of debt-deflation processes after a crisis. First, the demand price of capital assets is derived by the market capitalization of quasi-rents, and is greater than the supply price, as of figure 2.3. Here, financiers invest less than their ability due to high borrower's risk – while, on the contrary, households are increasingly demanding credit.

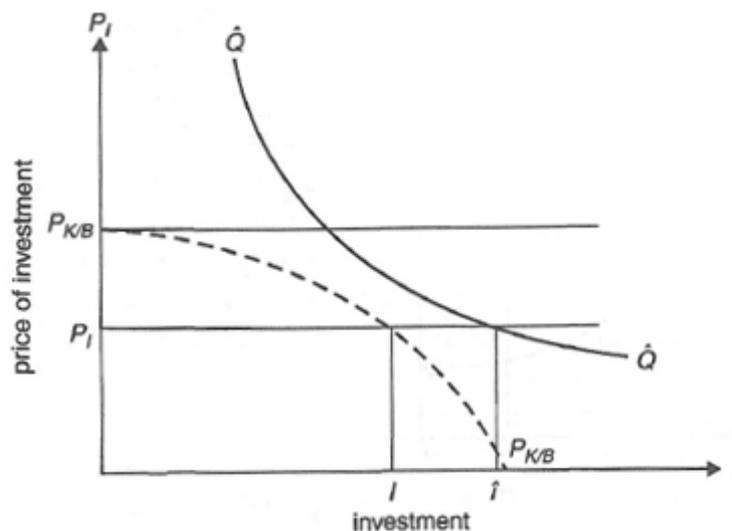


Figure 2.3 Borrower's risk and debt deflation. Source: Minsky 1975

Second, Minsky explains that investments tend to be zero due to the demand price for capital assets falling below the supply price (see figure 2.4). Internally generated funds will be utilized to repay debt. Long-term debt will be used to fund maturing short-term debt. This tends to sustain, and/or raise long term interest rates. Banks can have lending ability but be unwilling, just as borrowers, to put it into use. This results in declining short-term interest rates. At this point the economy experience debt-deflation, increased unemployment, and depression.

Minsky argues that stabilizing efforts, such as government expenditures, tax schedules, and central bank intervention as lender of last resort, will bring debt-deflation and the accompanying income decline to a halt. Due to the debt-deflation's "immediate and lingering effect upon investment and desired debt positions",¹⁴ one can still expect a period of persistent unemployment. However, as the effects of debt-deflation wear off, a recovery and expansion is likely to occur. As the memory of past disaster slowly fades away, more

¹³ Minsky (1975, p. 123), based on Fisher (1933)

¹⁴ Minsky (1975, p. 125)

adventuresome financing starts paying off to the first movers, others follow, and a new boom is expanding.

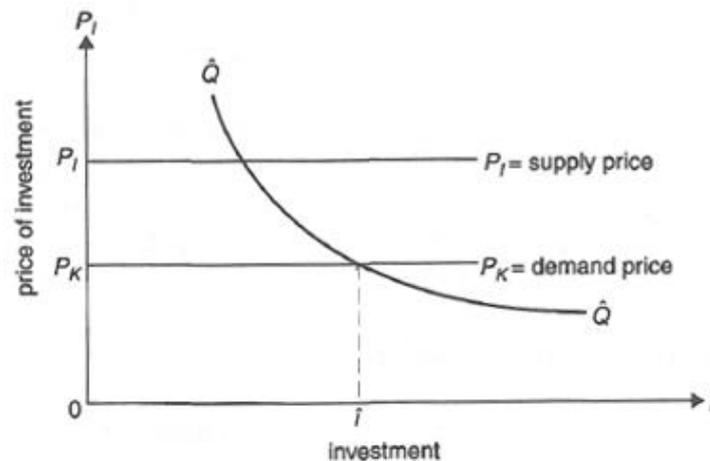


Figure 2.4 Supply price greater than demand price. Source: Minsky 1975

2.2 Grytten's model of "Minskian stages"

In an article written by Ola H. Grytten,¹⁵ a more compact summary of the Minsky model is presented. Based upon the theory that was presented above and another paper by Minsky,¹⁶ a five-stage model is developed. We want to include these stages as they provide a clear frame of reference in our analyses later, and they also serve as a good summary of what has been explained above.

The first stage is entitled *Displacement*. Here, monetary abundance arises in the aftermath of an exogenously given macroeconomic shock in demand. Such a shock can be caused by a political or financial event, but also wars and great innovations. Nonetheless, the economy leaves its natural path of growth with a positive shift.

From the above, stage two *Overtrading* follows. As the positive shock raises profitability expectations above fundamental values, activity increases. The economy has now entered an exponential face of growth. Psychological aspects are, as indicated, influencing the cause of events.

Stage three, entitled *Monetary expansion*, follows. The exogenously given shock, along with overtrading, produces an increased demand for money and credit. This increases overall

¹⁵ Grytten (2003)

¹⁶ Minsky (1982)

demand, which again increases the demand for money and credit even further. The process feeds on itself, and after a while the amount of money combined with a great deal of optimism, leads to the buildup of financial bubbles.

Due to monetary growth surpassing the growth in the real economy, a positive financial bubble has been created. Stage four is entitled *Revulsion*; as the bubble bursts, the turning point presents itself with a sharp decline in the monetary growth. The economy is now in a severe decline.

The last stage is named *Discredit*. As profitability expectations fall below what fundamental values would indicate, the demand for money and credit experiences a negative shift. This creates a negative bubble, as the economy falls below its natural path. An economic crisis has arisen.

2.3 Setting the target rate

In order to understand the theoretical framework used by Norges Bank (the central bank of Norway) in setting the target interest rate,¹⁷ we will now present a model known as the loss function. Even though several other aspects are included in the decision of altering the target interest rate, we believe this model illustrates the general idea behind – all our regions – central banks’ decision making.¹⁸

As central banks’ target inflation they will in the short run face a trade-off between price stability and stability in the real economy.¹⁹ This trade-off is known as minimizing a loss function which includes both inflation variability and output variability. The central bank should choose an interest rate that minimizes the discounted “losses” (L_t) in all future periods, for the following function (1):²⁰

$$L_t = E_t \sum_{j=0}^{\infty} \left(\frac{1}{1 + \rho} \right)^j \left[(\pi_{t+j} - \pi)^2 + \lambda x_{t+j}^2 \right] \quad (1)$$

¹⁷ Before it was modified in 2012. Norges Bank (2012a)

¹⁸ This assumption is taken in relation to what we find preparing 5.2 *Monetary policy*

¹⁹ Qvigstad (2005)

²⁰ Mork, (2004)

Here, we learn that π_{t+j} indicates the inflation j number of periods from the time the decision was made, and that the denominator π refers to the targeted level of inflation. x_{t+j} is the output gap (output less the potential output) in the same future period. E_t is the expectations held by the central bank based on the information available at time (t). The parameter ρ is the time preference in weighing different periods up against each other. At last, λ denotes the relative weight placed on output-gap stabilization by the central bank, compared to the targeted inflation.²¹

The first order condition states that the interest rate should strike a balance between stabilizing inflation around the target, and achieving stable developments in the real economy.²² This implies that in a given period, “loss” is minimized if the expected marginal benefit of bringing inflation closer to the target equals the expected marginal cost of this policy for the real economy. We choose here to disregard the fact that the first order condition depend on a discretionary monetary policy or an optimal precommitment policy.²³

2.4 Criticism

A common critique of Minsky’s financial instability hypothesis is the paradox-of-debt argument.²⁴ This paradox refers to the phenomenon where the attempts of individual firms’ to reduce indebtedness by cutting investment spending, actually leads to increasing indebtedness as the reduction in aggregate demand and profits makes firms rely more on debt finance. In an expansion phase, the opposite is true. Since Minsky argues for an increased indebtedness during expansions, he is at error according to critics, who argue that debt-ratios tend to decrease (increase) during expansions (contractions).

In relation to the 2007 crisis, Minsky’s model has received criticism for only providing a partial and incomplete account. Palley recognizes that the processes brought forward in Minsky’s model played a critical role in the crisis.²⁵ However; he believes that Minsky misses what he believes to be the underlying causes; around 1980 the neoliberal growth model was implemented.

²¹ Ibid. and Svensson (2003)

²² Qvigstad (2005)

²³ Walsh (2003)

²⁴ Ryo (2013)

²⁵ Palley (2010)

3. The Austrian school of economics

As an alternative to different branches of Keynesianism, we have selected Austrian economics to shed light on business cycles. The Austrian school is not known for macroeconomics. However, principles from earlier Austrian works have lately been systematized in more modern terms. Roger W. Garrison provides in his book, *Time and Money*,²⁶ an apparatus for an Austrian perspective on a macro level. In this chapter we will present this apparatus with applications and criticism.

3.1 Capital-based macroeconomics

Garrison presents capital-based macroeconomics graphically with three major elements. These are the market for loanable funds, the production possibilities frontier and the intertemporal structure of production. The framework allows us to look at several situations, e.g. boom and bust. It also makes it possible to see a clear distinction between sustainable and unsustainable growth, with its focus on intertemporal allocation of resources.

With the market for loanable funds we are able to include the consequences of deficit finance policies, which is particularly interesting in our case. Certain aspects of tax reform may be dealt with through the production possibilities frontier. In presenting the model we will first consider each of the three elements before putting it together.

The market for loanable funds

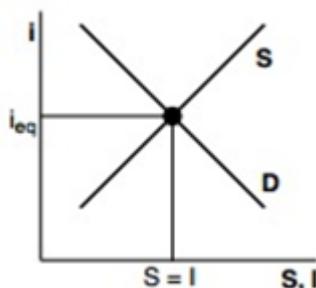


Figure 3.1 The market for loanable funds. Source: Garrison 2001

²⁶ Garrison (2001)

Loanable funds are, as demonstrated graphically in figure 3.1, given by its supply and demand curves, with the interest rate on the vertical axis. The supply is determined by the willingness to lend, and the demand is determined by the willingness to borrow – at different interest rates. On the horizontal axis there is savings and investment.

Garrison mentions a modification that he consider common and needed in macroeconomics. Net lending is saving – i.e. every dollar borrowed by the borrower represents a dollar saved by the lender. This explains why savings and investment are on the same horizontal axis. The supply of loanable funds, therefore, consists of earnings not consumed but in work. It may be understood as “Investable resources”, which is also consistent with Keynes’ view.

As the supply of loanable funds represents savers’ intentions to lend money in the market, the demand for loanable funds is represented by the borrowers’ willingness to invest in the production process. Investment refers to the means of production, for example machinery and tools but also goods in process, durable capital goods and human capital.

The loanable funds market coordinate consumer preferences with the investors’ production plans. This is coordinated through consumers who spend one part of their income and save the rest. The rate of savings function as a signal to the entrepreneurs of how much demand there will be in the future. In societies that save a lot, many resources are going to investment, and the possibility of future consumption is growing. If a society – on the other hand – consumes a lot today, they will have a smaller cake tomorrow.

If there are discrepancies between input and output prices and the rate of interest, individuals will take advantage. With an interest rate lower (higher) than the expected return of an investment project, the entrepreneur will invest (sit on the fence). This market mechanism reduces, not eliminates, discrepancies; it is not realistic that every participant will earn the market rate of return/interest.

In the loan rate of interest there are two notable differences between conventional macroeconomics and capital-based macroeconomics. On the demand side, expected losses from discoordination is conventionally measured as *business confidence*, and explained by psychology. This interpretation misses the underlying factors. Capital-based macroeconomics calls for an economic, not psychological, explanation. On the supply side we find a similar contrast. Conventional macroeconomics measures lenders’ risk with liquidity preferences. Garrison also points out Keynes’s fetish for liquidity in this matter, and

advocates also here an economic explanation. In other words, capital-based macroeconomics find no reason for change in business confidence or lenders' risk if there is no analysis of the market process suggesting so.

As shown in figure 3.1 the market for loanable funds, which identify the rate of interest through the equilibrium between savings and investment, is quit conventional. However, there is a major difference between conventional – especially Keynesian – macroeconomics and capital-based macroeconomics in its application. The lack of connection between short run and long run is viewed as a great weakness of conventional macroeconomics, as they are separated and conflicting.

The production possibilities frontier

Although it does appear, the production possibilities frontier (PPF) is never an integrated part of conventional macroeconomic analysis. The PPF shows the tradeoff between two alternative outputs that are negatively related. Figure 3.2 demonstrates the case of butter and guns. As the figure indicates, this economy has to give up an ever-increasing amount of butter to produce one more gun. Resources that are more suitable for the production of butter give less utility in the production of guns.

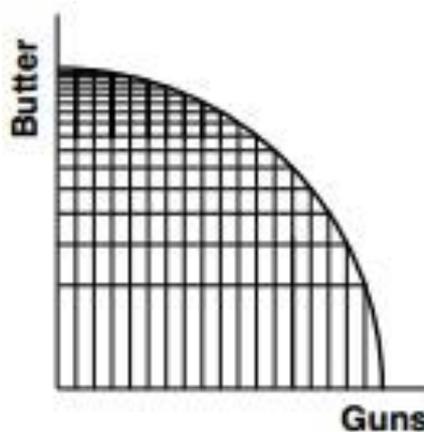


Figure 3.2 The production possibilities frontier. Source: Garrison 2001

The same principle goes for the tradeoff between consumption (C) and investment (I). With investment on the horizontal axis as in figure 3.3 – which demonstrates the application of contraction, stationarity, and expansion – it's easy to make the connection to the market for loanable funds. Together with saving (S), the terms are conveniently linked to conventional macroeconomics, where we find the same aggregates. It is necessary for the understanding of the model to point out that investment here include capital maintenance and capital

expansion. At some point of the frontier, the investment is just enough for maintenance which means a stationary/no-growth economy. If we move south-east along the frontier we enter an economy in expansion/growth. Similarly, a tradeoff in the direction of consumption implies a contracting economy.

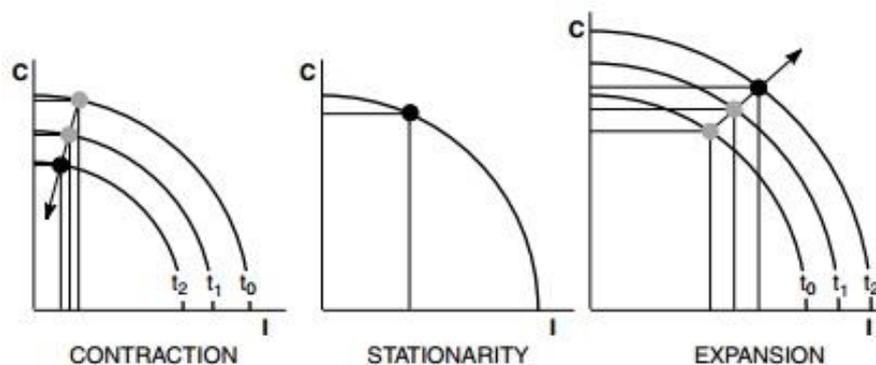


Figure 3.3 PPF with contraction, stationarity, and expansion. Source: Garrison 2001

To apply the PPF to a mixed economy one has to take government spending (G) and taxes (T) into account. If T is a “head tax” and the budget is in balance ($G=T$) the model represents the private part of a mixed economy. What this means for our model is that the PPF demonstrates the production possibilities after the government have had “its share”.

Now the model includes a government with a balanced budget. To integrate deficit spending, i.e. spending financed by borrowing, we can simply relabel one axis in the market for loanable funds. With the horizontal axis named $I+G_d$, deficit-financed government spending, G_d (or $G-T$) is included – although the possibility of finance through inflation is ignored. In sum, the PPF demonstrates sustainable combinations of C and I – in a fully employed economy – for a private economy or the private sector of a mixed economy.

The intertemporal structure of production

Attention to the stages in production is conventionally given to avoid double counting when aggregating indexes of national income. The aggregated output is often calculated by summing the added value in each stage of production. This practice put emphasis only to the value dimension. Capital-based macroeconomics allows for emphasis also on the time dimension.

The structure of production is presented graphically in figure 3.4. This figure is maybe best known as the Hayekian triangle. Production time and stages in production is represented by

the horizontal leg. The value of goods in process is represented by the vertical distance between the horizontal axis and the hypotenuse. The value added, on a continuous basis, is expressed by the slope of the hypotenuse. The linearity of the figure is chosen for simplicity, Garrison argue that this – over an exponential construction – don't inflict any relevant or significant loss.

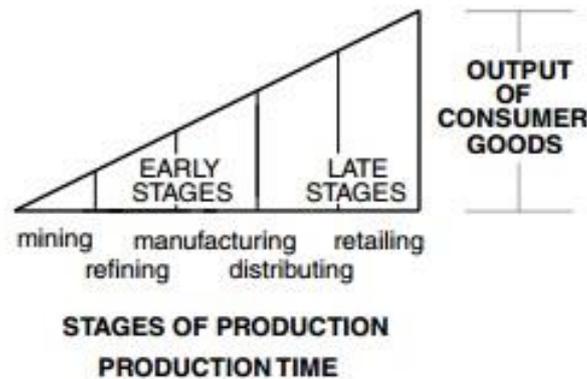


Figure 3.4 The structure of production. Source: Garrison 2001

It's necessary to point out that the examples of stages along the horizontal axis in figure 3.4 (e.g. mining, refining and manufacturing) is for illustration purposes only. It could be more or less of these stages, five is selected for convenience. Notice also that this axis has a double interpretation, time and stages.

The Hayekian triangle could give an old fashion impression as the example indicates a commodity intensive economy, contrary to today's service intensity. However, the triangle is just as applicable for any processes that imply an employment of means for the achievement of ends. In the perspective of a consultant agency, a modern application of the stages could be; education and training, before working in the field with clientele.

The triangle stops at output. This makes it adaptable with the consumption axis on the PPF figure. It could be argued that an inclusion of stages of consumption would make it more realistic, but according to Garrison it would not contribute much analytically. As presented, the output is consumed immediately.

There are many possible deviations and examples of nonlinearities in dealing with this construction. Garrison points to the original work of Hayek in assessing such problems. One of the essences of the triangle, the time dimension, is as here presented considered adequate and not simplistic.

The macroeconomics of capital structure

The interconnections of the three figures, in figure 3.5, are obvious by their common axes. The structure of production (Hayekian triangle) is connected with the PPF through their common vertical axis of consumption, and the PPF and the loanable-funds market are connected through their common horizontal axis of investment. We now have a model representing a wholly private economy or the private sector of an economy which is mixed and have a balanced public budget. A less explicit connection between the stages of production and the loanable-funds market is made through the slope of the hypotenuse of the structure of production which reflects the market-clearing rate of interest, Garrison argues. The stages of production have continuous input, which make its hypotenuse reflect more than the rate of interest, but they do move together in the same direction. If the consumers have long term preferences in a free market it will result in increased saving and thereby put a downward pressure on the interest rate (positive shift in supply in the market for loanable funds). At the same time, the earlier stages of production will increase and expand, as the entrepreneurs get the message from the consumers through the lower interest rate that they plan to delay their consumption. The later stages of production will decrease with the same mechanism. This is how lower interest rates are connected to a flatter hypotenuse of the Hayekian triangle in a free market.

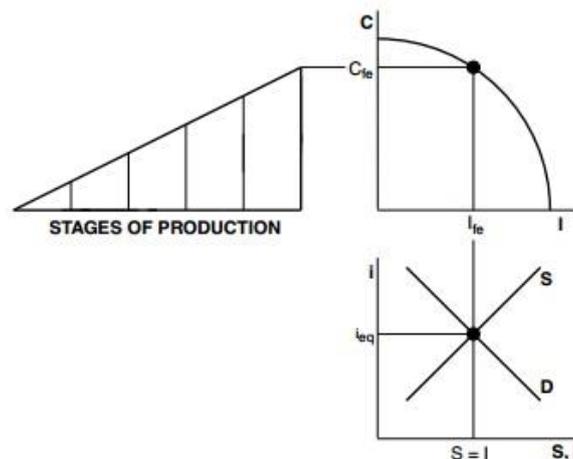


Figure 3.5 The macroeconomics of capital structure. Source: Garrison 2001

As the PPF shows possible combinations of C and I in a full employed economy, or it could be called an economy with natural unemployment, it is implied that the market for loanable funds shows the natural rate of interest.

We now have a model for a steady state economy, where investment is just enough to maintain the overall size. It is referred to this as the “evenly rotating economy”. This gives us an initial framework for further assessment, e.g. secular growth and cyclical fluctuations.

3.2 The application of the model

When it comes to the application of the Garrison model, we will present two cases. The first will be the macroeconomics of secular growth. To understand a malfunctioning economy we have to first understand the natural case – the case without intervention. This will be followed by the application on boom and bust, which is a central aspect in our thesis.

The macroeconomics of secular growth

The general case of an economy is usually expansion. Secular growth occurs without interference from both policy and technological changes. It is driven by investment above the level of maintenance. Figure 3.6 shows two steps of secular growth, from t_0 to t_1 and t_1 to t_2 . It depicts the growth-related shifts in all the three components of the framework.

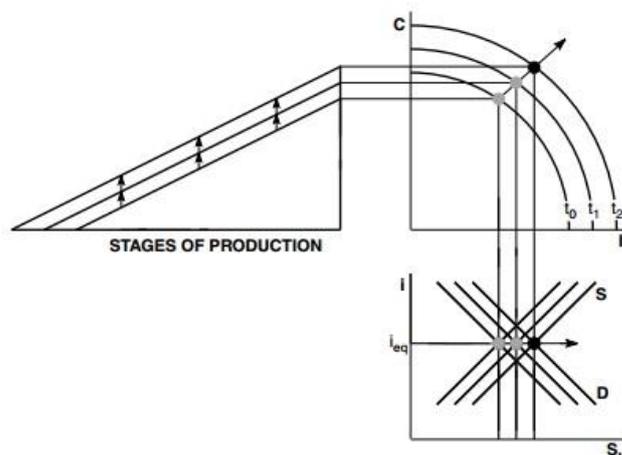


Figure 3.6 Secular growth. Source: Garrison 2001

An intuitive explanation of the PPF expansion is that the cake is getting bigger, and there are more resources available for investment or consumption – as the shifts in t_{0-2} indicates. In the market for loanable funds both supply and demand increases. As the economy grows, the share of savings increases. This is balanced by the demand for loan; businesses expect higher consumption as the PPF is growing – and the interest rate thereby remains constant. Garrison points out that increased wealth has historically been followed by a decrease in time preferences. The mechanism behind this phenomenon is that the supply of loanable funds

outpaces the demand. To use the cake example: You can only eat that much cake – and if it grows fast enough, the percentage of consumption will decline. This is consistent with the conventional view on long-run macroeconomics.

Assuming away the impact of time preferences, the Hayekian triangle shifts outwards with an unchanged slope in the hypotenuse – which is consistent with the unchanged interest rate. Taking the mechanism of time preferences into account, the shift would have been larger in the earlier stages due to lower interest rates.

Boom and bust

By separating the roles of savers and monetary authority, capital-based macroeconomics makes the identification of differences between artificially boom and genuine growth possible. Garrison names two reasons why monetary considerations are relevant. First, relative-price changes are attributed to monetary injections and initiate the boom. Here, the focus is not on the quantity of money and the following change in general price levels, but on the new moneys point of entry and the following changes in relative prices. These prices is what, over time, govern the allocation of resources. Second and similar to the first, monetary injections set motion to market processes that work contrary to that of the markets own, like secular growth. Money is therefore described as a loose joint, and through credit expansion it is the trigger for cycles.

Figure 3.7 demonstrates the effect of credit expansion. Three considerations needs to be taken into account: 1) the assumption of unchanging intertemporal preferences; 2) The assumption that a monetary authority (referred to as the Federal Reserve) controls the money supply, and; 3) The supply of loanable funds does not only include saving, but also funds that the Federal Reserve has made available.

Federal Reserve is known to have three policy tools,²⁷ which it uses to change the money supply. Namely:

1. *The required reserve ratio*: Imposed on commercial banks by the Federal Reserve.
2. *The discount rate*: set and used by Federal Reserve to control the level of commercial banks' direct short-term lending.

²⁷ Garrisons *Time and Money* is written in 2001, before quantitative easing (QE) was initiated. We will discuss the nature of QE in 6.2 *Monetary policies*

3. *Open market operations*: Federal Reserve acquires securities by the Treasury and lend to the government.

In essence, and in regard to the application of capital-based macroeconomics, these three is merely three variations of money creation. They all contribute to the positive shift in the money supply curve, in figure 3.7. Garrison argues the following:

1. A reduction in the required reserve ratio gives the commercial banks more funds available for lending. They have to reduce interest rates to lend out more.
2. A reduced discount rate would, together with competition between banks, cause the banks to borrow more and lend out to reduced rates of their own.
3. The Federal Reserve's purchases of Treasury securities is in effect lending to the government. This pushes down the interest rates, as it is an increase in lending.

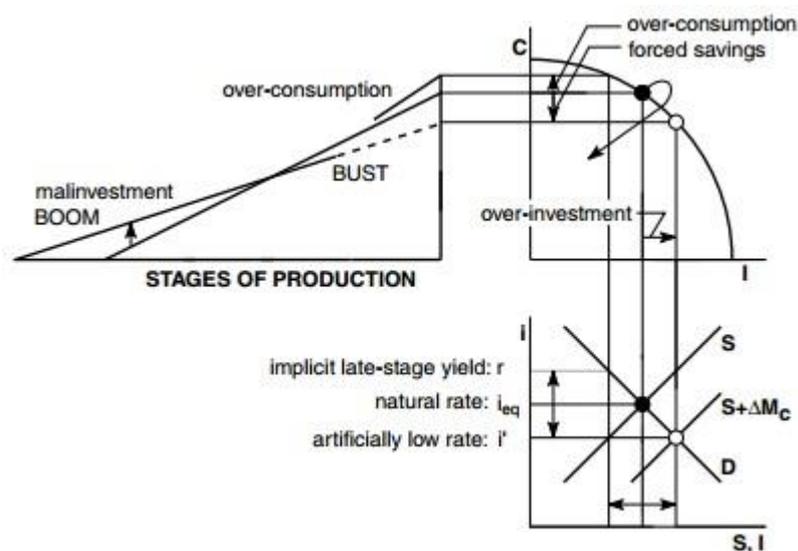


Figure 3.7 Boom and bust. Source: Garrison 2001

ΔM_C in figure 3.7 refers to the new money, which takes form as additional credit. This is not necessarily all the new money made; there could also be some increase in holdings by ΔM_H – which Garrison regards as of secondary importance to this analysis.

The new money put a downward pressure on the interest rates. This fall is relative to the natural rate. If the natural rate was to increase to the same extent as the decrease due to policy, the market rate would be unchanged. This has been defended in the name of stability, but it dismisses the underlying economic realities.

It is in the relationship between saving and investment that figure 3.6 secular growth and figure 3.7 boom and bust starts to differ. In figure 3.6, the increase in investment has its sources in increased savings. Figure 3.7 on the other hand, experience increased investment

driven by credit from new money, not saving. The market for loanable funds gets a split, sending two opposite signals. The lower interest rate pulls in the direction of more investment on the PPF, but at the same time, pulls for more consumption at the expense of saving. The candle is now burning at both ends. In the PPF, consumers are pulling north while investors are pulling east. We get a situation north-east outside the PPF curve, i.e. an unsustainable combination of consumption and investment. The contrary forces do not cancel each other out at first because of the looseness of money. The fact that the boom is unsustainable is not accepted by the market yet. When it is, the bust becomes real.

The difference between capital-based macroeconomics and conventional economics – at this point – is the entrance of new money. As presented here, the new money enters through the credit markets, and effects interest rates. Analyzed with the Phillip curve, the new money somehow enters directly in consumers spending, and effects wage rates. Garrison argues this conventional view suffers by some factual problems.

The contrary forces can also be seen in the Hayekian triangle. The forces pulling for investment creates a less steeply sloped hypotenuse. The low interest rate makes new projects look profitable in earlier stages than before. Some resources are gathered for this expansion from the intermediate and later stages of production. At the same time, a steeper sloped hypotenuse than the initial one shows the favoring of consumption over saving. This creates an expansion of the later stages. Some resources are gathered for this expansion from the intermediate and earlier stages.

The result is expansions in the earlier stage (malinvestment²⁸) and later stage (over-consumption) on the expense of the intermediate. This contradiction is viewed as a signal of an unsustainable boom. A restructuring of capital is set into motion from the earlier stages, but the hypotenuse turns into a broken line. There are not enough resources to carry it out. The investors are facing constraints that were not implied in the early phase of the boom. The interest rate is driven up by the bidding on resources and demand for credit to restructure and finish projects. This effect leads to the unusual high interest rates seen before busts.

²⁸ Ludwig von Mises Institute (2013a) defines malinvestment as investment in “wrong lines of production”, i.e. fallacious allocation that will end in loss.

Ultimately some projects are abandoned, and unemployment rises. The north-east movement in the PPF, pulled by consumers and investors, is ultimately won by the investors due to their access to new money. Due to this bias the bust takes us around clockwise in the PPF, and with the overproduction during the boom, we turn inside the PPF curve. We are ending up with a higher investment- and lower consumption intensity than the initial mix.

3.3 Fiscal and regulatory issues

Although we are primarily focusing on monetary policy, we want to include some theory on fiscal policy which can be assessed with the same framework of capital-based macroeconomics. We are still using Garrison (2001).

Deficit finance

In Garrison's example, we look at a portion of the public sector which was tax-financed before becoming deficit-financed. For this purpose government spending is held constant, which means that the deficit is accompanied by tax-cut. We assume that the spending is outside the national economy – which makes indirect effects of the spending on the allocation of resources irrelevant in our context.

The government issues debt, which makes a positive shift in the demand for loanable funds. The result is an upward pressure on the interest rate. The private savers preferences however, is not changed but still expressed by the initial demand (from before the positive shift). With the new higher interest rate they demand less funds for investment – which constitutes higher consumption.

The increase in consumption and the higher interest rate takes effect in the structure of capital. Long term investment is less profitable. Resources are placed in the later stages to meet the increased demand of consumption. The effect is a slower growing economy.

If the spending occurs in the national economy, the picture would be more complex. Spending on infrastructure for example would make smaller effect than illustrated here, but only to the degree it meets real demand.

Deficit spending

In this case, contrary to the above, the government spends funds on the same kind of areas that the private sector normally would do. We assume that the tax level is held constant, so the increased borrowing is followed by increased spending. The government is now included in the horizontal axis on the PPF; resources is being bid away from the private sector. We will briefly present the application of deficit spending on inert government projects and on infrastructure.

Inert government projects are the case where the government use borrowed funds to bid away resources from the private sector for projects that the market would not engage in. Also here we get the positive shift in demand for loanable funds, which puts an upward pressure on the interest rate. The PPF, with the government's deficit investment included, becomes more investment-intensive. The higher interest rate drives private incentives away from the earlier stages of production. Together with the assumption that the government invest improperly, the Hayekian triangle shrinks. The private sectors loss of resources is also reflected by decreased consumption.

In the case of deficit spending on infrastructure, there is an assumption that the government allocates resources in the same manner as the market would. This means that the fact that the government doesn't respond to prices and changes in interest rates like other market participants needs to be taken into consideration. The Hayekian triangle reacts as if the growth were induced by an increase in savings: increase in the earlier stages and decrease in the later. However, in the market for loanable funds the interest rate is pushed up by the government's increased demand. Contrary to the previous examples, the hypotenuse of the structure of capital gets flatter while the interest rate increases. Earlier stages of production are favored at the same time as the interest rate increases.

3.4 Inverted yield curves

The capital-based approach to macroeconomics argues that the business cycle is initially disturbed by monetary injections. These injections causes credit expansions which distorts price signals, and thereby the entrepreneurs ability to allocate resources efficient. The new credit has two major opposing effects on the yield curve, the Wicksell effect and the Fisher

effect. They are essential to the theory of inverted yield curves and will be briefly presented, before we look further at Paul Francis Cwik's PhD dissertation²⁹ on inverted yield curves – which will be the primary source of this whole subchapter. Cwik uses the same framework, capital-based macroeconomics, and his dissertation is approved and directed by Roger Garrison himself. A yield curve is the graphical relationship between interest rates and time to maturity for – in this case government – bonds. When the bonds mature, the debt they are representing are paid off.

The Wicksell effect

To be precise, the effect referred to in this context is the “Interest Wicksell Effect”. The new money which takes the form of credit, ΔM_C in figure 3.7, reduces the market rate of interest all across the yield curve. The underlying process in the effect is basic supply and demand economics. When the quantity of a good is increased the price decreases. It is necessary – for our case – to stress that this fact includes money as well as any other good.

The Fisher effect

However, the money injections that are causing the Wicksell effect also change the markets' expectations of future inflation (increase in general price levels). These expectations drive the interest rate up. The Fisher effect is stronger on the later periods on the yield curve because it takes time for the new money to reach other prices in the economy.

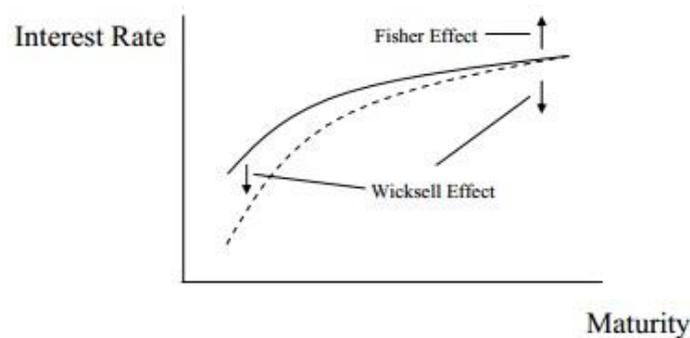


Figure 3.8 The Wicksell- and Fisher effect. Source: Cwik 2004

When the opposing effects are combined we get the picture of figure 3.8. They even each other out on the longer rates. As the Fisher effect is weaker on the shorter rates, the Wicksell

²⁹ Cwik (2004)

effect is more dominant in these stages. The net effect of money injections, all other things being equal, is therefore lower short rates and a rotated yield curve.

The crunch phase and an inverted yield curve

When explaining the upper-turning point of business cycles, theories center on either monetary or real factors as the major cause of the downturn. What makes capital-based macroeconomics significant is the ability to take both factors into account. Cwik refer to Robertson's classic description of the onset of a recession,³⁰ where two causes are identified: "deflationary shock" and shortage of savings. The capital-based view is that both these causes derive from the same underlying factor, which is malinvestment. Malinvestment is a disequilibrium which cannot be maintained. When the business cycle enters the crunch phase, the faith of the disequilibrium, it can play out as a credit crunch, a real resource crunch, or a combination of both. We will present them briefly.

Credit crunch

When the inflation or expected inflation is determined too high by the central bank, they will slow down the monetary policy – causing the short-term rates to go up. This makes the Wicksell effect dominate the short end of the yield curve. At the same time, due to higher short-term rates, the market expects future inflation to fall. The situation is depicted in figure 3.9, where we see the new expectations nullify the Wicksell effect through the Fisher effect on the long-term rates. As a result, the yield curve tends to invert before recessions.

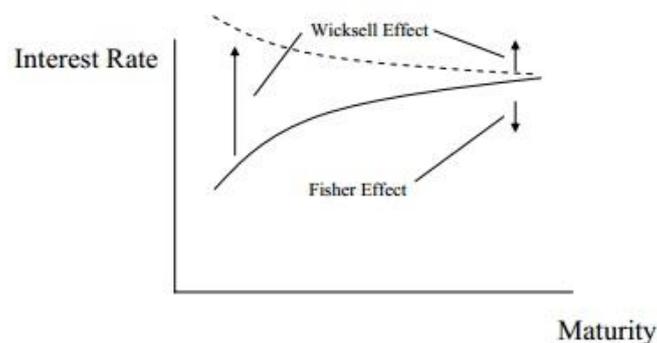


Figure 3.9 Inverted yield curve. Source: Cwik 2004

³⁰ Robertson (1959)

Hayek argues that the rate in which the money supply increases has to accelerate to maintain the level of malinvestment.³¹ The monetary authority is depended on surprising the market, by exceeding the expectations of future inflation. If it wasn't for the crunches, this path would end in hyperinflation. When a monetary expansion occurs, the price levels rise not only unevenly due to the injection, but also as a result of entrepreneurs seeking funding for their malinvestments. The consequences are, thereby, made worse by the need for more cheap funding. The higher short-term rates will then bankrupt the holders of malinvestment. They were depended on resources that where not there. This starts the financial crises.

Real resource crunch

Capital-based macroeconomics offers also explanations of crunches when the monetary tightening is not policy-induced. With the malinvested boom, the entrepreneurs engage in unsustainable projects and the consumers increase their spending. There are not enough resources for both. In the search for resources, the entrepreneurs bid up wages and input prices relatively to the general price level. The acute need for resources drives up the short-term rates – inverting the yield curve. Stable investments are limited by the economy's savings. The situation is made worse by the already increased consumption (decreased savings) as a consequence of the low short-term rates.

Smaller firms are more dependent on short borrowing, and thus more sensitive to short-term rates. The long-term bonds have an inherited hedge against short-term fluctuations, and the larger firms' access to these longer instruments gives them a clear advantage. Many larger firms also issue their own long-term bonds.

Cwik finds that there has been an inverted or humped yield curve maximum five quarters before every recession since the mid-1950s. Five of the recessions where preceded by credit crunches; the two remaining where a result of real resource crunches.

3.5 Criticism

The Austrian school of economics does not follow the same scientific method that other schools do. The traditional methodology is about refuting, while the Austrian method is

³¹ Hayek (1969)

about proving. This is viewed as a major reason to why the Austrian economists are not more included in the mainstream debate.³²

John Quiggin, a Keynesian economist,³³ attributes the impact of Austrian economics to the lack of intellectual competition for Mises and Hayek (in the early 19th century). He also criticizes the lack of focus on labor in the business cycle, which he views as important.³⁴ Paul Krugman also argues that the Austrian framework cannot explain changes in employment over the business cycle.³⁵

With regards to policy, Milton Friedman argues that the Austrian economics' implication would do a lot of harm. He specifically points to Hayek's view that the market needs to correct itself and Murray Rothbard who advocated that it has been a mistake not letting the whole banking system collapse.³⁶

³² Sautet (2005)

³³ John Quiggin (2012)

³⁴ Ibid. (2009)

³⁵ Krugman (1998)

³⁶ Friedman (1999)

4. Methodology and data

Here we will present the methodology of our research. This will be structured around the subchapter of statistical methods and -tests. A brief section on our data will follow.

4.1 Statistical methods

We use three statistical methods, correlation, multiple regression analyses, and the Hodrick-Prescott filter.

Correlation analysis

In order to investigate the relationships between certain variables, we will be conducting correlation analysis as a supplement to our graphical presentation. Correlation between two variables is measured by the Pearson product-moment, r , which varies between -1 and 1 . A correlation of -1 indicates a perfectly negative correlation, while a value of $+1$ intuitively indicates a perfectly positive correlation. What is regarded as a strong correlation varies. However, a correlation ≤ 0.2 is seen as a weak correlation; $0.3-0.4$ is seen as relatively strong; and a correlation ≥ 0.5 is regarded as strong.³⁷ The correlation coefficients are given by the following equation (2):

$$\text{Corr}(x, y) = \frac{\sigma_{xy}}{\sigma_x \sigma_y} = \frac{\sum_{t=1}^T (x_t - \mu_x)(y_t - \mu_y)}{\sqrt{\sum_{t=1}^T (x_t - \mu_x)^2} + \sqrt{\sum_{t=1}^T (y_t - \mu_y)^2}} \quad (2)$$

X and Y refer to the variables which the correlation coefficient is calculated for. The dividend in the expression equals the covariance between the variables, and the divisor equals the standard errors of the two variables multiplied.³⁸

Multiple regression analysis

Multiple regression analysis is a form of correlation. The purpose of this analysis is to investigate if a set of independent variables has an effect on a single dependent variable. The tool we will apply here is a type of multiple regression analysis known as the OLS

³⁷ Johansen, Kristoffersen, & Tufte (2004)

³⁸ Wooldridge (2006)

regression. Here, we may choose whether or not we want to take into account the possibility of a variable influencing another variable after some time has passed, an effect often entitled lag.³⁹ A dynamic model takes into account this effect; a static model does not. Out of the hypotheses we will be testing, the changes within the dependent variables could be somewhat lagged. However, we have chosen to apply a simultaneous static model, which does not consider this effect. We made this decision mainly due to the fact that our models did not produce any significantly different results after lag was introduced. If lagged variables were introduced, some of the models lost their explanatory power. Therefore, in order to be consistent, we chose a static model. However, not including lag might be considered a weakness since changes within some of the explanatory variables obviously occur before the changes in the dependent. The models are based on the following mathematical expression (3):

$$Y_t = \beta_0 + \beta_1 x_{1t} + \beta_2 x_{2t} + \dots + \beta_n x_{nt} + \mu \quad (3)$$

Here, we find (Y_t) being the dependent variable at time (t), explained by the changes within the independent variables (x_1), (x_2), ..., (x_n) at time (t). The regression coefficient is defined by (β_0), and the error term, which gives the variations within (Y) that the independent variables does not catch, is denoted by (μ). The OLS method tries to find the function of “best fit” that minimize the squared vertical distance between the observed values in the dataset and the responses predicted by linear approximation.⁴⁰ The values of each single will either be in the form of “*value less trend value*”, or in the form of percentage deviations from trend. The denotation of the variables will be presented along with the results.

Hodrick-Prescott filter

In order to evaluate how the values in our time series deviate from their trend, we need to separate out the cyclical component. To do this we will apply an algorithm known as a HP-filter,⁴¹ which allows us to estimate the trend component of each time series. This produces a set of smoothed values, i.e. a trend, which can be used in calculating the actual data’s deviation of said trend. The filter is expressed through equation (4):

³⁹ Gujarati (2003)

⁴⁰ University of Strathclyde

⁴¹ Grytten (2012)

$$HP_t = \min \left\{ \sum_{t=2}^N (y_t - d_t)^2 + \lambda \sum_{t=2}^N [(d_{t+1} - d_t) - (d_t - d_{t-1})]^2 \right\}, t = 1, 2, 3 \dots T \quad (4)$$

In the equation (y_t) refers to the observed value at time (t), while (d) refers to the trend component at time ($t-1$), (t), and ($t+1$). The first term of the equation is the sum of the squared deviations of the observed value from the trend.⁴² The term is squared as to provide negative and positive deviations with the same weight. The second term of the equation is an expression of the variance within the trend. λ is the smoothing parameter which is the weight one chooses for minimizing deviations between trend and observed value. A lambda value (λ), that increases indefinitely, will produce a proximate linear trend. The trend can thusly remain flexible by choosing a suitable lambda value.⁴³

What is regarded as a “suitable” value for lambda varies greatly based on aspects such as country of analysis, and the sample frequency within the time series. When applying the filter for annual data, Ahumada and Garegnani indicates that a $\lambda=100$ would be appropriate.⁴⁴ For quarterly series, a $\lambda=1600$ was found to be suitable by Kydland & Prescott,⁴⁵ and for the monthly we use a $\lambda=14400$.⁴⁶ The time series that we will analyze are predominantly quarterly data, we will thus apply a $\lambda=1600$ for all our three economies. However, Statistic Norway uses a lambda of 40 000 for Norway,⁴⁷ which we also will apply in some graphical analyses.⁴⁸ Since seasonal variation could contaminate the cyclical signal,⁴⁹ we have mainly chosen seasonally adjusted time series.

The strength of the HP-filter lies in its easy use,⁵⁰ and intuitiveness. Nonetheless, since the filter is two-sided – implying that for a given point in time, it uses both backwards and forwards observations to calculate the trend value – the filter will become one-sided as it approaches both ends of the series. The greater the λ , the greater this problem will become.⁵¹

⁴² Bjørnland, Brubakk, & Jore (2004)

⁴³ Ibid.

⁴⁴ Ahumada & Garegnani (1999)

⁴⁵ Kydland & Prescott (1990)

⁴⁶ Grytten (2012)

⁴⁷ Benedictow & Johansen (2005)

⁴⁸ I.e. the analyses of 5.2.1 *The Austrian perspective* and 7.1.3 *Norway* – if nothing else is mentioned.

⁴⁹ Maravall & Rfo (2001)

⁵⁰ Bjørnland, Brubakk, & Jore (2004)

⁵¹ Ibid.

4.2 Statistical tests

Of statistical tests we will include the F-test, T-test, and the Durbin-Watson. These are to evaluate the results of our multiple regression analyses. Followed briefly by how we measure deviations of HP-trend.

F-test

The F-test is a statistical procedure that can be applied to investigate if the independent variables (x) influence the dependent (Y), and explain the changes within this. The F-test operates with the null hypothesis that every coefficient has a value of zero. This would imply that none of the independent variables has any explanatory power on the dependent (Y). Elevated F-levels implies that the null hypothesis should be rejected. The test is based on the expression (5):

$$F = \frac{R^2(n - k - 1)}{k(1 - R^2)} \quad (5)$$

Where (R^2) refers to the regressions unadjusted explanatory power, (k) equals the number of explanatory variables within the model, and (n) the number of observations.

T-test

A T-test helps us determine whether each independent variable (x) exerts a significant influence on the dependent variable (Y). The test operates with the null hypothesis that the related independent variable (x) has no effect on the dependent variable, and that the coefficient is zero. The P-value of this test states the possibility of discovering a similar value to the coefficient, given the null hypothesis being true. A small p-value indicates that the null hypothesis should be rejected. The mathematical expression (6) for the test is:

$$T = \frac{\bar{t} - \mu}{\frac{s}{\sqrt{n}}} \quad (6)$$

\bar{t} represents the observed variable value, and μ is the value assumed in the null hypothesis that gives a coefficient of zero. s is the variance and n is the number of observations in the test.

Durbin-Watson

When using time series, one can often come across the problem of autocorrelation. This occurs when a systematic pattern develops within the order of residuals e_t , that makes the residual of observation t contain information about that of observation $t+1$. Such an event can come about if, e.g., relevant factors have not been included in the model, or if the data follows cycles. The occurrence of autocorrelation implies a systematic pattern in the data which breaks with one the assumptions made in the OLS method. We estimate autocorrelation through testing (7):

$$d = \frac{\sum_2^n (u_t - u_{t-1})^2}{\sum_1^n \hat{u}_t^2} \quad (7)$$

Here, u_t refers to the estimated residual value at time t . A low DW value (<2) indicates positive first order autocorrelation, whilst elevated levels (>2) indicates a negative first order autocorrelation. In order to correct for this effect, we have chosen to calculate a HP-filter ($Trend_t$) for the observations within our time series (O_t). The values that the HP-filter produces will be subtracted from the original variable values ($O_t - Trend_t$) resulting in the measure C_t . Lastly the find the percentage deviation from trend by calculating equation (8).⁵² We will then apply these deviations when conducting the regression.

$$C_t = \frac{O_t}{T_t} - 1 \quad (8)$$

4.3 Data

Because we are using a very broad specter of data, we have chosen to present it as we go to keep the discussion easier to follow. Most data are gathered through Macrobond, Thomson Reuters' Datastream, and Federal Reserve Bank of St. Louis' website.⁵³ The data from Macrobond and Datastream usually source back to official, high quality, sources like Federal Reserve,⁵⁴ European Central Bank,⁵⁵ and Statistics Norway.⁵⁶ The data is chosen based on our theoretical framework, i.e. we choose data we see fit to shed empirical light on the theories. Also due to our broad focus and the necessity of limitations, we have decided to make these choices as we go, to keep a compact structure.

⁵² Grytten (2012)

⁵³ Macrobond; Thomson Reuters and; Federal Reserve Bank of St. Louis (a)

⁵⁴ Board of Governors of the Federal Reserve System (a)

⁵⁵ European Central Bank (a)

⁵⁶ Statistics Norway

5. Pre-08 government interference

In this first chapter of empirical analyses we will, with our two theoretical frameworks, throw light on our first research question: *Did government intervention contribute to the housing bubble of 2008?* Of our three chapters of analyses, this first lays the foundation for the following two. We will structure this chapter basically around fiscal policy and monetary policy. Fiscal policy will be assessed in light of our Austrian framework, while monetary policy – which is our main focus – will be assessed with both perspectives of the Austrian- and Minskian school of economics. Some empirical arguments overlap, and will be cut short in the latter discussion. Both subchapters, on fiscal- and monetary policies, will start with a brief qualitative overview.

5.1 Fiscal policies

The euro area has no common fiscal policy. Although they share currency, their fiscal policies are divergent. The qualitative segment of fiscal policy is therefore going to be focused mainly on USA and Norway. All details on the Norwegian and American budgets are gathered from the website of the Norwegian government⁵⁷ and the Federal Reserve Archival System for Economic Research (FRASER).⁵⁸ The outcome of fiscal policy is – to a large degree – seen in the data gathered for our later discussion on monetary policy. We will, therefore, put a large emphasis on intentions and politics in this presentation of fiscal policy, studying national budgets of USA and Norway.

In Norwegian fiscal policy “handlingsregelen” is quite central. It could be understood as a “rule of action” which provides a guideline for the use of oil revenue in the national budget. The Norwegian government saves its revenue related to oil in the Government Pension Fund. “Handlingsregelen” dictates how much money is to be taken out of this fund, and into the budget. The limit is set to be at the expected real return of the fund by the entrance of the fiscal year, which again is estimated to be four percent.⁵⁹ The use may appear to increase in NOK while declining in percentage, which is due to the funds continuously increasing size.

⁵⁷ The Norwegian Government

⁵⁸ Federal Reserve Bank of St. Louis (b)

⁵⁹ Finansdepartementet (2001)

The period, before the housing bubble, starts in 2001 with the establishment of “handlingsregelen”.⁶⁰ It's considered a neutral fiscal policy. USA experiences its lowest unemployment rate in 30 years. Under President Clinton they have made a surplus and are paying off debt. The future is viewed very optimistically, as expressed in the federal budget for 2001: "As the debt begins to reverse course and head downward, we have an extraordinary opportunity to make America debt free by 2013."⁶¹ In the planning of both countries' budget for 2002 the IT-bubble is not relevant yet. Corrected for oil, the structural deficit on GDP trend for mainland Norway is 2.3 percent, 26 billion NOK. USA is focusing on moderate government growth, tax relief and debt reduction.

Both countries budgets for 2003 is, however, much more dramatic. USA is facing lots of fiscal stress, and a war is initiated as an answer to the terrorist attack on September 11th, 2001. The American budget is turning more expansive and away from its debt reducing path. Norway is affected mainly indirectly through stress in the US and European markets, with its strong and “less competitive” NOK.

For the budget of 2004, Norway is planning a larger structural deficit, corrected for oil: 50.7 billion NOK (calculated to be 74.3 billion the year after). Norway is also facing increasing unemployment. The fiscal policy is, however, considered neutral overall. USA provides further tax cuts in this fiscal year. The American spending continues to increase on security related to wartime, while focusing on making cuts on non-security programs. Deficit for the 2005 American fiscal year is estimated to be \$521 billion, 4.5 percent of GDP (but came in 109 billion lower).

By 2006, Norway has a structural deficit, corrected for oil, of 65.9 billion NOK – which comes to 4.6 percent of the GDP trend of mainland Norway. The economic outlook is considered stronger, and the fiscal policy neutral. This picture leads to the aim of lowering the use of oil revenue. In the 2008 budget, Norway plans to bring the spending from the Pension Fund down, 7 billion below “handlingsregelen”.

USA has, in 2006, increased overall defense spending by 41 percent since 2001. In 2007 the American markets experience strong growth, but the government still carries a deficit, estimated to \$354 billion, 2.6 percent of GDP – which they also focus on reducing in 2008.

⁶⁰ Ibid.

⁶¹ U.S. Government (2000, p. 13)

Both economies end this period with strong growth and low unemployment. However, they are both in deficit as they face the next period, which is far more dramatic.

The euro area has a similar story, although diverse. They had projects working towards financial integration between the member countries. Through EU they implemented a series of regulations, e.g. the Capital Requirement Directive of June 2006.⁶²

In USA, the subprime mortgages were central in the housing bubble, and much debated afterwards. Despite this, we will not pay it much attention. It is a major factor in explaining the events of the housing bubble, yes; but we argue it is a secondary. It was made a problem due to other primary events, like monetary expansion. It was a part of the bubble, but it was defiantly not the source. A meteorologist would not pay much attention to the leaves the wind blows, but rather why it does. For our purpose of looking ahead, previous blown leaves are not going to tell us much about where the wind will blow next time.

Figure 5.1 below depicts all regions deficit, annually from 2000 to 2013, with an estimate of 2014 and 2015. The data is from the European Commission and gathered through Macrobond. The Norwegian data is not corrected for oil revenue. After the IT-bubble, we observe that USA and the euro area have been in more or less deficit.

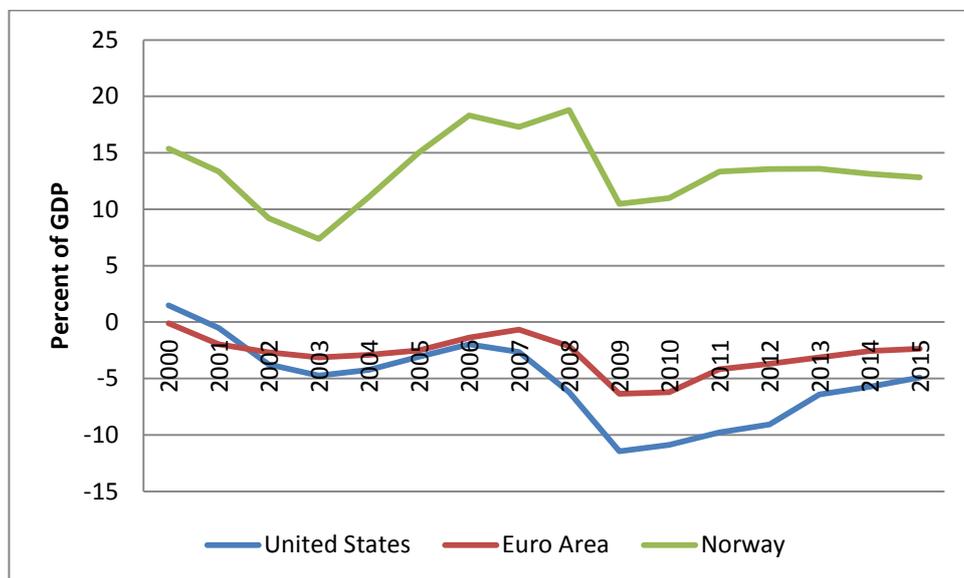


Figure 5.1 Surplus and deficit

⁶² European Central Bank (2007)

5.1.1 The Austrian perspective

We will use Garrison's framework for deficit finance to assess the financial situation before the housing bubble. Deficit finance initiates a shift, from tax-financed to deficit-financed spending. The theory is assuming that the spending is outside the national economy. This makes it applicable in the case of USA, due to its war time spending. For our assessment, it doesn't matter whether the war is legitimate or not. The economic consequences are almost the same once the war is initiated, at least on short term.⁶³ For the euro area and Norway, the applicability of the model is more segmented. Both regions participated in Afghanistan in this period, but to a lesser degree than USA. Because of Norway's special case of oil covered deficit, we will exclude it from this discussion. The Norwegian case is not compatible with our theoretical framework in this instance. The applicability of the model is strongest for USA, with a deficit-financed war. For the euro area, it is applicable to the extent that they participate in the war, and to the degree their governments spend funds outside their economy.

The regions (USA and the euro area) issues debt and put an upward pressure on the interest rate, which makes a positive demand shift in the market for loanable funds. With the higher interest rate the private demand for loans is lower, as it is still given by the initial demand curve. We get higher consumption which again twists the Hayekian triangle in favor of the later stages. The upward pressure on the interest rate gives the central banks the opportunity to print even more money within their target rates. The policy induced lower rates was "supposed to" be represented by saving – higher consumption is in this context *over*-consumption. The policy of deficit finance is maybe more dangerous here, where it is not seen. The motion of the natural interest rate is hidden behind the effective. With a given rate, deficit finance also allows for greater monetary expansions. This could contribute to even more malinvestments. Fiscal policy may be more influential than first anticipated.

5.2 Monetary policies

Monetary policy is our main argument when discussing the government's role in the housing bubble. We will assess the housing bubble with the perspective of the Austrian school of

⁶³ Ludwig von Mises argues that a legit war is worth fighting for the nation's future security (Garrison 2001)

economics, followed by the Minskian. First, we will present a brief overview of the three central banks and their practice.

The Federal Reserve (Fed) is responsible for monetary policy in the United States. The Fed's mandate is to “maintain long-run growth of the monetary and credit aggregates commensurate with the country's long-run potential to increase production, so as to promote effectively the goals of maximum employment, stable prices and moderate long-term interest rates”^{64,65}.

Within the Fed, the Federal Open Market Committee (FOMC) is responsible for making and implementing policy decisions. They achieve their above-mentioned goals by influencing the federal funds rate through open market operations, the discount rate, and the reserve requirement placed upon credit institutions. Open market operations are done to align the inter-bank rate (federal funds effective rate) with the federal funds target rate, through selling and purchasing securities.⁶⁶ We consider this tool most relevant for our period of analysis, and thus will not be discussing the other types. Please note that for the remainder of this paper we will use the abbreviation Fed when we are referring to the FOMC.

The European Central Bank (ECB) has conducted monetary policy for the euro area since 1999. Their primary objective is to achieve price stability for the members of the monetary union.^{67,68} To achieve price stability, the ECB attempts to maintain year-on-year increases in the Harmonized Index of Consumer Prices (HICP) close to two percent over the medium term. They attempt to accomplish this through: 1) open market operations; 2) interest charged on the standing facilities, and; 3) the minimum reserve requirements for credit institutions.⁶⁹ These tools correlate well with the ones used by the Fed, with main refinancing operations being the most relevant to our thesis.

The monetary policy goal of Norges Bank (NB) is to – over time – establish consumer price inflation near 2.5 percent, and a contributing to stabilizing output and employment.⁷⁰ As with the two others, they accomplish this by targeting the inter-bank rate. This rate is to stay

⁶⁴ Board of Governors of the Federal Reserve System (1977)

⁶⁵ Board of Governors of the Federal Reserve System (c)

⁶⁶ Board of Governors of the Federal Reserve System (2013b)

⁶⁷ Gerdesmeier, Mongelli, & Roffia (2007)

⁶⁸ Claussen, Jonassen, & Langbraaten (2007)

⁶⁹ European Central Bank (b)

⁷⁰ Norges Bank (2008b)

close to the sight deposit rate, which is NB's target interest rate. Through fixed rate loans and fixed rate deposits, NB can push the target rate in the desired direction. NB also applies the two other tools as the previously mentioned central banks.

In order to point out how monetary policy had the potential of contribution to the housing bubble, we will now present a brief overview of the intentions held and decisions made by each central bank. An analysis of the consequences of said policy will be conducted in the following sub-chapters. Our focus will naturally be on the actions of the Fed, since policy in the three regions generally followed the same pattern.

5.2.1 The Austrian perspective

We will use the boom and bust application of Garrison's model in assessing the housing bubble from an Austrian perspective. We would like to start by considering the three assumptions that the model is based on, i.e.: 1) unchanging intertemporal preferences; 2) a monetary authority controls the money supply, and; 3) that the supply of loanable funds include funds made available by the central banks as well as savings. First, we regard intertemporal preferences as secondary to monetary policy. Preferences manifest itself deep in the culture. We can observe different insensitivity in consumption and saving between USA and Japan, but we find no signs of significant shifts inside one economy. Of course there might be some changes in preferences over time, but for our period of focus – the 21st century – we hold monetary policy as a primary influence in the allocation of resources. Second, with regards to the monetary authority's control over the money supply, it is partly true. The central banks have a monopoly on the nation's currency, and thereby the monetary base. However, M2 is by definition also affected by other factors – as economic growth.⁷¹ The Fed sets the base and the banks make the multiplication. We find it safe to say that the central banks influence the money supply. Third, we will argue that funds made available by the central banks are in fact increasing the supply of loanable funds – it *is* the source.

The housing bubble is going to be assessed in the following six steps, which is derived from the boom and bust situation in figure 3.7. All gaps are measured as percent deviation of HP-trend.

1. Link between money supply and interest rate

⁷¹ Board of Governors of the Federal Reserve System (b)

2. Credit gap
3. Production gap
4. Consumption gap
5. Housing projects
6. Inverted yield curves and credit crunch

Link between money supply and interest rate

The business cycle starts out with a monetary expansion by the central banks. Austrian economists argue that lower rates are only an effect of increased money supply, as a positive shift in supply equals a lower price on the commodity. Due to the complexity of M2, its relationship to the interest rate is hard to find quantitatively. Below in figure 5.2, we have put together M2's percent deviations of HP-trend with the US federal funds target rate from Federal Reserve Bank of St. Louis. The data on M2 is gathered from Federal Reserve through Macrobond, and seasonally adjusted. The HP-filter is conducted from 1959, so there is no starting point error in the depict period, which is monthly from 01.2000 to 09.2013. We find it more accurate to use percent deviations of trend than the actual numbers because the trend movements in M2 are largely guided by expectations.

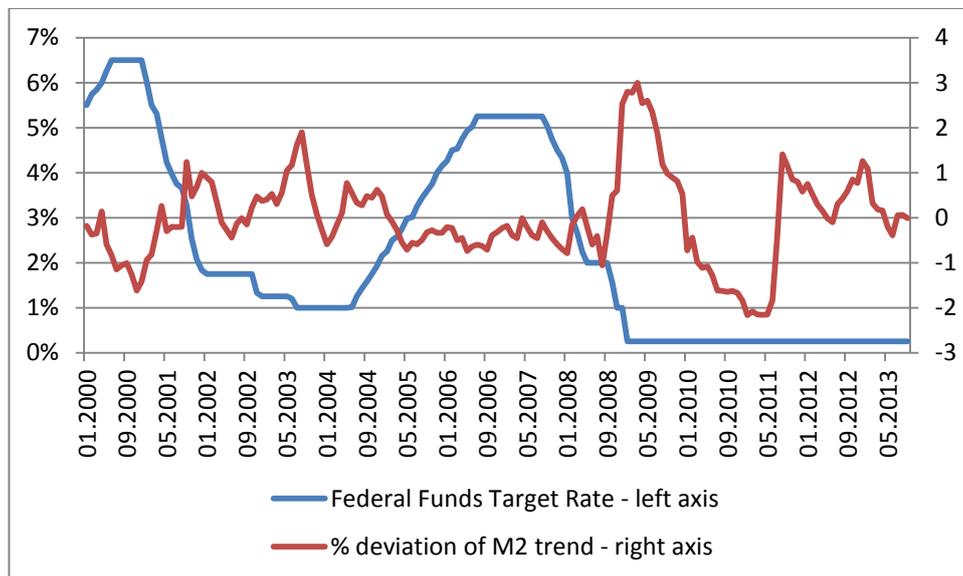


Figure 5.2 Federal funds target rate and M2

We find a negative correlation between the two by -0.322 , which is considered relatively strong⁷² – proposing a negative relationship. The influence of GDP needs to be taken into account when discussing changes in M2. However, if we look at the booming period of

⁷² Johannesen, Kristoffersen, & Tufte (2004)

2005-2007, M2's trend deviation is not at its heights. If GDP growth puts an upward pressure on M2 then we should experience higher trend deviations of M2 in the early years (2001 to 2004) and lower deviations in the following booming period – if we correct M2 for GDP. If this is true, our correlation of -0.322 could be even more negative. The red line of M2 deviations is more often above its zero percent line in recessions and recoveries, and below in well-known booming periods – suggesting the influence of countercyclical policies.

The data confirm the boom bust model of lowered interest rate, down to one percent, at a time where the percent deviations of trend peaked at 1.9 percent in 08.2003, prior to the housing bubble. This should offset a credit expansion.

Credit gap

We are still discussing shifts and consequences in the market for loanable funds. From here we will include the euro area and Norway. To see how the monetary injections and historically low interest rates for all regions⁷³ affected the credit markets with regard to the housing bubble, we will first take a look at private non-financial corporations' credit development followed by households. The former have – in figure 5.3 – data from 01.1980 for USA and Norway. For the euro area we could only find from the later 90's.⁷⁴

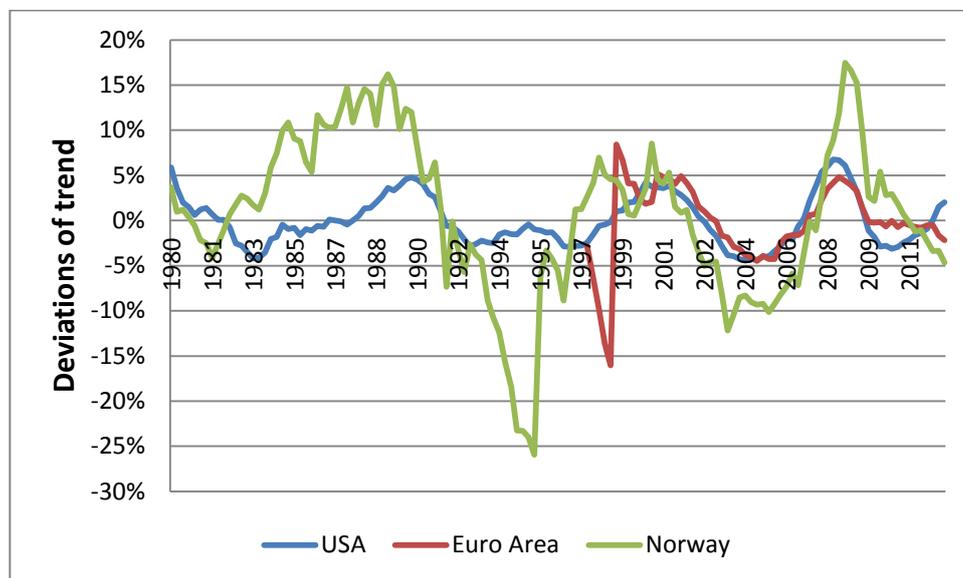


Figure 5.3 Credit gap – Private non-financial corporations

⁷³ Appendix: Target Interest Rates

⁷⁴ “The euro was introduced in 1999.” European Central Bank (d)

The series of figure 5.3 are quarterly, ends on 01.2013, and are gathered from Federal Reserve Bank of St. Louis. All regions experience a significant credit expansion for non-financial corporations, peaking around 2008. The numbers where the closest we could find to in part represent the firms engaging in housing projects. To the degree that these data speak for this specific sector, it suggests a credit expansion in all regions.

The entrepreneurs is not the only one accumulating debt in a boom, the buyers do as well. Figure 5.4 on households' credit gap may be more precise in this assessment. The households are a more direct link to the housing bubble than the general non-financial corporations. The credit expansion is made even clearer at this point. Norway is a special case, with its housing bubble in the early 90's. Followed by monetary expansion and lower interest rates, we do find credit expansion in all regions. The data in figure 5.4 is of the same source as of figure 5.3.

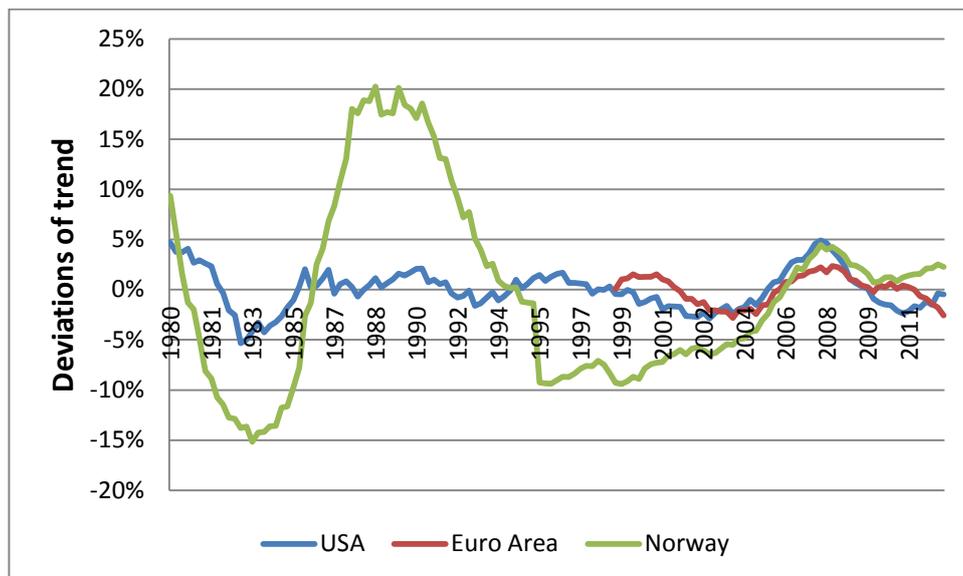


Figure 5.4 Credit gap – Households

Production gap

The consequences – of the discussed – take form in the PPF curve. The signal of lower rates, by the shift to $S+\Delta M_C$ in figure 3.7, calls for over-investment. At the same time, the consumers are still represented by S , where the now lower rates discourage saving and favors consumption. Burning the candle in both ends, we are outside the sustainable area of the PPF curve. This phenomenon of overproduction is best illustrated by production gap, in figure

5.5. Our data series⁷⁵ starts in 01.1980 for USA and Norway, and 01.1995 for the euro area. It ends in 04.2013 for the euro area and Norway, and 07.2013 for USA. All are quarterly data on GDP.

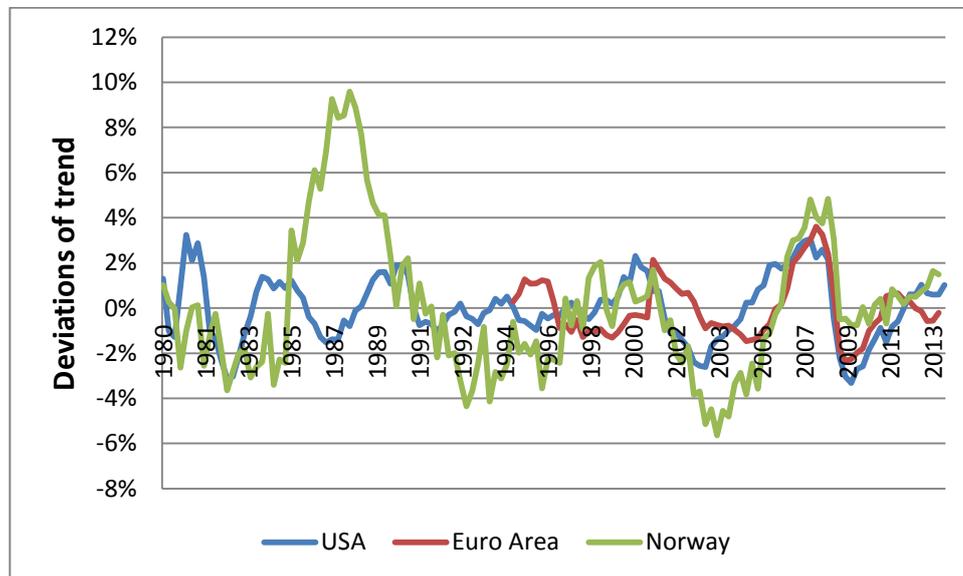


Figure 5.5 Production gap

The production gap of USA peaks already in 2007, the euro area peaks in the early 2008, and Norway peaks in mid-2008. For all regions, the peaks are significant to the rest of our time series. The same mechanisms appear to be very strong in Norway prior to the Housing bubble in the early 90's, but there is also a noticeable peak before the current crisis.

To elaborate on the forces that cause unsustainable production we want to include the consumption gap. Together with housing starts that are going to follow, these forces are what constitute the production gap or the unsustainable production outside the PPF curve.

Consumption gap

The data we found on consumption differ from each other in kind and time period.⁷⁶ All are gathered through Macrobond,⁷⁷ and presented in figure 5.6.⁷⁸

⁷⁵ The data for USA is from U.S. Bureau of Economic Analysis, for the euro area is from Eurostat, and for Norway is from Statistics Norway. All are gathered through Macrobond.

⁷⁶ For USA we have seasonally adjusted personal consumption expenditures, excluding food and energy prices, monthly from 01.1980 to 08.2013. For the euro area we have households' credit for consumption, monthly from 09.1997 to 09.2013. And, for Norway we have seasonally adjusted households' final consumption expenditure, quarterly from 01.1980 to 04.2013. However, we only depict the data after 1997.

⁷⁷ The American numbers are from U.S. Bureau of Economic Analysis; the euro area from ECB; and, the Norwegian from Statistics Norway.

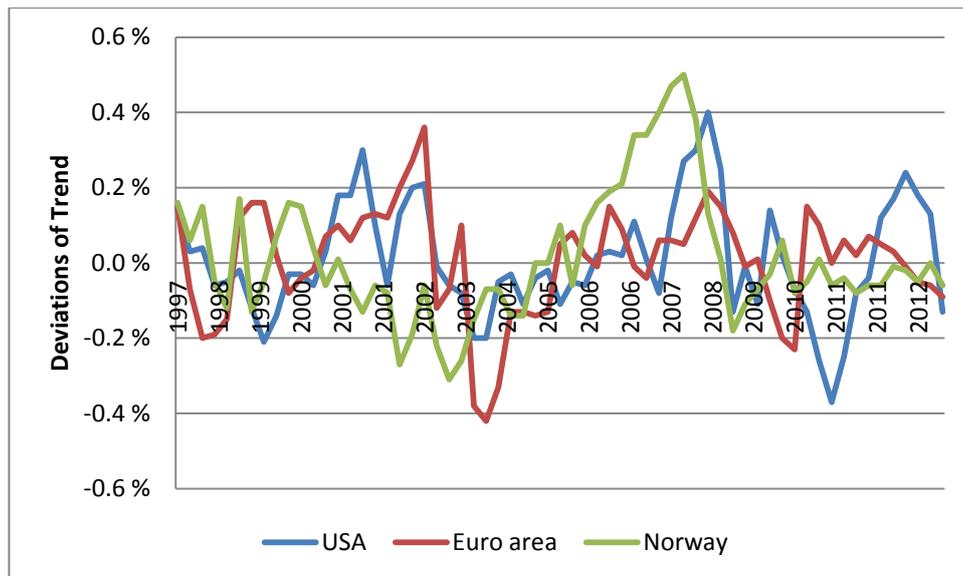


Figure 5.6 Consumption gap

The American consumption gap is not dramatic, but it is positive and the highest since the 80's in our analysis. Much of the same is true for the euro area. To explain the positive deviations after 2010, we point out that the trend for the euro areas consumption turned diminishing – hence, making the later deviations more positive. The picture is somewhat clearer in the case of Norway. Again, the Garrisons boom and bust model seems to really capture the old Norwegian housing bubble.

The above discussion on consumption strengthens our application of capital-based macroeconomics. To complete the cycle we need to discuss over- and malinvestment. In the case of a housing bubble, we find measures from the early stage of construction relevant for them both – especially for malinvestment.

Housing projects

For housing projects we have done HP-trend analyses, depicted in the appendix.⁷⁹ Despite their diversity in sort, the fact that all the series are from the early stages of production make them useful for our purpose.

All regions show peaks around 2006, followed by major downturns. These clearly represent the bust of the early stages of production in the Hayekian triangle. We also notice how the

⁷⁸ The values of the euro area and Norway are divided by ten to make them more compatible with that of USA.

⁷⁹ Appendix: Housing starts – USA (A); Housing starts – euro area, and; Housing starts – Norway

series peak before all other measures we have assessed. This is a good example on how the problems start at malinvestments.

Inverted yield curves and credit crunch

With Cwiks dissertation taken into account, we look at the American yield curves⁸⁰ in figure 5.7. NBER recessions⁸¹ are highlighted in grey.

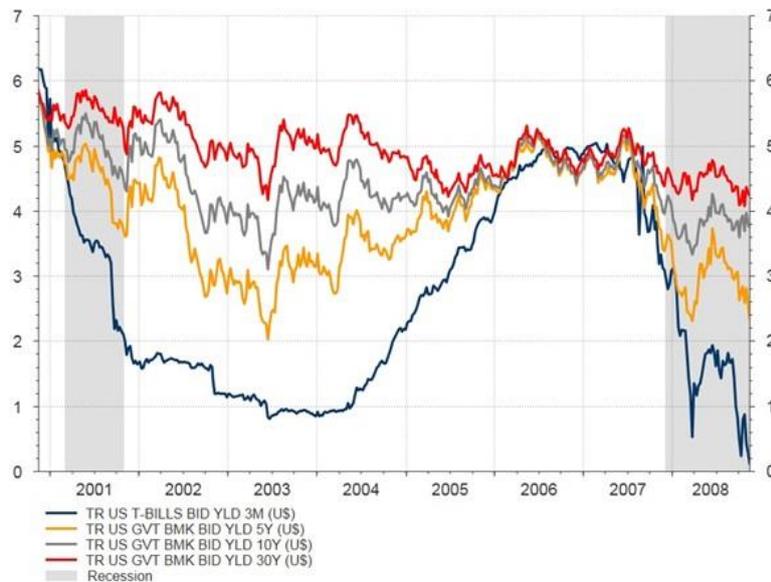


Figure 5.7 Yield curves – USA

We see a clear inversion prior to the housing bubble's bust. The Federal Reserve started reacting to higher housing prices in 2004/2005 by increasing the interest rate. This led the yield curve to invert. The three month bill inverted against the ten year bond from July 2006 to June 2007, giving out a huge warning signal.

We find capital-based macroeconomics to be very applicable to the housing bubble of 2008. It offers a good explanation of the underlying factors between the boom and the bust. To broaden the link between monetary policy and crises, that we advocate, we will follow up with an assessment in the Minskian perspective.

⁸⁰ Figure made in Datastream, from Thomson Reuters.

⁸¹ National Bureau of Economic Research (2010) (NBER) defines recessions as the period between the peak and the trough of business cycles.

5.2.2 The Minskian perspective

Since we already assessed the housing bubble from the perspective of the Austrian school, our choice to include Minsky's theories is one made primarily out of desire to illustrate that other perspectives could result in the same conclusion. This subchapter will include a qualitative assessment of Grytten's model of "Minskian stages", followed by quantitative analyses.

After the IT-bubble busted, business and consumer confidence fell.⁸² Business credit also went below trend levels⁸³ and would decline until it flattened out in mid-2004. The Fed responded swiftly by lowering the target rate.

Stage 1: Displacement

In the first stage of the model one can witness a debt expansion due to increased confidence, combined with the creation of new money, and/or wealth owners' portfolio diversification. In the US, as the effects of the IT-bubble wore off, the economy grew again. Confidence increased, and the decline in business credit flattened out before it started growing again. The Fed target rate had remained at a significantly low level for some time⁸⁴ and M2 stayed mainly above trend from mid-2002 until the start of 2005.⁸⁵ The same tendencies could also be seen within the euro area. In Norway however, the effects would present themselves sometime after the US and the EA. The NB target rate was maintained at a comparatively high level for almost three years since the Fed started lowering their target rate.

Already here, we can see how Minsky's concepts start presenting themselves. After a significant downturn, confidence grows, and when this happens, a credit expansion starts taking place due to the creation of new money. The effects can be seen to present themselves somewhat slower in Norway.

Stage 2: Overtrading

In the second stage of the model, growing profitability expectations leads firms to expand their production, and economic activity increases. Credit is still increasing as businesses and

⁸² Appendix: Business- and Consumer Confidence

⁸³ *Figure 5. Error! Main Document Only. Credit gap – Private non-financial corporations*

⁸⁴ Appendix: Targets Interest Rates

⁸⁵ Appendix: M2

consumers in financing purchases use it. Profitability expectations surpass real value, and the economy enters into an exponential phase of growth (Grytten 2003).⁸⁶

In 2003, the Fed made it clear that low interest rates provided an additional boost in household spending, by reducing borrowing costs for new purchases of houses. The low interest rates also facilitated a refinancing on mortgages, and thereby an upward pressure on housing prices.⁸⁷ Housing prices and real-GDP shot above its trend levels towards the end of 2004.⁸⁸ By the end of 2005 US housing prices, real-GDP, confidence, residential construction and business fixed investment were significantly above trend levels.⁸⁹

The same tendencies that one could observe in the US, were also presenting themselves in Norway and the euro area. The difference was primarily related to the US economy grew somewhat earlier than the two others. It's also worth noting that the Norwegian business credit did not surpass trend levels before 2007, an effect that might be attributed to NB not lowering its target rate before 2003 (two years later than the Fed and the ECB).

Again, we see movements within the economy that can be explained by Minsky. Banks had easy access to Fed funds for a while. Confidence is rising, and consumers are increasing their debt-financed purchases of, in this case, housing. This helps drive prices upwards and businesses (especially construction firms) respond to these signals by expanding their operations (fixed investments and residential construction) to meet demand. All this, accompanied by easy access to credit, helps fuel the “machinery”, and M2 is expanding as Minsky foretold. The economy is growing and for a while resides above trend levels, which is signified by real-GDP. The Fed responds by raising the target rate in order to prevent inflation.

Stage 3: Monetary expansion

During a monetary expansion a “growing demand leads to an increased demand for money and credit, which increases the money supply. The increased demand for money and credit leads to an increased demand for products. At this stage, the confidence and the easy access to funds contribute to creating a financial bubble.”⁹⁰

⁸⁶ Grytten (2003)

⁸⁷ Board of Governors of the Federal Reserve System (2004, p. 5)

⁸⁸ Appendix: Real-GDP

⁸⁹ Appendix: Real-GDP; Business- and Household Confidence; Business Fixed Investment, Residential Construction, and; Housing Prices.

⁹⁰ Grytten (2003, p. 92) (authors translation)

From 2005, the trend of the previous stage continued. Credit kept on expanding rapidly, in spite of the rapid increases in the federal funds target rate, and real-GDP grew well above trend levels. However, around mid-2006 residential construction peaked, and started falling, which led to a fall in employment within that industry. The Fed noticed this development; however, they still felt that the economy in general was in good shape.⁹¹

After housing prices peaked in 2007, prices started declining somewhat sharply – which led people to have trouble getting their houses sold to a comfortable price. As has become commonly known, some households took on mortgages even though their ability to pay back was limited. At first, this did not prove to be a problem since housing prices were continuously raising. However, as housing prices started falling, and the economy in general was cooling down due to the constraints put forward by the contraction in residential construction.⁹² Several households had trouble serving their loans. For some, default became the only option. This reduction in confidence and investments is the first sign of a crisis.

Stage 4 and 5: Revulsion and Discredit

In the fourth stage of the model, the positive financial bubble that was created by monetary growth surpassing real economic growth, will eventually burst. As of figure 2.1, reduced optimism pushes investment down, while reducing asset prices.

The crisis that took place within the housing market had far reaching consequences due to the speculative endeavors that had taken place amongst large financial market players. On September 7, 2008, Fannie Mae and Freddie Mac were put into conservatorship,⁹³ throwing financial markets into panic. Two weeks later, Merrill Lynch had been sold, Lehman Brothers had filed for bankruptcy, and AIG had been given a loan of \$85 billion by the Fed. These inconsistencies contributed to the decline below fundamental values – and the economy reached the fifth stage.

In the fifth stage, a negative bubble is created by economic growth falling below its natural path.⁹⁴ Close to every indicator would fall below trend not long after the fall of 2008.

What is interesting with this situation is the fact that residential construction reached its peak some time before consumer confidence. This suggests that early stages of production are

⁹¹ Board of Governors of the Federal Reserve System (2007a)

⁹² Board of Governors of the Federal Reserve System (2007b)

⁹³ Bodie, Kane, & Marcus (2011, p. 49)

⁹⁴ Grytten (2003)

primary to confidence. This again implies that the Austrian framework could have stronger explanatory power than the confidence-focused theories. At least it supports our choice to use two theoretical frameworks.

We find the five stages to fit the housing bubble. Due to the wide ramifications of the turmoil in the financial markets, Norway and the euro area were also affected. The euro area followed much of the same pattern as the US. In Norway however, residential construction would not fall below trend before the beginning of 2008, and GDP experienced a dramatic fall below trend levels first in 2010. As of consumer confidence, the fall did not have a too lengthy effect on Norwegians.

Quantitative testing of model assumptions

We will now present some multiple regression analysis that we have conducted to test whether or not the assumptions made by Minsky is valid within our three economies. The tests are shown in table 5.1.

Hypothesis:	Dependent Variable	Independent Variable	Independent Variable	Independent Variable	Independent Variable
1	Increase in Household Credit	Decrease in Target Interest Rate	Household Confidence		
2	Increase in Business Credit	Decrease in Target Interest Rate	Business Confidence	Household Confidence	Household Credit
3	Increase in Business Fixed Investment	Increase in Business Credit	Decrease in Target Interest Rate	Business Confidence	Household Confidence
4	Increase in Residential Construction	Increase in Business Credit	Decrease in Target Interest Rate	Business Confidence	Household Confidence
5	Increase in Housing Prices	Increase in Household Credit	Decrease in Target Interest Rate	Household Confidence	

Table 5.1 Hypotheses

The regressions have some weaknesses and should therefore be taken as a supplement to the graphical analysis earlier in this chapter. One statistical weakness is the presence of positive autocorrelation in as good as every test we have conducted – as indicated by the Durbin-Watson (DW) tests. Autocorrelation is present even though we have processed the data by calculating an HP-filter for every single time series, and applied those values to adjust the actual data.

The time series is also shorter than ideal. We operate using quarterly data due to the fact that most of our relevant variables are only measured once each quarter. This however, leads us to having even fewer observations to study. We have made an attempt of finding data that runs back to the 1980's which ideally would provide us with around 130 observations.

Unfortunately, for the most part we operate with around 80 observations. We don't have any observations for the euro area before 01.1999 (establishment of the ECB). We will therefore not give the test from this region any attention; however, the results could give some illustrational value.

We have also decided to apply a static model, where no lag is included. This could have been done differently, but for the most part including lagged variables did not increase the models explanatory power. Therefore, to keep the results consistent - and not further reduce our already limited number of samples - no lag was included.

For the t-tests, we have chosen a 95 percent confidence interval. If we wanted to better explain the changes in e.g. housing prices, other variables could perhaps have been included. However, since our goal is to examine government interference, we have chosen to keep the number of independents as small as possible. Different methods have been applied in processing the data.⁹⁵

Hypothesis 1: Household credit

Here, we wanted to investigate further the theory that households take on more credit as their confidence grows, and target interest rates are low. This is expressed as follow:

$$HouseholdCredit_t = \beta_0 + \beta_1 TargetInterest_t + \beta_2 HouseholdConfidence_t + \mu \quad (9)$$

We want to make it clear that we understand that the target rate only affects consumers through banks' lending decisions. However, as already stated, the target rates function as a tool of making credit more available to the public.

The data for household credit have been gathered from Bank for International Settlements:⁹⁶ the monthly target interest rates from the respective central banks (Fed, ECB, NB),⁹⁷ and;

⁹⁵ Some results in our tables will carry the following marks:

* Calculated using variables unprocessed observations

** Calculated using the variables percent-deviations from trend ($= \frac{Observation}{HP-Value} - 1$)

*** Calculated using the variables unprocessed observations on change-from ($= \left(\frac{Value_t}{Value_{t-1}} \right) - 1$)

**** Calculated using the unprocessed variables' actual deviations from trend ($= Observation - HPvalue$)

⁹⁶ Bank for International Settlements

⁹⁷ Federal Reserve Bank of St. Louis (c); European Central Bank (c), and; Norges Bank (a)

household confidence from The Conference Board,⁹⁸ the European Commission,⁹⁹ and Finance Norway.¹⁰⁰ The results are presented in table 5.2.

Dependent Variable:	Household Credit*						
	Region:	USA		EA		NOR	
		Stand. Coeff.	T-test (Sig.)	Stand. Coeff.	T-test (Sig.)	Stand. Coeff.	T-test (Sig.)
Independent Variable:	Target Interest	-.221***	-1.737 (.086)	-.497*	-3.843 (.000)	.257***	-2.599 (.011)
Independent Variable:	Household Confidence	.367**	2.886 (.005)	-.257**	-1.988 (.052)	-.276****	2.414 (.018)
	Adjust. R-squared	.076		.194		.164	
	DW	0.170		.096		.306	
	F-Test (Sig.)	4.204 (.019)		7.613 (.001)		8.920 (.000)	

Table 5.2 Hypothesis 1

For this, and the following hypothesis we are testing, we want to see negative significant coefficients for the target interest rates, and positive coefficients for the other variables. In table 5.2 however, our findings are somewhat mixed. The ideal pattern only presents itself in the US, where target interest rates are just above the 95 percent confidence level (>0.05). Also, for the US, the explanatory power of the model (AR^2) is virtually non-existent. In Norway, the opposite result was found.

Hypothesis 2: Business credit

Next, we want to investigate if rising household credit, fueled by an increase in confidence, will transfer into businesses becoming more confident and thus expanding their operations through applying credit. To test this, we have formulated the following model:

$$\begin{aligned}
 BusinessCredit_t = & \beta_0 + \beta_1 FedTarget_t + \beta_2 BusinessConfidence_t \\
 & + \beta_3 HouseholdConfidence_t + \beta_4 HouseholdCredit_t + \mu
 \end{aligned}
 \tag{10}$$

The newly added variables consist of business credit and business confidence. We have gathered the business credit data from the Bank for International Settlements,¹⁰¹ and the business confidence data from Fed¹⁰² and Statistics Norway.¹⁰³ Results are in table 5.3.

⁹⁸ The Conference Board

⁹⁹ European Commission (2013)

¹⁰⁰ Finans Norge

¹⁰¹ Bank of International Settlements

¹⁰² Federal Reserve Bank of St. Louis (d)

¹⁰³ Statistics Norway

Dependent Variable:	Business Credit						
	Region:	USA		EA		NOR	
		Stand. Coeff.	T-test (Sig.)	Stand. Coeff.	T-test (Sig.)	Stand. Coeff.	T-test (Sig.)
Independent Variable:	Target Interest	-.501 ***	-6.729 (.000)	.790 *	6.829 (.000)	-.338 ***	-3.803 (.000)
Independent Variable:	Household Confidence	.171 *	2.340 (.022)	.056 **	.427 (.671)	-.287 ****	-3.019 (.003)
Independent Variable:	Household Credit	.558 ****	8.115 (.000)	.549 ****	5.169 (.000)	.369 ****	3.897 (.000)
Independent Variable:	Business Confidence	-.184 ****	-2.583 (.012)	-.376 ****	-3.014 (.004)	-.099 ****	-1.101 (.274)
Adjust. R-squared		.638		.500		.367	
DW		.289		.313		.520	
F-Test (Sig.)		35.321 (.000)		14.724 (.000)		12.723 (.000)	

Table 5.3 Hypothesis 2

The hypothesis states that target interest rates should have negative coefficients, and the three others should be positive. Here, the AR²'s should be taken with a grain of salt since they are tremendously large for the US and Norway. However, we can see significant negative coefficients for the “target”-variable in the same countries. This indicates an actual connection between falling target rates and increasing business debt. As for business confidence, a result contrary to the hypothesis was found for the US. In Norway, the same coefficient gives an insignificant result, rendering us unable to make any conclusions as to whether business confidence influence business credit in that region.

Hypothesis 3: Business fixed investment

After investigating the influence confidence and consumer credit has on firms' debt-ratio, we now want to study the hypothesis that credit growth, along with increased general confidence, leads to businesses increasing their fixed investments. We have here formulated the following model:

$$\begin{aligned}
 BusinessFixedInvestment_t = & \beta_0 + \beta_1 BusinessCredit_t + \beta_2 FedTarget_t \\
 & + \beta_3 BusinessConfidence_t + \beta_4 HouseholdConfidence_t + \mu
 \end{aligned}
 \tag{11}$$

We gathered the data for business fixed investment from the Bureau of Economic Analysis,¹⁰⁴ from the European Commission,¹⁰⁵ and from SSB.¹⁰⁶ It is presented in table 5.4.

¹⁰⁴ Bureau of Economic Analysis (2013)

Dependent Variable:	Increase in Business Fixed Investment	USA		EA		NOR	
	Region:	Stand. Coeff.	T-test (Sig.)	Stand. Coeff.	T-test (Sig.)	Stand. Coeff.	T-test (Sig.)
Independent Variable:	Target Interest	.665***	7.867 (.000)	.402*	3.015 (.004)	.300***	2.698 (.009)
Independent Variable:	Business Confidence	.116***	1.724 (.089)	.475****	3.322 (.002)	.196*	1.896 (.062)
Independent Variable:	Household Confidence	.261*	3.584 (.001)	.226**	1.558 (.125)	.277***	2.207 (.030)
Independent Variable:	Business Credit	.727****	9.121 (.000)	.243****	1.935 (.059)	.159****	1.271 (.208)
Adjust. R-squared		.655		.387		.147	
DW		.456		2.666		.912	
F-Test (Sig.)		37.961 (.000)		9.698 (.000)		4.500 (.003)	

Table 5.4 Hypothesis 3

From the table we can see that business credit is a strong explanatory variable for business fixed investment in the US. In Norway however, we find that this variable does not have any significant influence over fixed investments. As in *Hypothesis 2*, the coefficients for the target interest rates do not provide the results as the hypothesis indicates. If business fixed investments serves as an indicator of increased economic activity, and growing activity after a while is met with raised target rates, then the results could be in tune with reality, but affected by countercyclical policy. The remaining variables state roughly what the hypothesis claims, with US business confidence strangely proving insignificant.

Hypothesis 4: Residential construction

As we saw, business fixed investment was at least somewhat influenced by the variables we put forth. Thus, we now want to transfer this thinking over to the residential market, and see if the same independent variables from *Hypothesis 3* can explain the changes within the construction of living spaces. Here, we have formulated the following model:

$$\begin{aligned}
 ResidentialConstruction_t = & \beta_0 + \beta_1 BusinessCredit_t + \beta_2 FedTarget_t \\
 & + \beta_3 BusinessConfidence_t + \beta_4 HouseholdConfidence_t + \mu
 \end{aligned}
 \tag{12}$$

¹⁰⁵ European Commission, Eurostat

¹⁰⁶ Statistics Norway

The data for residential construction is gathered from the Fed.¹⁰⁷ The results are presented in table 5.5.

Dependent Variable:	Increase in Residential Construction****	USA		EA		NOR	
		Stand. Coeff.	T-test (Sig.)	Stand. Coeff.	T-test (Sig.)	Stand. Coeff.	T-test (Sig.)
	Region:						
Independent Variable:	Target Interest	.388***	3.134 (.002)	.328*	2.311 (.025)	.092***	.967 (.336)
Independent Variable:	Household Confidence	.172*	1.455 (.150)	.086**	.554 (.582)	.380***	3.513 (.001)
Independent Variable:	Business Confidence	.079****	.750 (.455)	.233****	1.531 (.132)	.165***	1.862 (.066)
Independent Variable:	Business Credit	-.194****	-1.725 (.089)	-.555****	-4.155 (.000)	-.269****	-2.491 (.015)
Adjust. R-squared		.383		.305		.366	
DW		.698		.630		1.813	
F-Test (Sig.)		13.129 (.000)		7.024 (.000)		12.675 (.000)	

Table 5.5 Hypothesis 4

For the US the results gained from this test do not correlate well with what we saw in the graphs earlier. The same suggestion concerning the target rate in the previous test could also be possible here. For Norway however, we can find household confidence as a significant positive coefficient. This can indicate that an important driving force in the building of residences in Norway is influenced by households' faith in the future. Next, we will test models explaining housing prices, which is highly relevant for Norway.

Hypothesis 5: Housing prices

Lastly, we want to test the increases in housing prices. Here, we want to investigate if increases in household confidence and credit lead to raised housing prices, and have thus formulated the following model:

$$\begin{aligned}
 \text{HousingPrices}_t = & \beta_0 + \beta_1 \text{HouseholdCredit}_t + \beta_2 \text{FedTarget}_t \\
 & + \beta_3 \text{HouseholdConfidence}_t + \mu
 \end{aligned}
 \tag{13}$$

The data for housing prices have been gathered from the Federal Housing Finance Agency,¹⁰⁸ from the ECB,¹⁰⁹ and from SSB.¹¹⁰ The results are presented in table 5.6.

¹⁰⁷ Federal Reserve Bank of St. Louis (d)

¹⁰⁸ Federal Housing Finance Agency

¹⁰⁹ European Central Bank (a)

¹¹⁰ Statistics Norway

Dependent Variable:	Increase in Housing Prices**	USA		EA		NOR	
	Region:	Stand. Coeff.	T-test (Sig.)	Stand. Coeff.	T-test (Sig.)	Stand. Coeff.	T-test (Sig.)
Independent Variable:	Target Interest	.400***	5.592 (.000)	.653*	4.639 (.000)	.385***	4.405 (.000)
Independent Variable:	Household Confidence	.311**	4.205 (.000)	.197**	1.530 (.132)	.176****	2.002 (.049)
Independent Variable:	Household Credit	.525****	8.305 (.000)	.261****	1.977 (.053)	.466****	5.251 (.000)
	Adjust. R2-squared	.719		.255		.390	
	DW	.516		.244		.986	
	F-Test (Sig.)	67.609 (.000)		7.260 (.000)		18.264 (.000)	

Table 5.6 Hypothesis 5

Out of the hypothesis we have tested, it appears that this is the one that provides the highest amount of significant coefficients. Regarding the coefficients for target interest rates, the same tendency – seen in the two earlier hypotheses – is present. What is interesting here is firstly the strong significant positive value found on US household credit. This could validate the idea that growth in household credit did lead to rising housing prices; leading in turn to more mortgage refinancing and debt, as prices continued to ascend. Secondly, we find a significant positive relationship between Norwegian housing prices and household confidence. The housing debate in Norway generally revolves around what the causes of the seemingly ever-growing housing prices might be. Whilst some claim that the rising prices are based on fundamental conditions, the results presented in this test imply that part of the price increases could be due to psychological aspects.

Summary of regression analyses

We conducted these regression tests in an attempt to establish causality between growing confidence, debt, and prices. As we have seen, there seems to be a relationship between decreasing target rates, and increasing household- and business credit. We have also seen that the growing confidence and credit explains some of the growth within businesses' fixed investments, and within residential construction. We have also to a degree established explanations for changes within housing prices.

The target rate coefficients seldom provided a value coherent with our hypotheses. However, as already explained, this could very well be a natural result of the countercyclical policies conducted by central banks. The aspects that have been brought forward give a brief view into the explanatory power of Minsky's theory. We have chosen to put our focus on what we believe to be the primary, namely the credit financed bubble within the housing market. We

make the assumption that the speculation relating to sub-prime bonds market amplified the crisis severely, but would perhaps have been of a smaller scale had there not been such easy access to credit for people unable to service their loans. The regression analyses did indicate that the conclusions we made might be valid. However, due to the limited number of observations, and the complexity that surrounds macroeconomic analyses, these tests should only be taken as a supplement to our graphical assessment.

6. Post-08 policy similarities and differences

In this chapter, we will present qualitative data on the fiscal and monetary policy conducted after the housing bubble in order to assess our second research question: *Are the same recovery policies conducted today, on the way out of the housing bubble?* Fiscal- and monetary policies are separately going to be assessed and compared against the policies after the IT-bubble, which were discussed in the previous chapter.

6.1 Fiscal policies

We will start out by discussing the major happenings relevant to fiscal policy in our three regions. Again, the euro area is not focused on due to its diverse fiscal policy. This discussion is going to be followed up by a brief comparison to the period before the housing bubble, and some analysis of the key differences. All details on the Norwegian and American budgets are again gathered from the website of the Norwegian government¹¹¹ and the Federal Reserve Archival System for Economic Research (FRASER)¹¹² – if not other sources are stated.

Norway is experiencing slower growth in 2008, which is expected to continue fading. To cope with the ongoing problems, Norway increase its use of oil revenue and the spending reach the four percent line of “handlingsregelen”, after laying below for the last three years. In the later revision of the Norwegian budget the oil corrected structural deficit is increased from 92 billion NOK to 101.5 billion NOK.¹¹³ After the financial stress really hit the global markets a stimulus package is passed January 26th, 2009, with a proposal to increase spending with 16.75 billion NOK and cut taxes by 3.25 billion NOK.¹¹⁴ The Norwegian political opposition criticized the stimulus package for its lack of tax cuts.¹¹⁵ The stimulus package of 20 billion NOK contained environment, transportation, infrastructure, and housing as priorities.

¹¹¹ The Norwegian government

¹¹² Federal Reserve Bank of St. Louis (b)

¹¹³ Finansdepartementet (2009a)

¹¹⁴ Finansdepartementet (2009b)

¹¹⁵ Bakken, Krekling, Lilleås, & Nordbø (2009)

USA starts out with an optimistic view in early 2008, when planning the 2009 budget. Tax reliefs that were due to expire in 2010 are renewed; the budget is moderate; and the spending is aimed at a slower growth than the overall economy.

On February 17th, 2009, President Obama had just taken office, and signed the American Recovery and Reinvestment Act into law. It contained an estimated \$150 billion tax relief,¹¹⁶ entitlement programs, and federal contracts, grants and loans. This stimulus package is \$787 billion in total,¹¹⁷ and where increased to \$840 billion in the 2012 budget. The package is ongoing, different programs have different expiring dates.

The next two years, 2010 and 2011, the Norwegian economy experience low unemployment rate, spending above “handlingsregelen”, and no change in tax levels. In 2012 and 2013 the spending is brought below “handlingsregelen”, and the fiscal policy is more restrictive. Still, Norwegian legislatures face a complex picture. The export industry is weakened by the global stress.

The American budget continues a very expensive fiscal policy; gaining debt, investing in infrastructure, job creation, clean energy, health care, and more effective governance. The Affordable Care Act (better known as “ObamaCare”) was signed into law in 2010, but still faces resistance in the congress.¹¹⁸ President Obama is also making a somewhat opposite move than his predecessor Bush, by pushing for the elimination of the tax relief for people with an income above \$250 000 and offering a relief for people with an income below.

With several years of expansive fiscal policy, the Americans are facing huge deficits. The Budget Control Act (2011) is passed to reduce the spending they accumulated in the process of jumpstarting the economy. To help people struggling in the aftermath of the housing bubble, the Home Affordable Modification Program was launched. It was followed by the “we can’t wait” campaign, which supports house refinancing and make responsible borrowers, who has little or on equity, able to take advantages of the low interest rates. By the 2013 budget the fiscal policy is more restrictive, or less expansive with regard to the continually deficit. The President is advocating for people to “pay their fair share”. Deficits

¹¹⁶ U.S. Department of the Treasury

¹¹⁷ Recovery Accountability and Transparency Board (2009)

¹¹⁸ FOX News (2013b)

are to be reduced by; cutting wasteful programs; tax hikes for top earners, by Bush, faced obsolescence, and; a tax cut for people earning less.

In the euro area they have taken extraordinary actions after 2008 – in which most, on the continental level, were monetary. However, the finance ministers from across the euro area have just come to an agreement on a banking union. Details on bailout practice are still not agreed upon.¹¹⁹

Comparison and analysis

Looking at figure 5.1 *Surplus and deficit*, one can easily spot the similar fall in the direction of deficit – after the IT-bubble and the housing bubble – for all our regions. The latter case was definitely of a greater magnitude. For Norway this mainly meant increased use of oil revenue. In USA they even had the “we can’t wait” campaign, which was dangerously similar to subprime. We will now do some brief assessments of some selected differences.

To the degree government projects fail, we consider them to be inert in the manner presented in subchapter 3.3 on deficit finance. Even government projects that make a profit we find reasons to question, due to the opportunity costs and the dis Coordinating forces of government interference.¹²⁰ There are also projects we argue are inherently inert, like the Norwegian stimulus spending on environment projects and the American “ObamaCare”. Norwegian projects on climate can only reach symbolic achievements, and “ObamaCare” cannot contribute any resources; it distorts market signals.¹²¹ The inert government projects spending puts an upward pressure on the interest rate, which make a positive shift in the demand in market for loanable funds, allowing the central bank to print more money on its given target. The PPF, which now has the public sector included, turns more investment-intensive – decreasing the later stages of production. The inert projects also shrink the earlier stages, making the whole Hayekian triangle smaller. Spending on project which has no economic value will shrink the economy. What we will take with us from this discussion is only that to the extent the stimulus projects is inert they will shrink the economy, not grow it. There are also unseen opportunity costs that contribute negative consequences. We still regard this as a marginal issue compared to monetary policy.

¹¹⁹ O'Donnelly & Santa (2013)

¹²⁰ Catalan (2011)

¹²¹ Vidal (2009)

The regions stimulus packages are also being spent on infrastructure, which draw a different picture. The major difference in this application, from the one of inert projects, is that the Hayekian triangle expands on the earlier stages. The hypotenuse of the triangle rotates in the opposite direction compared to the interest rate which is pressed up. This is characteristic of countercyclical spending. Garrison assumes in this model that the government allocates the resources like the market would by itself. We don't consider this a good move. It's in essence the same as initiating a pyramid project when there is a famine. It is also a malinvestment, because it is financed by savings that doesn't exist, waiting for a new crunch. To the degree these policies are conducted, we regard them as contributions to new problems. Although we also consider these points marginal compared to monetary policy.

6.2 Monetary policies

This sub-chapter will follow the same structure as the previous one. First, we will present some aspects of the monetary policies conducted after the housing bubble, by each of the three central banks. This will be followed by a brief comparison and analysis. The sources of this subchapter are mainly from the three central banks' monetary reports,¹²² if not otherwise is stated.

Federal Reserve

The Fed launched three groups of programs, each with their respective recipient. We will only mention the programs that most strongly contributed to the growth of Fed's balance sheet. The programs were focused on the following:¹²³

1. Provision of liquidity to banks and dealers
2. Provision of liquidity to other market participants
3. Direct purchases of assets

The first program had the strongest contribution to the growth of the balance sheet. This liquidity provision was conducted through the Term Auction Facility (TAF) (expanded by \$450 billion), and the liquidity swaps made with foreign central banks (expanded by \$375 billion). The Fed also lent out \$115 billion in securities through the Term Securities Lending Facility (TLF).

¹²² Board of Governors of the Federal Reserve System (2013a); European Central Bank (2013), and; Norges Bank (2013)

¹²³ Board of Governors of the Federal Reserve System (2009)

The TAF provided term funds to depository institutions against various collaterals which were used to secure loans at the discount window. This increased institutions access to funding, which helped them meet customers' credit needs. The Fed also provided dollars to other central banks through swaps, as the need for such was increasing dramatically after the crisis hit. The Term Securities Lending Facility was also set up in order to better credit conditions for primary dealers, and improving general conditions in the financial markets. Through the TSLF, the "Federal Reserve lends up to \$200 billion of Treasury securities to primary dealers for a term of 28 days [rather than overnight, as in the regular securities lending program]." ¹²⁴

The second group of programs was directed primarily towards other market participants. Here, the Commercial Paper Funding Facility (CPFF) program was the strongest contributor to the growth of the balance sheet. Through the CPFF, a "special purpose vehicle" was created that provided Federal Reserve credit by "purchas[ing] commercial paper of eligible issuers." ¹²⁵ The CPFF is responsible for some of the measures that have commonly become known as *quantitative easing* (QE). From 2008 to 2009, the purchases made by the CPFF increased the Fed balance sheet by close to \$250 billion. Between March and October 2009, \$300 billion of longer-term securities were purchased. ¹²⁶

The Fed announced in November 2010 the first round of QEs by stating that they "intended to purchase an additional \$600 billion of longer-term Treasury securities by the end of the second quarter of 2011". ¹²⁷ In the fall of 2011 the Fed introduced the second round of QEs by stating the intention to purchase \$400 billion of Treasury securities with remaining maturities of six years to 30 years, to push down long term interest rates. ¹²⁸ The Fed would also sell an equal amount of Treasury securities with remaining maturities of three years or less. The fed started this program of QEs with purchasing bonds for \$30 billion a month in 2010, followed by an increase to \$45- and \$85 billion in 2012.

The final group consists of the purchases of short-term debt obligations issued by Fannie Mae, Freddie Mac, and the Federal Home Loan Banks. In order to: "reduce the cost and increase the availability of residential mortgage credit," ¹²⁹ the Fed implemented a program

¹²⁴ Board of Governors of the Federal Reserve System (2009, p. 48)

¹²⁵ Ibid. (p. 49)

¹²⁶ Amadeo (2013)

¹²⁷ Board of Governors of the Federal Reserve System (2011, p. 37)

¹²⁸ Board of Governors of the Federal Reserve System (2012, p. 41)

¹²⁹ Board of Governors of the Federal Reserve System (2009, p. 50)

that would purchase, "up to \$100 billion in direct obligations of housing related government sponsored enterprises (GSEs) and up to \$500 billion in MBS backed by Fannie Mae, Freddie Mac, the Federal Home Loan Banks, and Ginnie Mae."¹³⁰

European Central Bank

The ECB chose in 2009 to implement "enhanced credit support", that was somewhat similar to the ones implemented by the Fed. The ECB chose to implement five measures, which primarily focused on helping banks gain access to funds through providing "unlimited liquidity at a fixed rate in all refinancing operations against adequate collateral."¹³¹ The ECB did also initiate two programs for purchasing covered bonds (one going from 2009-2010, and one from 2011-2012). Under the first program, purchases were made to the nominal value of €60 billion, and €16.4 billion under the second one.¹³² The ECB also provided US dollars to the market through swap agreements with the Fed.

Norges Bank

Even though Norway focused on fiscal stimulus, NB also chose to implement monetary measures. As the Fed and the ECB, NB provided liquidity to banks in need. This was done by giving banks access to liquidity in an otherwise illiquid market, and they provide fix term loans with longer time to maturity.¹³³ NB also provided the Norwegian economy with US dollars in the same way as the ECB.

Comparison and analysis

After the IT-bubble, central banks opted for traditional tools, i.e. low target interest rates, in their attempt to stimulate the economy. Figure 6.1 illustrates how similar the reactions to the housing bubble were to the previous, with a comparison of the two periods, containing monthly interest rates.¹³⁴ Today's difference is magnitude, with regards to the time and intensity of the expansive policy.

¹³⁰ Ibid.

¹³¹ European Central Bank (2010, p. 17)

¹³² European Central Bank (2012)

¹³³ Norges Bank (2008a & 2011)

¹³⁴ Federal Reserve Bank of St. Louis (c); European Central Bank (c), and; Norges Bank (a)

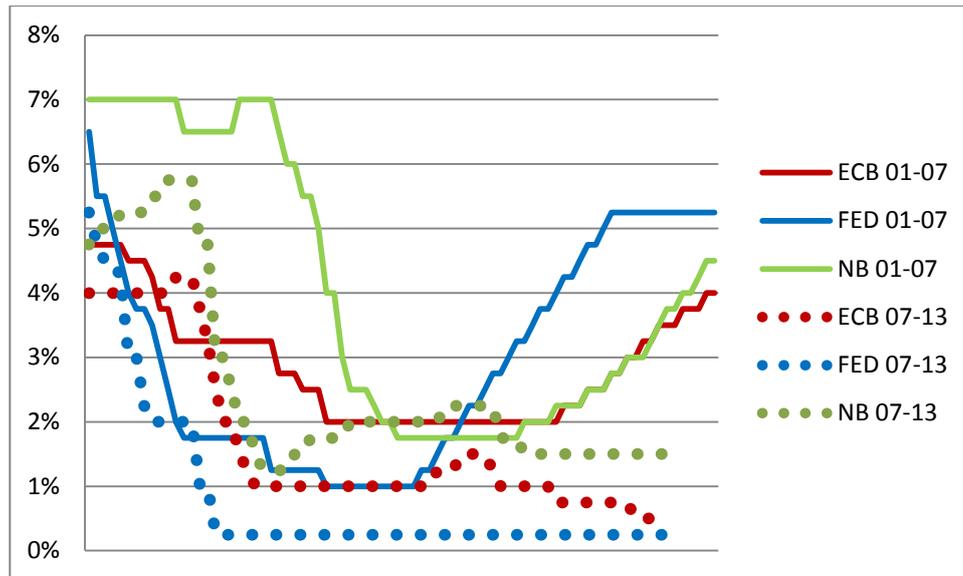


Figure 6.1 Target interest rates comparison

Several trillion dollars have entered the market since 2007. Comparing the effects of stimulus packages to the one of a low interest rate policy is somewhat beyond the scope of this paper. However, it should be noted that the intended effects of QEs is the same as the one with lowering interest rates, namely stimulate expansion through easing the access to credit. As we saw of the analysis in chapter 5.2.2 *The Minskian perspective*, the easy access to credit was an influential factor in the creation of the housing bubble. If such an event was brought on with the aid of low target rates, one can speculate in what the additional trillions of dollars of stimulus might lead to. The ECB and NB, to variously degrees, chose to implement the same measures as the Fed, and the conclusions naturally go for these regions as well: the same type of expansive monetary policy are being conducted today with the significantly added strength of stimulus packages.

7. From IT-bubble, to housing bubble, to...?

In this chapter we will assess our third research question: *Are we heading for a new wave of financial crises? What kind and how?* We will do this by first looking at potential bubbles in our three regions. The latest news that we find relevant will be integrated in the theoretical and empirical assessment, to make this discussion as forward looking as our resources allows it to be. To answer the “*how?*” we will propose two possible scenarios of courses of events. The Austrian school of economics will be the primary perspective of this chapter. We have made this decision because we find – from experience in working with the previous chapters – this school of thought to have strong qualities in understanding the underlying factors in the business cycle. This chapter concludes our assessment, and will be followed by our conclusions.

7.1 Potential bubbles

We will discuss the likelihood for bubbles or crises in the stock markets, the public surplus/deficit situations, potential malinvestments, and potential new housing bubbles. The segment is going to be structured around each region.

7.1.1 USA

To assess the American stock market we have taken HP-filter on the two major stock exchanges; S&P 500 in figure 7.1 and Dow Jones.¹³⁵ Both are monthly index data from 01.1980 to 10.2013 from Federal Reserve Bank of St. Louis, and are presented with a HP-trend.

¹³⁵ Appendix: Dow Jones Industrial Average

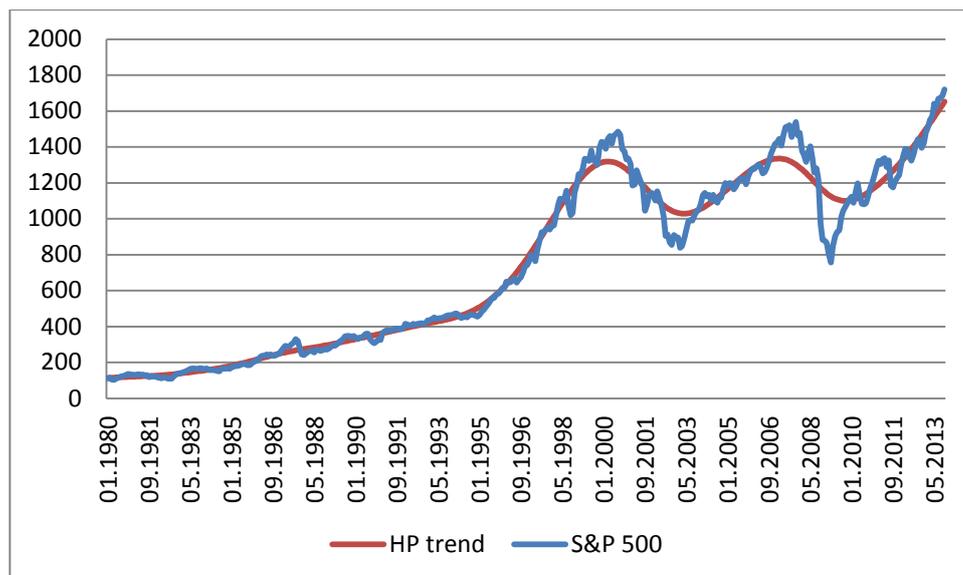


Figure 7.1 S&P 500

The peaks of the IT-bubble and the housing bubble are both in the shadow of today's all-time highs. However, this picture does not necessarily indicate a bubble by itself, but offer strong arguments in that direction considering the severe monetary expansions the last five years. There is reason to believe a major portion of the later growth could be malinvestment. We think there is a potential bubble in both American stock exchanges – a possible equity bubble. Janet Yellen on the other hand, who is to take over for Bernanke in February 2014,¹³⁶ shows no concern for bubbles. She claims that, although the stock market has grown significantly, today's conditions don't indicate bubbles when looking at measures as price-earnings ratio.¹³⁷ We regard this as a weak and irrelevant argument. Looking at P/E ratio for S&P 500,¹³⁸ we find our last value to be 17.66 in 04.2013. Consider the value was 17.7 in 04.2007 just before the bust; Yellen's argument is not valid. There were also high earnings in both observations, which make them even more similar. It is hard to know to what extent and in what balance price and earnings are inflated by monetary expansion as well, and it only represent information known in the present – the forecasting power is limited.

The American deficit, as we saw in figure 5.1, has been there ever since 2000. It peaked on 11.43 percent of GDP in 2009 and is still at 6.4 percent in 2013. It is also estimated to be around five percent in 2014 and 2015. Recent news also confirms this. The budget of 2014 is still not passed, and it does not look like the new budget will bring any shifts in direction;

¹³⁶ Irwin (2013)

¹³⁷ Zumbrun & Kearns (2013)

¹³⁸ Appendix: S&P 500 P/E ratio

USA will keep accumulating debt.¹³⁹ With an own central bank, and thereby an own printing press, it's unlikely that USA is heading for any default. What is more plausible is a downgrade on the American bonds, which could make their lending more expensive with higher interest rate on long-term bonds. USA has some benefits that other currency-unions don't enjoy. As the world trade oil in dollars, they are in the position to print more money without experiencing all the consequences of increase in their general price levels at home. There has been some news indicating that this could change, with China's decreased interest in dollar reserves.¹⁴⁰ We think that although USA will continue to accumulate debt for some time, they have no catastrophic near future due to the state of global financial institutions.

Does USA have malinvestment? The assessment of the stock exchanges above says plausible, so do the later low interest rates and their production gap – which have been up to one percent the last two years as we saw in figure 5.5 *Production gap*. It is generally very hard to point at a potential case of malinvestment in the present. They are often unseen phenomenons until they burst. We regard the interest rate as the best hint. If the rate is manipulated below the market, investors *will* lend and invest in projects they otherwise couldn't afford. Today's interest rates are clearly manipulated below the natural rate, in the name of countercyclical policy. The complexity of the economy makes it hard to find empirical evidence of malinvestments. However, we argue deductively that as long as the interest rate is manipulated, there will be malinvestments. The low rates are in essence a subsidy of money. Which, like all other commodities, encourage higher “consume”. We do find plausibility of malinvestment in USA.

With regard to housing, we don't see any potential bobble in the case of USA. If there is malinvestments, they seem to be of no isolated threat to the near future – the activity has been low since the crash.¹⁴¹

To make a brief summary on USA, we see potential bubbles in the stock market despite Yellen's argument. The deficit will continue for some time, but function more as brakes than as any nearby threat. We see deductively potential for general malinvestments, but no major ones in the housing market.

¹³⁹ Fox News (2013a)

¹⁴⁰ Bloomberg News (2013)

¹⁴¹ Appendix: Housing starts – USA (A)

7.1.2 Euro area

We find no sign of major bubbles in the *FTSE Eurotop 100 Europe stock index*.¹⁴² This is of course by looking at the surface. With regard to the historically low interest rates and monetary expansions, there is possibility that even today's moderate levels could be unsustainable.

The euro area has, like USA, been in deficit for a long time, as of figure 5.1 *Surplus and deficit*. They hit a peak in 2009 on 6.35 percent of GDP, and are forecasted to lay around 2.5 percent in 2014 and 2015. Of course, the euro area is a diverse region – including countries like Germany and Greece. However, we argue that the nature of their union constitutes more financial problems than that of USA. The euro area carries a bureaucracy on a whole other level than America. The Telegraph¹⁴³ measured the time several countries' use to carry out business in a general selection of fields.¹⁴⁴ USA got an average of 100 days, against Italy with 420 days. Germany was the best among the countries in the euro area, with an average on 128.75 days.¹⁴⁵ The nature of their currency-union brings trouble, but some weaker countries may find protection in it.

In assessing the euro area's potential malinvestments, we refer to the same arguments made in the case of USA. We think the low interest rates do distort market signals and contribute to unsustainable undertakings of projects.

The housing market in the euro area is similar to the American. But in Europe the trend has still a negative slope.¹⁴⁶ We find no reason to fear any housing bubbles in this region. The values are at the lowest of our time series, which starts in 1980.

To sum up on the euro area, we find some potential for bubbles, but not in any empirically explicit state. The housing and stock market does not seem to carry too much malinvestments. They have a deficit that is smaller than the case of USA, but we still think the euro area will have more problems with theirs. Their inability to do efficient business

¹⁴² Appendix: FTSE Eurotop 100 Europe

¹⁴³ Quilty-Harper (2011)

¹⁴⁴ I.e.: construction permits, commercial electricity connected, commercial contracts, and export goods.

¹⁴⁵ Zero Hedge (2011)

¹⁴⁶ Appendix: Housing starts – euro area

could be an explanation for why they haven't produced any bubbles, considering malinvestments actually takes work to create.¹⁴⁷

7.1.3 Norway

Norway is a special case, with its richness on natural resources. We regard the current general growth in Norway as more sustainable, due to more sound resource exportation. The unusual strong financial position of the government sets other premises for the practice of lender of last resort. The other regions hit huge deficits in 2009, bailing out their industries. The Norwegian government practiced the same policies but, as we saw in figure 5.1 *Surplus and deficit*, did not face any serious damage. We consider this a short-term blessing, but a long-term curse. The public sector doesn't play by the market rules; it does not adhere to price signals. We argue that the richer a government is the further away from the rules of the market it tend to get. This lay the foundation for the commonly known Dutch disease.

The Norwegian stock market has climbed above the heights of 2007 and 2008, illustrated in figure 7.2. Our data are monthly the last 15 years from Statistics Norway through Datastream. NBER US recessions are highlighted in grey,¹⁴⁸ and the nominal sight deposit rate is included in the lower part of the figure. Although we see arguments for a more sustainable growth here than in other regions, the low interest rates with its corollary monetary expansions of the latest growth period still indicate malinvestment. The empirical argument of high stock prices is not strong if there is reasons to believe there is underlying fundamental values to back up the growth. However, from a deductive perspective, we think much of the growth is attributed to manipulated interest rates. We don't see how the Norwegian stock market would perform the same with higher rates.

¹⁴⁷ This statement needs some elaboration: The euro area conduct policies we argue create bubbles. The lack of explicit bubbles in our data and their slow business might therefore have a relationship.

¹⁴⁸ Norwegian recessions were not available in Datastream.



Figure 7.2 Oslo Stock Exchange with nominal sight deposit rate

With only national factors taken into account, the stock market could experience major corrections if or when the sight deposit rate approach six percent again. Due to the robustness of the Norwegian economy alone, we think that in order for a crisis to occur, there needs to be major internal shocks or disturbances from abroad.

With regards to possible deficits, we don't see it as a problem for Norway in the near future (as of figure 5.1). It might be more relevant in later discussions, as consequences of the Dutch disease develop. For the time scope of this thesis, it is not relevant.

Just as the above discussion on Norway, the complexity and disturbance of a rich economy makes it hard to identify malinvestments. Figure 5.5 *Production gap* indicates a positive production gap for Norway. It could be a signal of overproduction. The strong general economic outlook says *no*, the low interest rate says *yes*. We consider the problem of malinvestments to be there in kind, but to a minor degree – excluding the housing market.

Looking at the constructions of new buildings in Norway,¹⁴⁹ it is hard to say if it's a bubble, an answer to a growing population and richer households, or a recovery from periods of financial stress. In recent news we learned that the construction numbers had fallen with 39 percent.¹⁵⁰ It doesn't determine anything – the numbers are volatile of nature. However, it's interesting in the light of our analyses of chapter 5.2.1 where we found housing construction

¹⁴⁹ Appendix: Housing starts – Norway

¹⁵⁰ Utheim (2013)

to peak before all the other data we looked at. With the Norwegian target rate unchanged, this suggests the possibility of a real resource crunch. The next figure draws a somewhat different picture. Under, in figure 7.3, we see the extraordinary growth in stock of orders for all construction since the 90's. Not only are we above today's trend: When a bubble grows long enough the HP-trend line will adjust itself to it. We saw a freighting example of that in the case of USA.¹⁵¹ To illustrate how wrong the HP-filter could be, we made one of American housing starts where we only used data up until the peak in 2006.¹⁵² Here, the lambda of 10 million where more correct – contrary the statement of Bjørnland et al. (2004) (that greater lambda gives greater problems). As we see it, they are correct for as long as actual values equal fundamental values. With a bubble, the HP-filter is more correct on higher lambda values. We have therefore included a trend line of a higher lambda in figure 7.3. The data are quarterly from 01.1976 to 07.2013, from Statistics Norway through Macrobond.

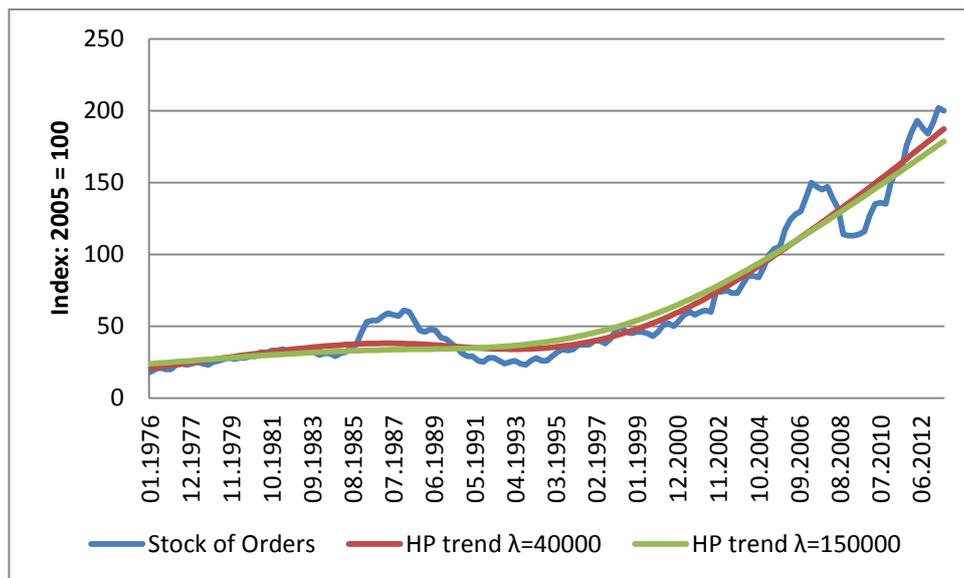


Figure 7.3 Stock of orders, Housing – Norway

To the degree it is applicable, the green line could indicate a potential for a housing crash greater than that of 2008. Considering the nature of the HP-analysis, the bust of 2008 made the trend line flatter. A new crash would do the same. This means that future analyses of these data might find our present levels to be a major bubble. Each steep period of growth,

¹⁵¹ Appendix: Housing starts – USA (A)

¹⁵² Appendix: Housing starts – USA (B)

approximately from 2002 to 2007 and 2009 until today, are characterized with historically low interest rates. This joins our arguments for malinvestment.

To add some weight to this argument for a Norwegian housing bubble we include an analysis of real estate prices from the same source as above. This time we use a lambda value of 80 000 on quarterly data from 01.1992 to 07.2013 in figure 7.4.

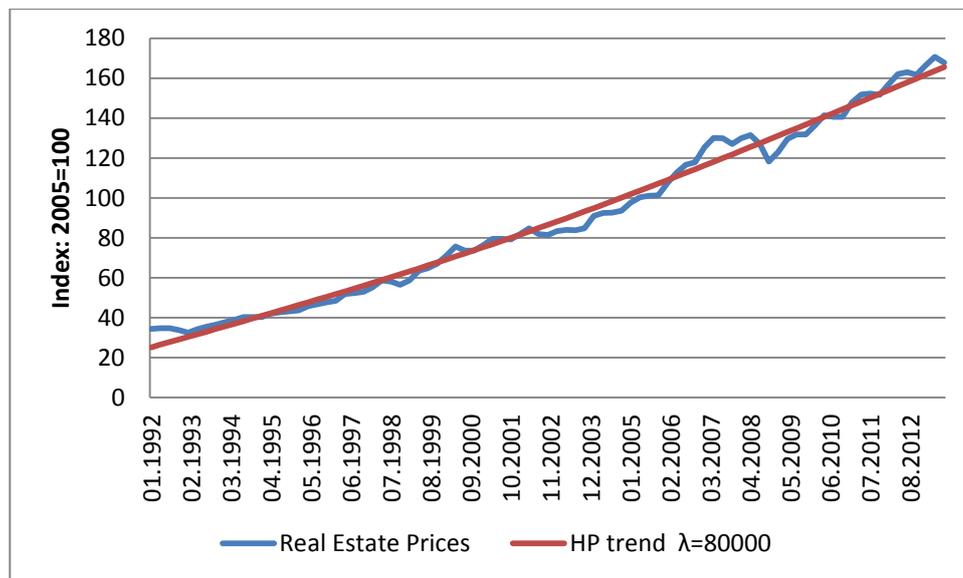


Figure 7.4 Real estate prices – Norway

The analysis of real estate prices tells much of the same story. Also here we could imagine how a bust would flatten the trend line in future analyses. Of the potential bubbles we have examined, we regard this as a clear case. That does not necessarily mean it has to burst. If the regulations are kept tight, the fundamental values might catch up with the price development. This is yet an example of how monetary policy makes an artificial need for regulations. The fact that the Austrian business cycle theory has been shown fit to explain Norwegian business cycles earlier strengthens our argument.¹⁵³

From other recent news¹⁵⁴ we learn that the housing prices are flattening and that households' credit is still rising. There is a limit to how much people can afford pay for housing; we therefore expect a slower market until the (possible) bust. To sum this discussion up, we find potential for bubbles in both the stock- and housing market.

¹⁵³ Bjerkenes, Kiil, & Anker-Nilssen (2010)

¹⁵⁴ Norges Bank (2012b)

7.2 Scenarios

On the basis of our above discussions, we will now look at two scenarios that we regard as likely – to answer the “*how?*” in the third research question. Negative estimates of the future, in times that are considered good, are often not taken seriously – especially by advocates of the conducted policies. We argue that the mainstream blame of the crises is put in the wrong place, and we challenge the system itself. Prices are market signals, blaming the failing bank is therefore equal to shooting the messenger. It is the system that sends the message.

A precondition for building scenarios is the initial point. It is hard to state if we are in a situation equal to 2003 or 2006. The market could have been in the situation of 2003 for years now, building up the potential for the bubble of all times. In many cases, we think this is true, that the regions still are in early stages of malinvestments. At the same time, this allows for action to be taken. The question of destiny is therefore concluding this subchapter. First, we will discuss the possible scenarios of credit crunch and real resource crunch. We want to stress that the following is possible scenarios, and not factual claims. We think they are likely in kind, but that the degrees are extremely hard to measure. To make our understanding of causal relationships clear, we want our predictions to be explicit – which mean that this subchapter will consist of much of our own reflections.

7.2.1 Credit crunch

A credit crunch is what we regard as the most likely outcome of today’s situation. This is because it is only a matter of time before all the new money hits the general price levels. When or before it does, the central banks are going to increase its interest rates in order to avoid runaway inflation. This action will crunch the malinvestments which accumulated in the times of low rates. A credit crunch is worst for smaller businesses, as the bigger ones often have the opportunity to get funded by their own long bonds. For this reason, among others, we regard monetary policy as anti-social and unfair.

We will now examine the possibility of a credit crunch in each region. In figure 7.5 we have gathered data on CPI for all regions; from 01.2000, to 09.2013 for USA, and to 10.2013 for the euro area and Norway. All are monthly year-to-year change, except Norway, where we

only could obtain annual data. All are gathered through Macrobond, but source back to different places.¹⁵⁵

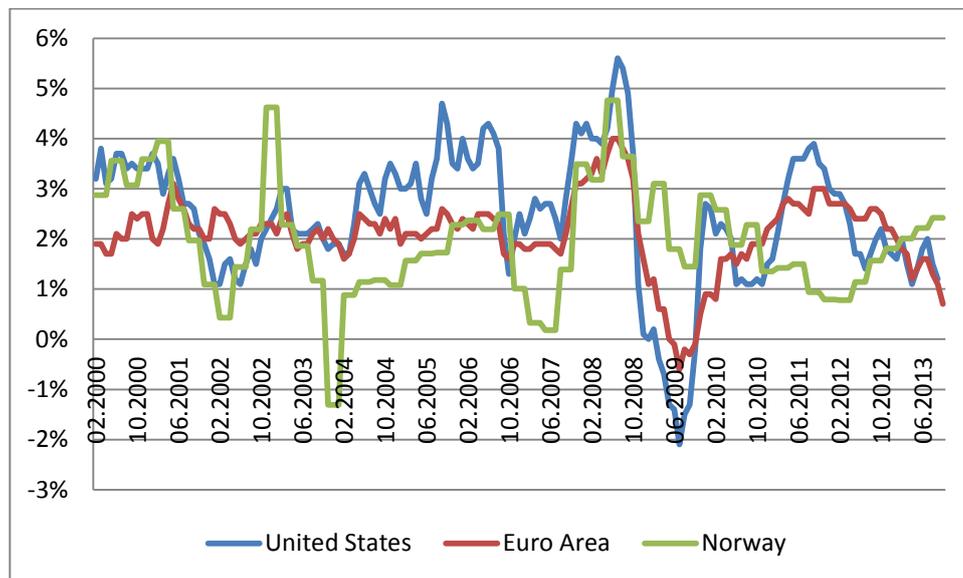


Figure 7.5 Consumer Price Index

Above we see that the CPI of USA is at moderate levels. The last observation was on 1.2 percent in 09.2013. We have to take these numbers with caution. CPI only measures the last stage of the Hayekian triangle – i.e. consumer good prices. It is the last place in the economy where the new money takes effect. As we see it, the strongest virtue of CPI is to predict the central banks' action, because they put much weight on these aggregates.

We will now focus of the case of USA. Below, in figure 7.6, we have a comparison on monetary base, M1, and M2. All seasonal adjusted from 01.2000 to 10.2013. All of these are gathered from Federal Reserve Bank of St. Louis.

¹⁵⁵ Data for USA are from U.S. Bureau of Labor Statistics, for the euro area are from Eurostat, and for Norway are from OECD Economic Outlook.

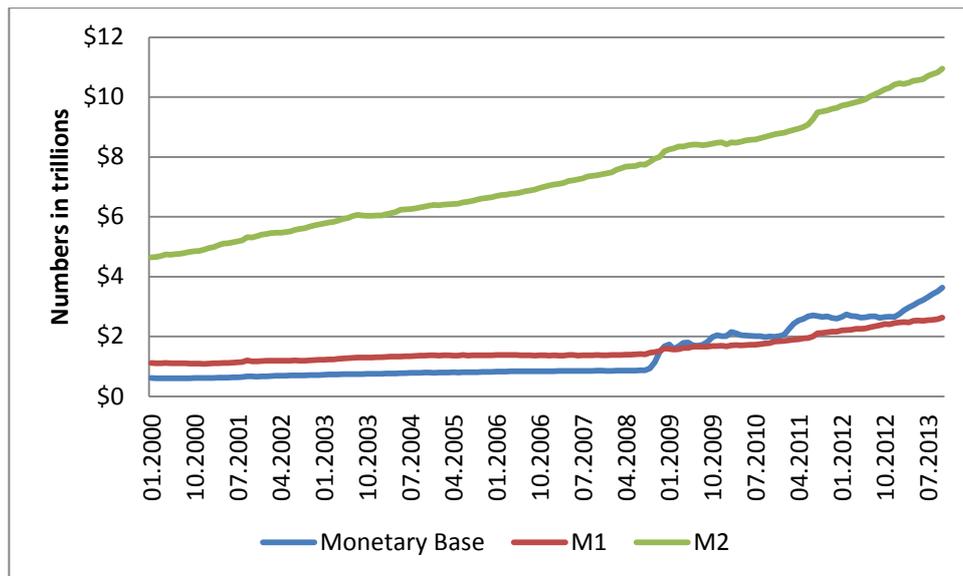


Figure 7.6 Money supply – USA

What is interesting in the above chart is the monetary base crossing M1 in late 2008. We view this as a ticking bomb. As Keister and McAndrews points out,¹⁵⁶ increased reserves measured by monetary base does not say anything about to what degree the banks are lending the new money out. It will still end up on the banks deposits in the Federal Reserve. We have however seen some credit expansion, but not in any way that reflects this huge increase in reserves. It is therefore clear that there are much excessive reserves in the banks. The much debated question is: Why are the banks not lending it out? Keister and McAndrews offers two reasons.¹⁵⁷ First, there have been interest rates on banks deposits in Federal Reserve since 2008, which gives them incentives to keep it deposited. Second, due to higher risk premiums in the interbank market after the housing bubble the banks face a low opportunity cost when the money is deposited in the Federal Reserve. This could all change as soon as market conditions get better. To avoid hyperinflation the Federal Reserve has to exit the expansive policy. In Bernanke's testimony of February 2010¹⁵⁸ he presents an exit strategy that we sum up in seven points:¹⁵⁹

1. Liquidity facilities are designed to be reduced when the financial conditions improves
2. Normalize the discount window between loans and deposits
3. Let bonds mature without buying new ones

¹⁵⁶ Keister & McAndrews (2009)

¹⁵⁷ Ibid.

¹⁵⁸ Bernanke (2010)

¹⁵⁹ Our seven points are inspired by Keister & McAndrews (2009)

4. Increased interest rates on reserves
5. Offer term deposits, which is not counted on as reserves
6. Reverse repo transactions
7. Reverse open market purchase (i.e. selling bonds)

We choose to disregard point one, two, and three because they are passive, and point five and six because they only are temporary solutions. The focus is therefore on four and seven because they bring “real permanent” change. The Fed first said they were determined to continue an expansive monetary policy for as long as the unemployment rate is above 6.5 percent and inflation stays under 2.5 percent.¹⁶⁰ The unemployment rate is reported down to seven percent on December 6th 2013.¹⁶¹ Despite unemployment and inflation not crossing the lines, they just come out announcing the drawdown of QE.¹⁶² This surprises us, but we think it is too late, as figure 7.7 illustrates, and that this is the first step in the direction of a credit crunch. The exit will ultimately drive up the short interest rates, causing the short rates to invert against the longer rates in the yield curve.¹⁶³

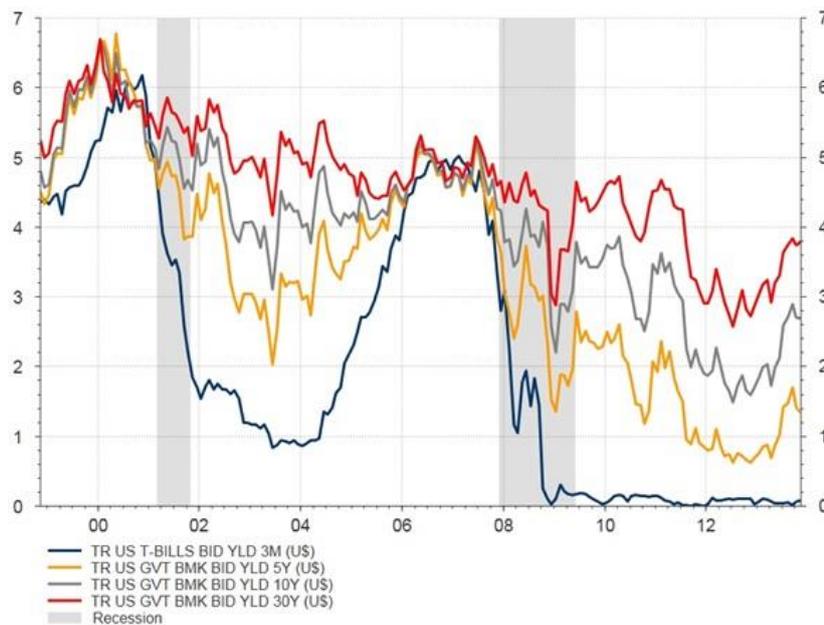


Figure 7.7 Yield curves – USA

¹⁶⁰ Zumbrun & Kearns (2013)

¹⁶¹ Groshen (2013)

¹⁶² Adams (2013)

¹⁶³ Eeg (2007) found that the Norwegian key deposit rate had the most influence on the rates up to one year to maturity on the yield curve. On the longer rates, the central bank's communication was more influential. Higher short rates constitute lower expectations of future inflation, which is a strong signal that keeps the long rates from rising. We regard these as applicable for USA, and a good explanation for the relationship between the short and the longer rates in figure 7.7 and 7.8

Figure 7.7 above depict daily rates the last 15 years with NBER recessions highlighted in grey, and it is taken from Datastream and Thomson Reuters. We see how the yield curve inverts in good time before the housing bubble, making the credit crunch. Now in the following years up until today, we have the same situation, but much more dramatic in terms of distance between the short and the longer rates. We think (with the slowdown of QE) an accompanied increased interest rate will offset a credit crunch – liquidating the potential malinvestments we found in the stock market. It will have consequences on the public sectors finances, as it gets higher interest rates on its obligations. The government may also be tempted to conduct yet another round of bailouts, moving the problems from one place to another. The housing market will experience corrections, but maybe not as dramatic as of 2008.

The euro area has not produced much that could indicate bubbles, as seen with HP-filters earlier. We think their deficits and the nature of their policies is going to make problems for them also in the future. Below, in the upper half of figure 7.8, we see the euro area's short-term rate against the ten year bond. The data is daily and monthly for the last 15 years. The source is Datastream and ECB, and NBER euro area recessions are highlighted in grey. Also here an inversion occurred before the 08-crisis. What is *especially interesting* with the euro area is the recession they had in 2012. It was preceded by a policy induced increase in the short-term rates. Even at these low levels, it appears as a credit crunch. This could be a sign of a dramatic case of malinvestments, when only a small increase in the short-term rates offset a recession lasting longer than the previous. Most of the problems are probably also postponed from 2008. The low interest rates that have followed, from then until today, does not make the situation any better. We think the euro area is in the onset of a serious case of credit crunch. From figure 7.5 *Consumer Price Index*, we saw that the inflation has not caught them yet. This could be a bad sign, as it provides the European Central Bank with a reason to keep the expansive policy going – and thereby making the existing problems bigger before facing it. In the lower half of figure 7.8 we have the daily three month T-bill for Norway against the monthly ten year bond – from Statistics Norway and Datastream, with US recessions highlighted in grey. We see a later, but steeper, inversion before the housing bubble. All of our regions have a special characteristic of their yield curve.

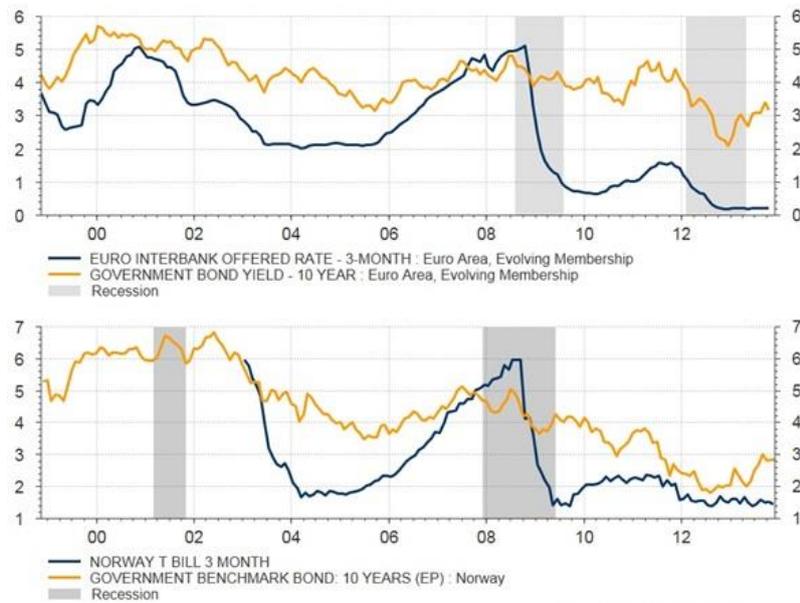


Figure 7.8 Yield curves – Euro area and Norway

Norway is characterized by the small gap between the three month T-bill and the ten year old bond – which constitutes a more leveled curve. At the same time, of the three regions, Norway has the highest inflation (figure 7.5). Our last observation on 10.2013 of 2.42 percent is approaching the objective which is supposed to be 2.5 percent over time.¹⁶⁴

As indicated, we don't think Norway has the strongest general potential for a credit crunch. However, there are two weak links. The stock market could easily experience corrections from an increase in interest rates. We see that as very likely. The housing market could face huge consequences by a credit crunch. From figure 5.4 *Credit gap – Households* we see that Norway also has a credit gap, and that is from a trend that is not diminishing like in the case of the two other regions. The combination of high housing prices and households' high credit, in a time with already low interest rates, is alarming. Because of all the prosperity Norwegians generally are faced with, they fail to identify their own bubble. The signs of a bubble are instead attributed to other aspects of their prosperity.¹⁶⁵

7.2.2 Real resource crunch

Due to the similarities of credit- and real resource crunch, we are going to make this part on the latter very brief. We are only going to discuss what separates them, i.e. the market bid up the rate before the central bank takes action. If inflation doesn't happen, the central banks are

¹⁶⁴ Norges Bank (b)

¹⁶⁵ Thomton (2013)

going to be tempted to keep going at present terms. We don't think they have the will to exit fully if not threatened by inflation. For this reason we think less inflation means that a real resource crunch is more likely. The oil prices below in figure 7.9¹⁶⁶ provide an example on how prices could be bid up by the market on the onset of a crisis. Big projects were started on low interest rates before 2008, bigger than the existing resources could allow. When the market faced this lack, the resources were bid up – as the peak of 2008 illustrates in figure 7.9.

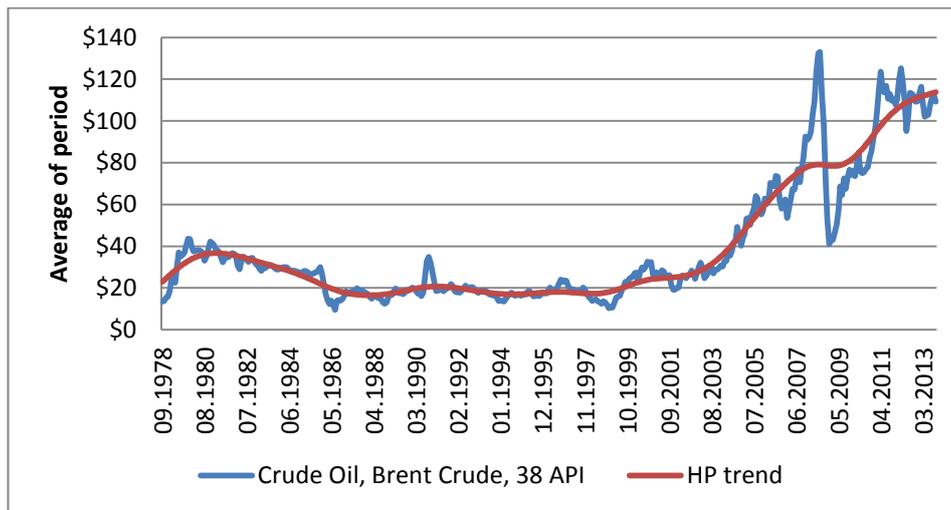


Figure 7.9 Oil prices

As Hayek pointed out,¹⁶⁷ the rate of increase in the money supply has to continuously increase in order to maintain the level of malinvestment. If the central banks don't increase this rate of money supply, projects will eventually run dry and cause the real resource crunch. Prices on means of production will rise. There is reason to believe the general price level will follow this development – which could trigger a policy induced interest rate increase too. Either way, the bidding on resources will raise the short term rates, and eventually invert the yield curves.

Here we face disagreement with conventional Keynes-inspired economics. The drought is a need for liquidity which, if given without representation, only will postpone and enlarge the problems. If we had free banking tomorrow, we would probably experience a real resource crunch as the liquidity injections stopped and the market corrected itself. We wouldn't like a crunch, but we like the logic of it.

¹⁶⁶ Data monthly from 07.1978 to 10.2013, gathered from Hamburg Institute of International Economics.

¹⁶⁷ Hayek 1969

The low inflation, 0.7 percent, could keep the ECB from increasing the rates, given continued trends, and thus make time for a real resource crunch to develop. However, this is too unpredictable to draw conclusions from. As mentioned earlier, Norway might experience a real resource crunch if the situation in the housing market develops further.

7.2.3 Destiny?

We think a credit- or real resource crunch is the most likely outcome of today's situation. But, it is not a deterministic statement. As long as there is free will, there is possibility for change. We are on a dangerous path, but it is not our destiny. We have some thoughts on how our scenarios could be avoided.

The interest rates needs to increase, slowly. This is to avoid further malinvestments. At the same time saving needs to be encouraged. Since the initial problem of money injections is fake signals of accessible saving, the only solution would be increased real saving. All tax on wealth should be abolished. The general tax system should be converted towards consumption, in order to encourage more productive priorities. This is however a difficult task. The habit of saving is in many aspects a cultural phenomenon, and evolves over generations.

The same attitude needs to be adopted by the government as well. It should focus on its core function, protecting individual rights, which is the only thing a government can do that actually contributes to prosperity; it extracts force from society, allowing the market to function.¹⁶⁸ The euro should also consider the need for its own existence. 17 nations with different cultures, needs, and demands are in our opinion too many for one bank to manage. The practice of bailout distorts incentives and should be abolished, together with the policies that put the banks in trouble in the first place. The ongoing development of a European banking union could result in increased bailout practice and perverted incentives.

~

To sum up the chapter, we have the possibility of a credit- or real resource crunch, with runaway inflation as an alternative if the path continues. If the trend shifts, we also have the possibility of saving in what is lost in malinvestments, and thereby avoiding a crisis.

¹⁶⁸ Brook (2010)

8. Conclusions

In the perspectives of Minskian- and Austrian economics, we have conducted a comparative study of three regions; USA, the euro area, and Norway – from the “rescue” after the IT-bubble, to the present and near future. We asked three research questions, which we assessed in separate chapters. The former question paved the way for the latter. The following conclusions have been reached.

Did government intervention contribute to the housing bubble of 2008?

On this much debated question, we assessed fiscal- and monetary policies separately. In the fiscal evaluation we did a qualitative study of the three regions. We found Garrison’s theory on fiscal policy to fit USA, and too a less extent on the euro area. Norway was excluded from the theoretical assessment. Our main finding was a consequence of deficit finance: Higher consumption, in combination with policy induced lower interest rates, is over-consumption. This is because of the real demand the lowered rates create for savings that is not met due to said higher consumption. This finding was not expected, and calls for further investigation. Fiscal policy is seemingly more influential than we first anticipated.

In the monetary assessment we did a – mainly graphical – study of Garrison’s *boom and bust* theory, followed by a qualitative study of Grytten’s model of “Minskian stages” and multiple regression analyses of Minskian theories. We found the Austrian boom and bust theory to fit the course of events between central banks’ monetary injections and the housing bubble. The American yield curves were also inverted from July 2006 to June 2007. The five Minskian stages offered a straightforward additional explanation of the housing bubble. Our multiple regression analyses might suffer from the exclusion of lags, but it did show a relationship between decreasing target rates, and increasing household- and business credit, and that growing confidence and credit could explain residential construction activity. On housing prices, American household credit and Norwegian household confidence proved to be influential. This strengthens the explanatory power of the “Minskian stages”.

In the perspective of both our theoretical framework, we find explanations supporting a *yes* to our first question. Government intervention did contribute to the housing bubble. To what degree this is true calls for further – more specified – study. The second question emerge from the answer of the first.

Are the same recovery policies conducted today, on the way out of the housing bubble?

Also in this assessment we decided to discuss fiscal- and monetary policy separately. In both, we found – through qualitative analyses – similarities. The differences were greater magnitude of both policies in the post housing bubble period. On fiscal policies we found repeated deficit spending, with increased use of oil revenue in the case of Norway. We saw examples of similarities to subprime in the USA, and deficit stimulus spending on inert government projects and infrastructure. The negative consequences of *government* spending on infrastructure (with emphasis on government, i.e. not infrastructure as such) might be more severe than we first thought – although it was too complex an issue for this thesis to discuss deeper. On monetary policies we found a very similar pattern in target interest rates for all regions. Like fiscal policies, it has additional magnitude – in e.g. QEs. We find it safe to conclude: *yes*, the same polices are conducted today. This leads us to the title of our thesis.

Are we heading for a new wave of financial crisis? What kind and how?

We do find reasons to fear more financial stress in the near future. The kind and manner differ for our regions, and there *is* possibility of rescue with saving – in both the political and the cultural realm. For USA, we see potential for an equity bubble. Their deficit situation may continue functioning as a brake on the economy. We see – deductively – potential for general malinvestments, but non for a housing bubble. Since the exit strategy is initiated, a credit crunch is most likely.

For the euro area we do not empirically identify any bubbles. However, the way the region fell into a recession in 2012 after trying to increase the target rate, indicates a weak economy and general malinvestment. This could be crunched through credit or real resources depending on the patience of ECB.

In the Norwegian economy we find potential for an equity- and/or housing bubble. Recent news *could* indicate that a real resource crunch is emerging in housing construction. However, Norway has lots of resources to prey on, and might need a greater shock in the form of a credit crunch to bellyflop.

On the side, we find Minskian theories well fit to explain *what happened*, and Austrian theories well fit to explain *how it happens* – when assessing financial crises. The lesson most applicable to us personally, is to not enter the Norwegian housing market – yet.

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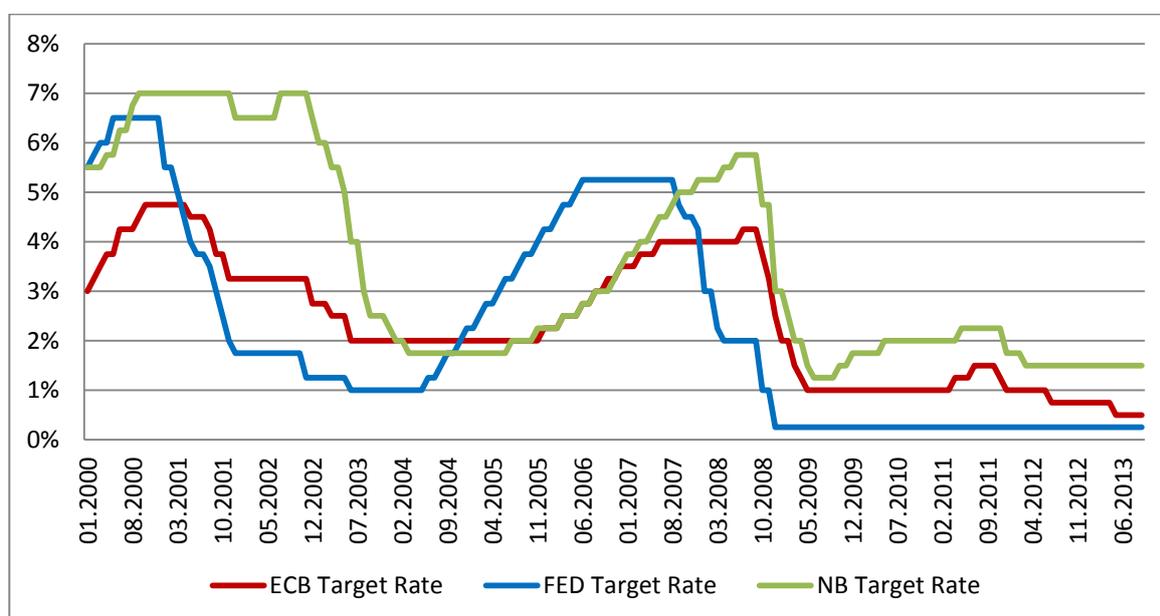
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Appendix

The data presented in the following graphs are all gathered from reputable sources using the Macrobond service. The source and the URL are presented as footnotes. If not otherwise stated, a lambda equaling 1 600 have been applied for quarterly data, and 14 400 for monthly data.

Target Interest Rates:

The target rates for the central banks measured quarterly for the US¹⁶⁹, and monthly for the rest. For the US, the Fed target rate is displayed; while for the ECB the rate on the Main Refinancing Operations¹⁷⁰ is shown. For Norway, the sight deposit rate is displayed.¹⁷¹



Housing Starts – USA (A)

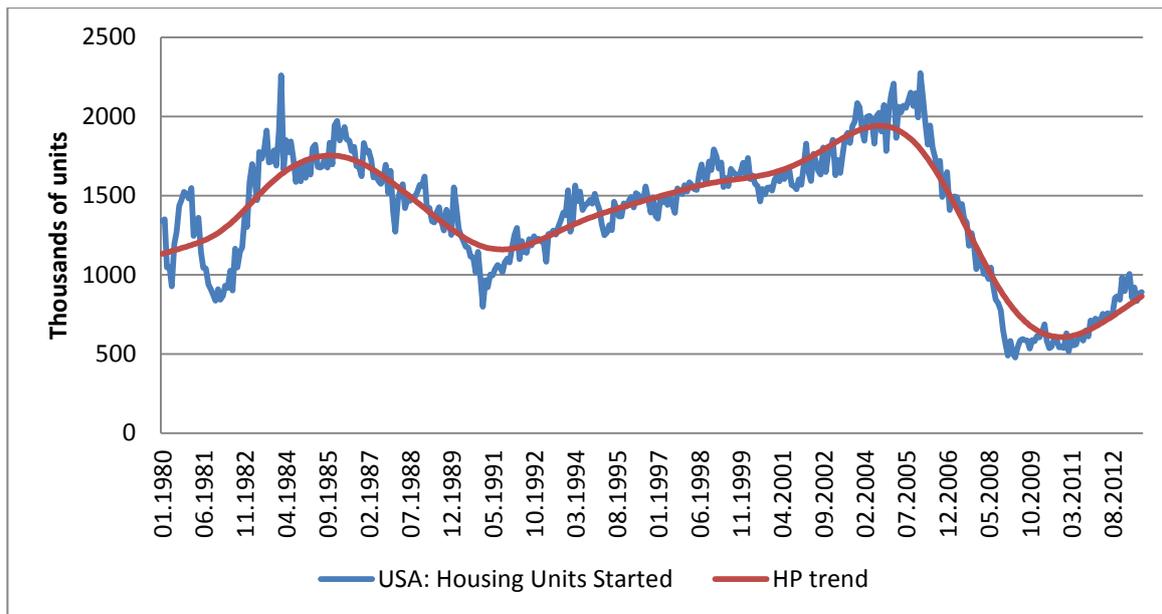
For the US we have private housing units started, seasonally adjusted, monthly from 01.1980 to 08.2013.¹⁷² The data are from Federal Reserve Bank of St. Louis. We chose a Lambda of 40 000 due to endpoint error. As with the graphs for business confidence, we are showing each country's data individually.

¹⁶⁹ Fed: research.stlouisfed.org/fred2/series/DFEDTAR

¹⁷⁰ ECB: ecb.europa.eu/stats/monetary/rates/html/index.en.html

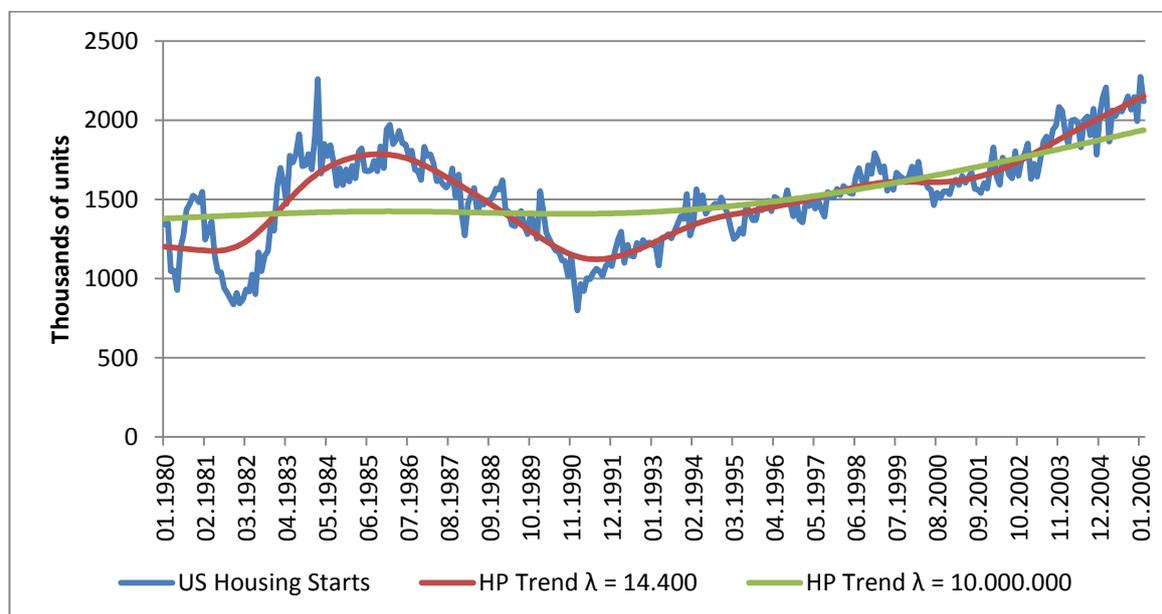
¹⁷¹ NB: norges-bank.no/templates/pages/article.aspx?id=67652&epslanguage=en

¹⁷² The Conference Board: conference-board.org/data/bci.cfm



Housing starts – USA (B)

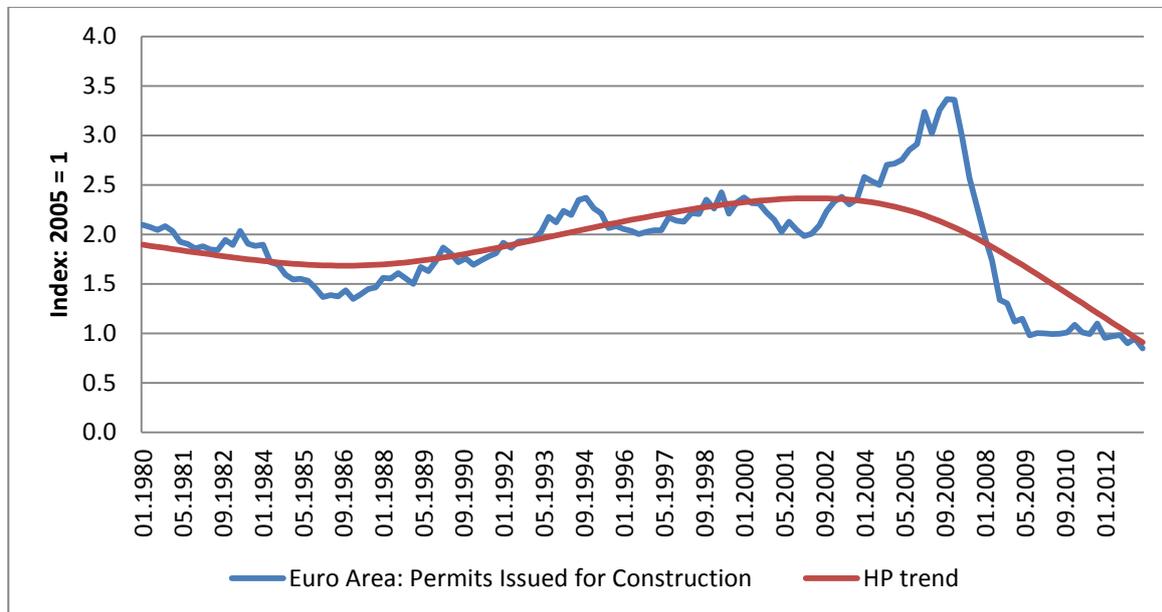
In the following graph, we have attempted to recreate the same graph an analyst would do in the end of 2005, before the housing market turned.¹⁷³ As illustrated, a significantly higher value for lambda gives a better indicator of a potential bubble – if there is one.



Housing starts – euro area

¹⁷³ The Conference Board: conference-board.org/data/bci.cfm

For the Euro Area we have an index of dwellings and residential buildings permits issued for construction, seasonally adjusted, and quarterly from 01.1980 to 04.2013.¹⁷⁴ The data are from Federal Reserve Bank of St. Louis. We chose a Lambda of 40 000 due to endpoint error.

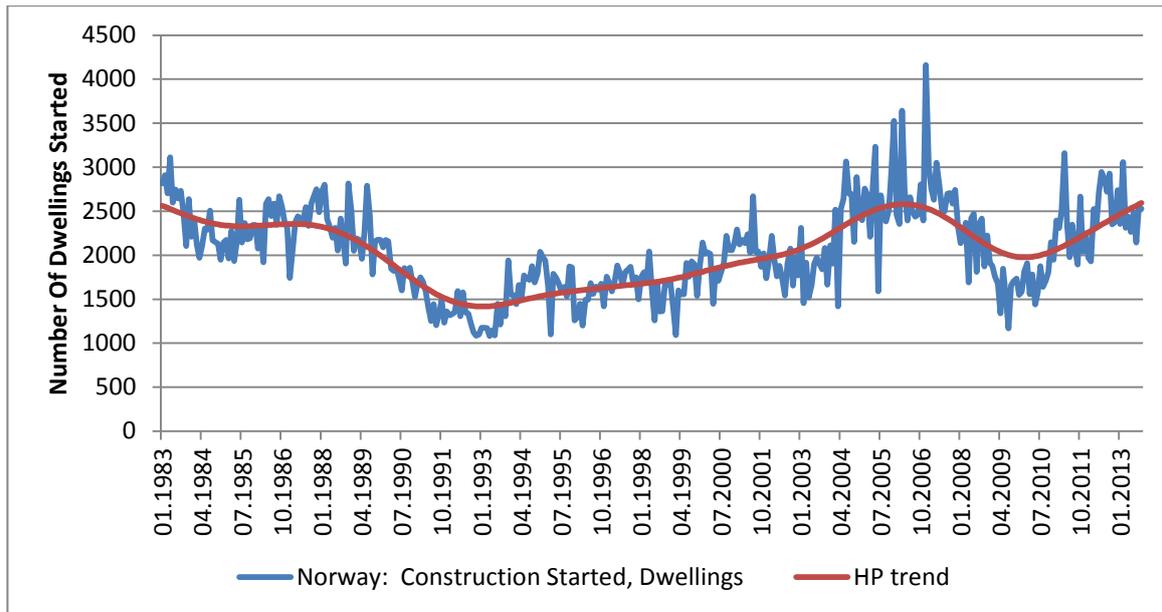


Housing starts – Norway

For Norway we have dwellings construction started, seasonally adjusted, monthly from 01.1983 to 09.2013. The data are from Statistics Norway, through Macrobond.¹⁷⁵ We chose a Lambda of 40 000.

¹⁷⁴ Fed: research.stlouisfed.org/fred2/series/ODCNPI03EZQ661S

¹⁷⁵ SSB: ssb.no/statistikkbanken/selecttable/hovedtabellHjem.asp?KortNavnWeb=byggeareal&CMSSubjectArea=bygg-bolig-og-eiendom&PLanguage=1&checked=true



Business Confidence:

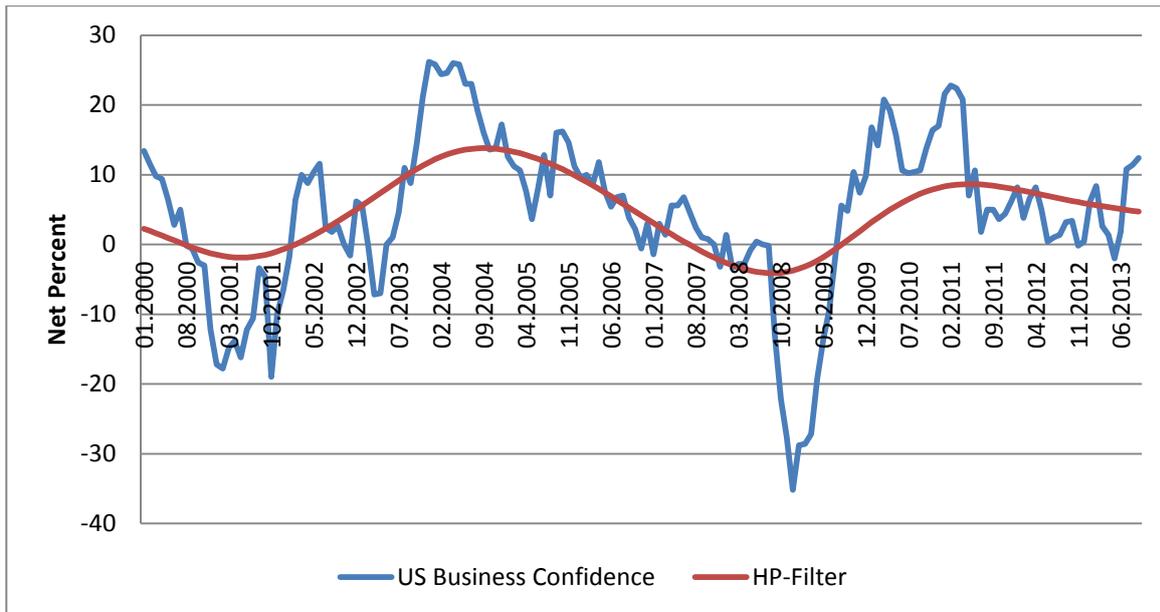
Business confidence represents, in the same way as household confidence, how firms look upon the future. All the data have been seasonally adjusted by the source.^{176,177,178} The data for Norway is calculated as an average of the data from five different segments of the Norwegian economy based on quarterly data. These segments include, e.g., providers of consumer goods, and manufacturers. We have chosen to present each region individually since we found this to increase the ease of viewing due to the nature of the data. The US and the EA is measured on monthly data.

USA:

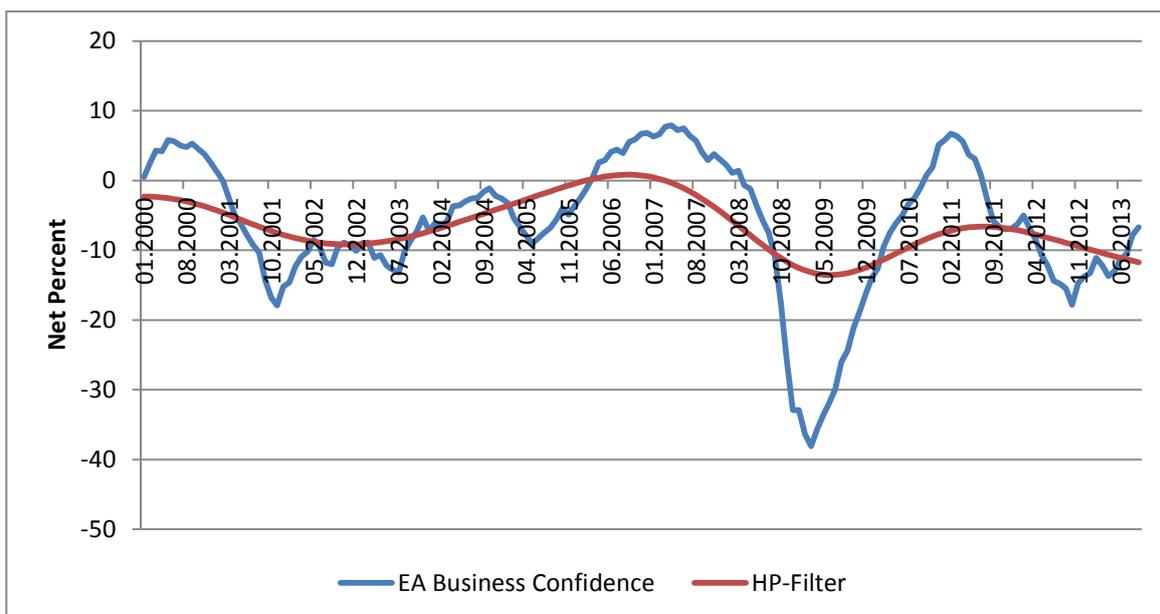
¹⁷⁶ Fed: research.stlouisfed.org/fred2/series/BSCICP02USM460S

¹⁷⁷ Fed: research.stlouisfed.org/fred2/series/BSCICP02EZM460S

¹⁷⁸ SSB: ssb.no/statistikkbanken/selecttable/hovedtabellHjem.asp?KortNavnWeb=kbar&CMSSubjectArea=energi-og-industri&PLanguage=1&checked=true



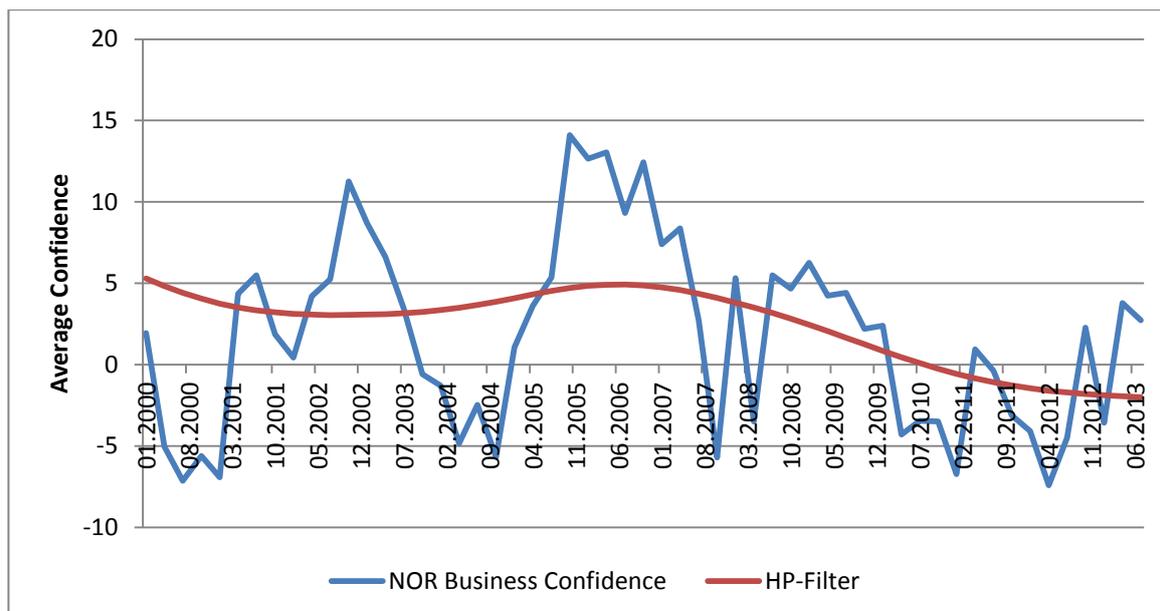
Euro Area:



Norway:

SSB calculates the index values as the "arithmetic average of the answers (balances) to the questions on production expectations, total stock of orders and inventories of own products (the latter with an inverted sign)."¹⁷⁹

¹⁷⁹ SSB: ssb.no/en/kbar



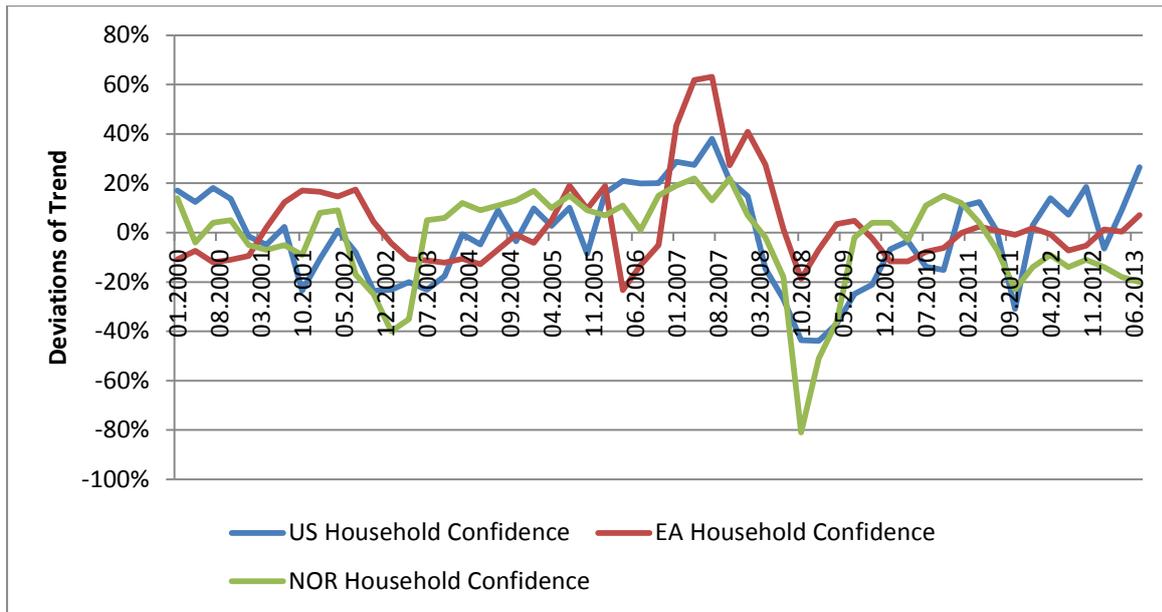
Household Confidence:

The original quarterly numbers, which have been seasonally adjusted, represent how consumers (households) look upon the future.^{180,181,182} The values for EA and Norway have been divided by three, in order to get a more similar standard deviation across the regions. The original observations were therefore more volatile. The data for the EA were also multiplied by (-1) due to every observation for consumer confidence being negative for the whole period.

¹⁸⁰ The Conference Board: www.conference-board.org/data/bci.cfm

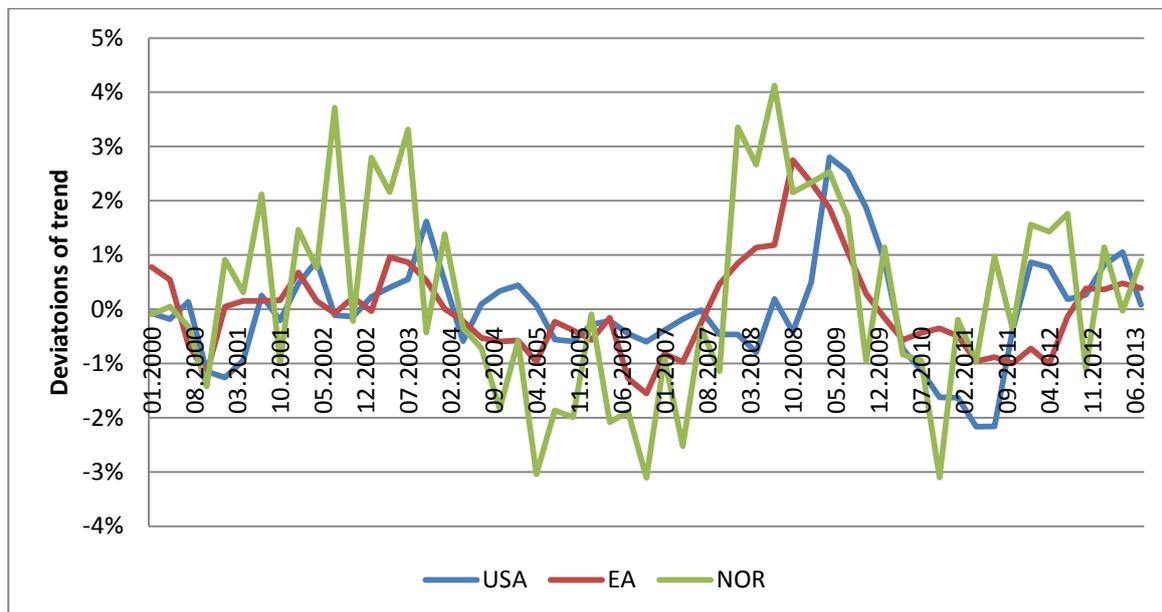
¹⁸¹ The European Commission: ec.europa.eu/economy_finance/db_indicators/surveys

¹⁸² Finance Norway: fnh.no/no/hoved/aktuelt/sporreundersokelser/forventningsbarometeret



M2:

The graphs are displaying the deviations from trend levels for the monetary measure *M2*. The numbers are, noted in national currency, measured monthly, and are seasonally adjusted by their respective sources.^{183,184,185}



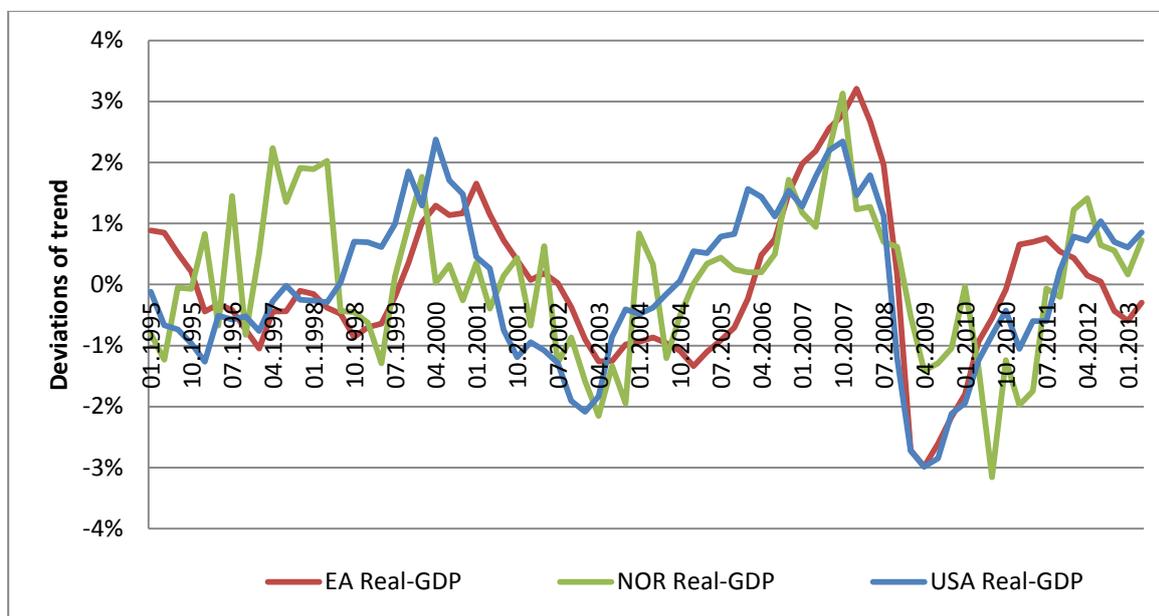
Real-GDP:

¹⁸³ Fed: research.stlouisfed.org/fred2/series/M2

¹⁸⁴ Fed: research.stlouisfed.org/fred2/series/MYAGM2EZM196N

¹⁸⁵ Fed: research.stlouisfed.org/fred2/series/MABMM201NOM189N

To get the numbers for this graph, we chose the gross domestic products calculated by the expenditure approach for quarterly data. The original data is seasonally adjusted and in constant prices, noted in chained year-2000 national currencies for the US and the EA.^{186,187} The chain year for Norway was not provided by the source.¹⁸⁸



Business Fixed Investment

Firms' fixed investment is for each region calculated using the expenditure approach on quarterly data, and presented in current prices.^{189,190,191} The numbers represent each countries' gross private domestic fixed investment. Only the data for the US have been seasonally adjusted, and the numbers are presented as an index. The data for Norway naturally exclude investments made by the general government.

¹⁸⁶ Fed: research.stlouisfed.org/fred2/search?st=Gross+Domestic+Product+by+Expenditure+in+Constant+Prices%3A+Total+Gross+Domestic+Product+for+Norway

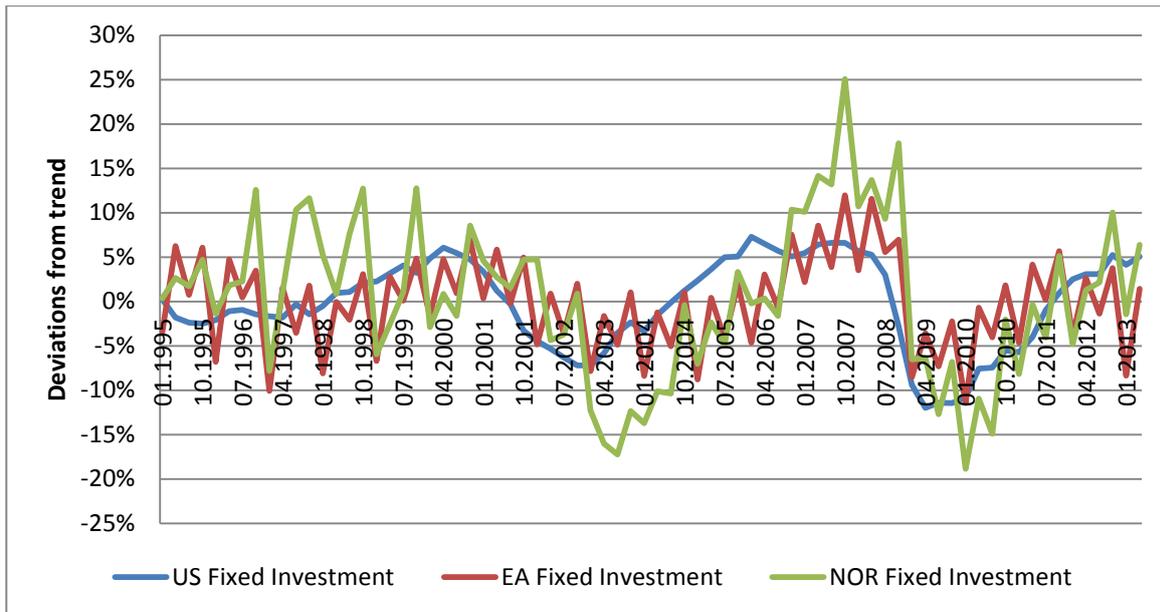
¹⁸⁷ Fed: <http://research.stlouisfed.org/fred2/search?st=Gross+Domestic+Product+by+Expenditure+in+Constant+Prices%3A+Total+Gross+Domestic+Product+for+the+Euro+Area>

¹⁸⁸ Fed: research.stlouisfed.org/fred2/search?st=Gross+Domestic+Product+by+Expenditure+in+Constant+Prices%3A+Total+Gross+Domestic+Product+for+the+United+States

¹⁸⁹ Bureau of Economic Analysis: bea.gov/newsreleases/national/gdp/gdpnewsrelease.htm

¹⁹⁰ The European Commission: epp.eurostat.ec.europa.eu/portal/page/portal/national_accounts/introduction

¹⁹¹ SSB: ssb.no/statistikkbanken/selectable/hovedtabellHjem.asp?KortNavnWeb=knr&CMSSubjectArea=nasjonalregnskap-og-konjunkturer&PLanguage=1&checked=true



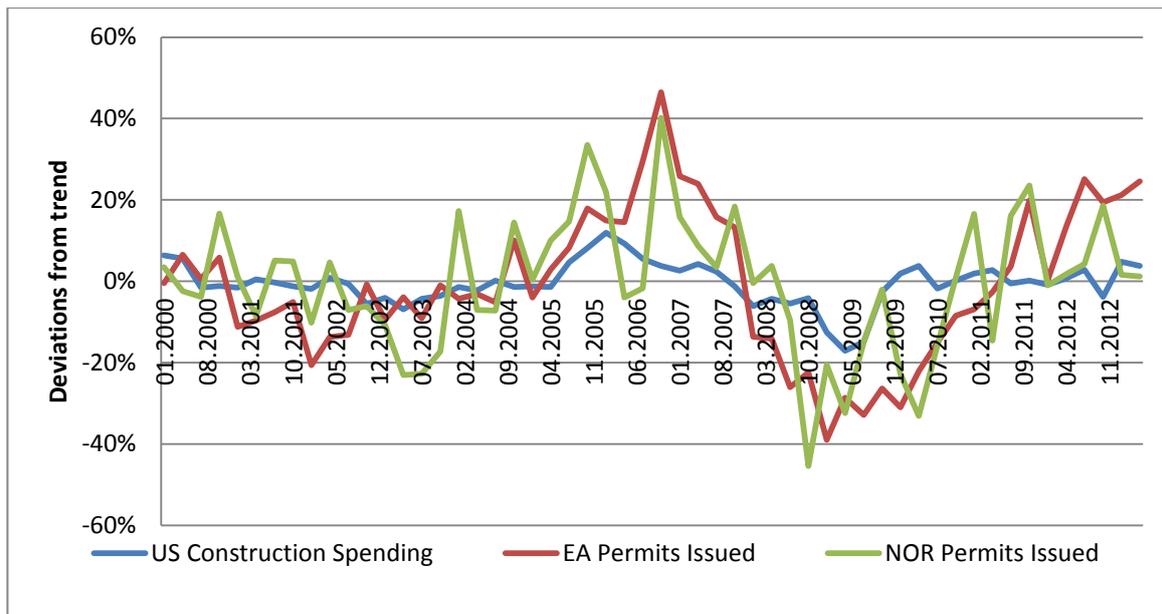
Residential Construction:

The data for the US is the total amount in millions of dollars that has been spent on private residential construction measured monthly for the US, and quarterly for the two others.^{192,193,194} The equivalent of this could not be found in for the EA and for Norway. Therefore, we have applied an index comprised of the permits issued for the construction of dwellings and residential buildings in these regions. Out of the three, only the data for the US have been seasonally adjusted.

¹⁹² Fed: research.stlouisfed.org/fred2/search?st=Total+Private+Construction+Spending%3A+Residential

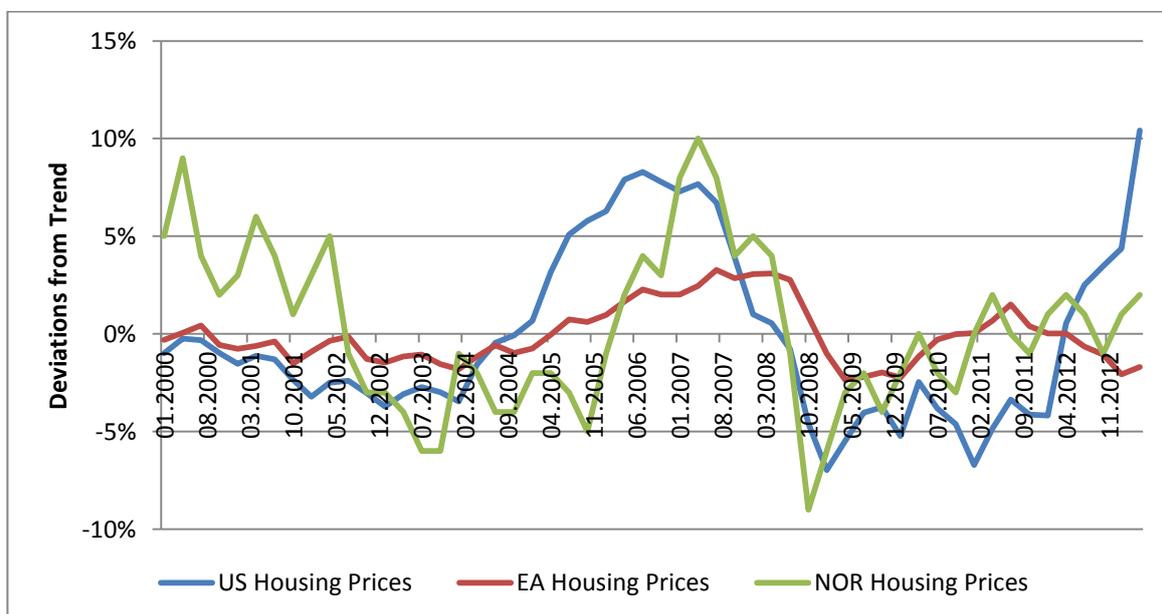
¹⁹³ Fed: research.stlouisfed.org/fred2/search?st=Dwellings+and+Residential+Buildings+Permits+Issued+for+Construction+for+Norway

¹⁹⁴ Fed: research.stlouisfed.org/fred2/search?st=Dwellings+and+Residential+Buildings+Permits+Issued+for+Construction+for+the+Euro+Area



Housing Prices:

The real estate prices for each region are originally presented as indexes calculated quarterly. The indexes represent the price of all residential buildings in their respective regions.^{195,196,197}



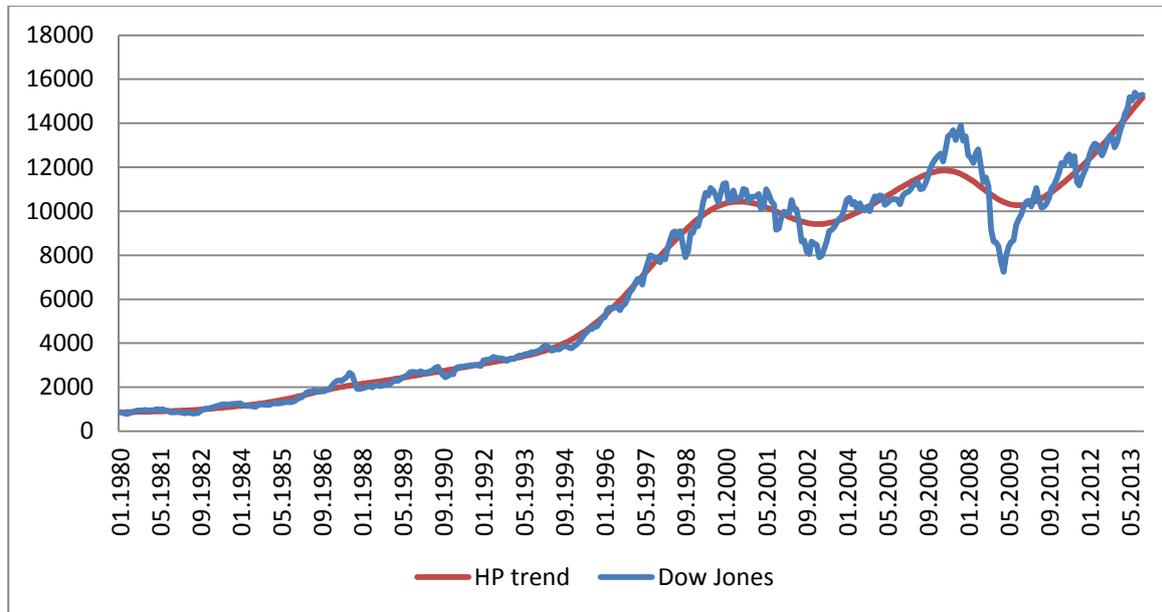
¹⁹⁵ SSB: ssb.no/statistikkbanken/selecttable/hovedtabellHjem.asp?KortNavnWeb=bpi&CMSSubjectArea=priser-og-prisindekser&PLanguage=1&checked=true

¹⁹⁶ ECB: sdw.ecb.int/browseExplanation.do?node=2120781&trans=N

¹⁹⁷ Federal Housing Finance Agency: fhfa.gov/Default.aspx?Page=14

Dow Jones Industrial Average:

Below, we have the Dow Jones Industrial index, depict monthly with a HP-filter.¹⁹⁸ Gathered from Standard and Poor's, through Macrobond.



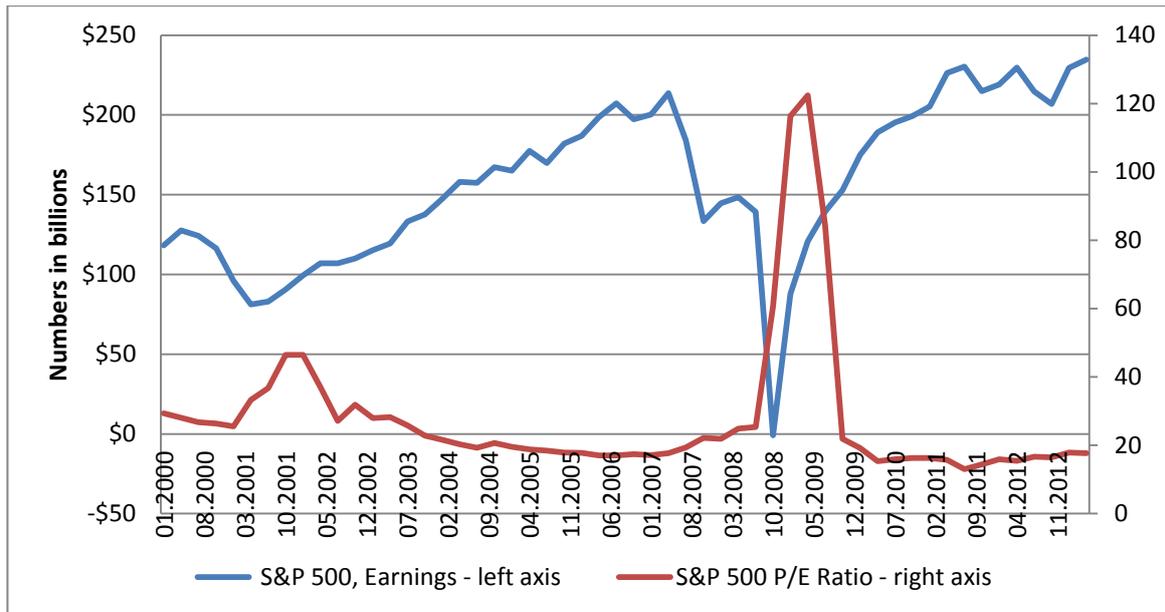
S&P 500 P/E ratio:

S&P 500's earnings (operating earnings) and P/E ratio are quarterly, gathered from Standard and Poor's, through Macrobond.^{199, 200}

¹⁹⁸ S&P: DOW JONES INDICES: djindexes.com

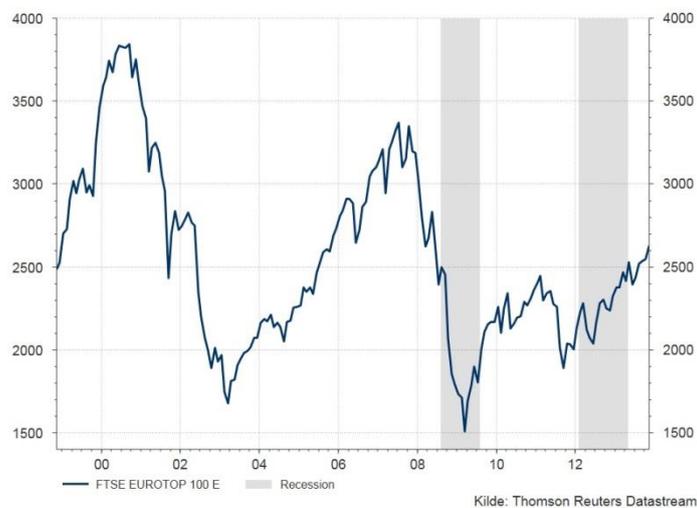
¹⁹⁹ S&P: eu.spindices.com/resource-center/thought-leadership/market-commentary

²⁰⁰ S&P: eu.spindices.com/resource-center/thought-leadership/market-commentary



FTSE Eurotop 100 Europe:

The euro area stock index is gathered from FTSE through Datastream, daily the last 15 years, containing highlighted NBER euro-recessions in grey.



Kilde: Thomson Reuters Datastream