# A Vicious Cycle of Manias, Crashes and Asymmetric Policy Responses - An Overinvestment View

Hoffmann, Andreas and Schnabl, Gunther

University of Leipzig

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# A Vicious Cycle of Manias, Crashes and Asymmetric Policy Responses – An Overinvestment View[*]

Andreas Hoffmann
Universität Leipzig
Grimmaische Str. 12, 04109 Leipzig, Germany
Tel. +49 341 97 33 578 - Fax. +49 341 97 33 569
E-mail: ahoffmann@wifa.uni-leipzig.de

Gunther Schnabl (corresponding author)
Universität Leipzig
Grimmaische Str. 12, 04109 Leipzig
Tel. +49 341 97 33 561 – Fax. +49 341 97 33 569
E-mail: schnabl@wifa.uni-leipzig.de

**Abstract**
The business cycles theories of Wicksell (1898), Schumpeter (1912), Mises (1912), Hayek (1929, 1935) and Minsky (1986, 1992) explain business cycles by distorted prices on capital markets, buoyant credit expansion and overinvestment. The exuberance during the boom endogenously causes the subsequent slump. While these theories put the emphasis on explaining the emergence of the cycle, this paper focuses on the macroeconomic policy responses during and after the crisis, when panic tightens credit supply. The paper allows an assessment of the long-term consequences of an asymmetric monetary and fiscal policy response to financial crisis.

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## 1 Introduction

The bust of the US housing bubble brought about an unprecedented global financial and economic crisis. The crisis was transmitted at a unique pace and scope from the world financial centres to the centres of world industrial goods and raw material production. Financial and goods market stability moved to the highest priority of economic policy making. To counteract the crisis, governments around the world slashed interest rates and set up large fiscal stimulus packages when the effectiveness of monetary policy reached its limits (Feldstein 2009).

We argue that the US housing market bubble was not the outcome of a random financial market shock, with the consequences being simply underestimated by market participants, financial supervision and policy makers (Krugman 2009). Instead, the most recent boom and bust cycles in the US real estate market and many other parts of the world are interpreted as the outcome of a vicious cycle of crises and its macroeconomic policy responses. Asymmetric macroeconomic policy behaviour in the wake of crisis and during the recovery after the slump is argued to have contributed to a structural decline in world real interest rates. This has triggered a gradual decline of marginal efficiency of investment and fuelled a spate of bubbles that started with the Japanese bubble in the second half of the 1980s and culminated in the current global slump. Given that the scope for monetary stimulus has become small, world government debt levels are likely to substantially increase due to fiscal stabilization attempts.

To model boom-and-bust cycles and their policy response we build upon the seminal overinvestment and credit boom theories of Wicksell (1898), Schumpeter (1912), Mises (1912), Hayek (1929, 1935) and Minsky (1986, 1992) which explain the emergence of business cycles by distorted prices on capital markets, buoyant credit expansion, irrational behaviour in financial markets and macroeconomic policy mistakes. According to these

theories, the exuberance during the boom endogenously causes the subsequent slump. Whereas these theories and previous papers put the emphasis on explaining the boom before the bust (Schnabl and Hoffmann 2008), this paper focuses on the policies during the crisis and its long-term consequences for financial and economic stability. Economic policy conclusions with focus on the exit strategies from macroeconomic expansion are derived in section 5.

## 2 Overinvestment and Boom-and-Bust Cycles

The business cycle theories of Wicksell (1898), Mises (1912), Schumpeter (1912), Hayek (1929, 1934) and Minsky (1986, 1992) model an unsustainable economic upswing which is driven by distorted prices in the financial sector. Innovation (Schumpeter 1912), too low interest rates set by the central bank (Wicksell 1898) and/or by the banking sector (Hayek 1929, 1935) cause the upswing. Structural distortions in the financial and real sectors bring about the economic turn-around. The crisis is not initiated by a sudden random shock but by excessive investment during the boom which causes inevitably the subsequent slump.

To model boom-and-bust cycles as observed in the world financial markets, we distinguish four different stylized interest rate concepts based on the overinvestment theories listed above. First, the *internal interest rate* $i_i$ reflects the (expected) returns of (planned) investment projects. Second, the *natural interest rate* $i_n$ is defined as the interest rate which balances supply (saving) and demand (investment) on capital markets. Third, the *central bank interest rate* $i_{cb}$ is the policy rate set by the central bank. It represents the interest rate which commercial banks are charged by the central bank for refinancing operations. Fourth, the *capital market interest rate* $i_c$ is defined as the interest rate set by the private banking (financial) sector for credit provided to private enterprises and consumers.[1]

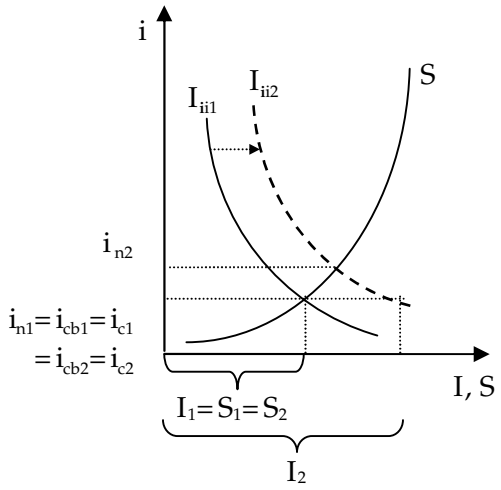
[1] Note that Minsky does not use the concept of a natural interest rate. However, there are many similarities in Minsky's and the Austrian's explanation of the cycle (Schnyder 2002, Prychitko 2009). To explain financial market boom-and-bust cycles we incorporate Minsky's ideas into the Austrian framework.

*Upswing and Exuberance*

Positive expectations about future growth or income set the stage for the upswing. The reasons can be innovations in the real sector such as new products, production processes or technologies (as in the case of the New Economy) or the discovery of new markets or production locations (as in the case of China and Central and Eastern Europe) (Schumpeter 1912, Hayek 1929). Financial innovation (Minsky 1992) as in the US subprime market may cause higher expected returns on investment in financial markets. Given such innovation – which changes the mood of investors – the internal interest rate $i_i$ rises and investment activity in the real and/or financial sector accelerates.

Figure 1 models the upswing: With a rising internal interest rate $i_i$ (from $i_{i1}$ to $i_{i2}$) investment is growing (from $I_{ii1}$ to $I_{ii2}$). The demand for credit expands. The natural rate of interest rises (from $i_{n1}$ to $i_{n2}$) to keep the capital market in equilibrium at which saving is equal to investment ($S_2=I_2$). Disequilibria can emerge, if the central bank (Wicksell 1898; Mises 1912; Hayek 1935) or commercial banks (Hayek 1929; Mises 1912) fail to adjust the central bank policy rate and/or capital market interest rate to the natural interest rate. To maintain capital markets in equilibrium, the central bank rate and the capital market interest rate would have to increase ($i_{n2}=i_{cb2}=i_{c2}$). A credit boom is triggered when the additional capital demand of enterprises is satisfied at unchanged interest rates ($i_{n2}>i_{cb2}$, $i_{n2}>i_{c2}$).

**Figure 1: The upswing**




The overinvestment theories mainly provide two reasons for a fall of the capital market rate below the natural rate: First, the central bank supplies more liquidity at unchanged rates via money creation, underestimating future inflation ($i_{cb1}=i_{cb2}$). This allows for accelerating credit growth of the banking sector and low capital market rates (Wicksell 1898: 134, Mises 1912: 417-430, Hayek 1929: 82). Second, the banking sector (or capital market) keeps interest rates low via money creation (Hayek 1929). Bank competition for market share and profits are important motivations ($i_{c1}=i_{c2}$). During the upswing the interest rate set by the central bank and the private banking sector are usually closely linked with the commercial banks following the central bank.[2] Bank profits increase when the volume of credit expands (rather than margins), for instance as financial intermediaries (such as banks, hedge funds or conduits) increase leverage ratios of equity along with rising competition or appetite for risk (Hayek 1929: 84, 99-103; Minsky 1992, 6-7). Minsky (1986) argues that declining risk aversion brings about excessive lending and a lower quality of investment in the upswing.[3]

[2] In particular in small open economies the direction of causality can be reversed. Buoyant private capital inflows are translated into monetary expansion as the central bank stabilizes the exchange rate or cuts interest rates to shield off further capital inflows.

[3] This behaviour causes a shift from safe finance schemes (hedge financing) to speculative and Ponzi finance schemes. In the wording of Minsky (1982), *hedge finance* is the traditional form of financing with investors being able to repay loans and interest rates in the future. *Speculative finance* schemes only cover the cash

In Hayek's (1935) framework, excessive lending at constant capital market rates distorts the production structure of the economy as it provides a false signal to investors. Building upon Böhm-Bawerk's capital theory (1884), the credit expansion leads to increasing investment at unchanged interest rates which mimics an increase in savings (preferences of households to forgo consumption). With higher savings investment in capital goods would be lucrative as they aim at satisfying higher consumption in the future. More resources are shifted towards the production of capital goods that are expected to produce more consumer goods in the future (more "roundabout ways of production" in the wording of Böhm-Bawerk 1884).

If savings had really increased with the rise in investment, (future) preferences of households would be in line with the investment plans. However, interest rates and thereby savings stay unchanged (no change in inter-temporal preferences). Later on with higher investment and rising demand for labour, wages and consumption increase. Overconsumption emerges because the constant interest rate holds savings low (Mises 1912: 430-431). As the production of consumption goods lags behind, prices increase.[4]

Rising profits of enterprises are reflected in higher stock prices. When consumer prices rise with the increase in consumption, investment in asset markets becomes more attractive to store rising wealth. Households purchase stocks of booming enterprises or real estate to participate in the boom. An increasing number of risky projects are financed (Mises 1912: 429; Minsky 1992: 6-7). Positive expectations may turn into financial market exuberance.[5] Positive returns from hiking stock and real estate prices can reinforce speculative behaviour of agents, if positive trends are extrapolated into the future.

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flows. In the case of *Ponzi finance* to stay in business investors have to borrow to meet their near-term debt obligations. It is only lucrative as long as asset values increase.

[4] In open economies, the consumer good gap can be satisfied via imports and the increase of inflation can be postponed. Nevertheless, sooner or later inflation rises and central bank rates have to be lifted. Then, as the downturn starts, unemployment increases, wage income declines and consumption decreases. Imports have to decline.

[5] Whereas the overinvestment theories assume a causality from overinvestment to overconsumption to capital market speculation, today with financial markets having a crucial role for economic development, the

The perceived positive wealth effect of rising asset prices keeps saving low and stimulates consumption and/or asset purchases of the household sector, financed by low-interest rate bank credit. As the banking sector's profits surge from higher asset prices, bankers are granted generous wage increases and indulge in consumption. These wealth effects perpetuate the lending, investment and speculation activities. Irrational exuberance and a speculative mania may emerge, in which speculative price projections and "*the symptoms of prosperity themselves finally become, in the well known manner, a factor of prosperity*" (Schumpeter 1912: 226).

*The Turn-Around and Panic in Financial Markets*

The turnaround occurs when inflation in consumer and/or assets market prices reach unsustainable limits. There are two possible triggers for the turn-around. Either, the banking sector projects the financial turn-around by reassessing credit risk and tightening credit supply (Hayek 1929, 100). This would be accompanied by rising capital market rates, from $i_{c1,2}$ in Figure 1 to $i_{c3}$ in Figure 2. Alternatively, the central bank tightens financing conditions to counteract inflationary pressure (Wicksell 1898: 134; Minsky 1992: 8; Mises 1912: 430, 431), from $i_{cb1,2}$ in Figure 1 to $i_{cb3}$ in Figure 2. Usually a monetary tightening by the central bank is followed by rising capital market rates.[6]

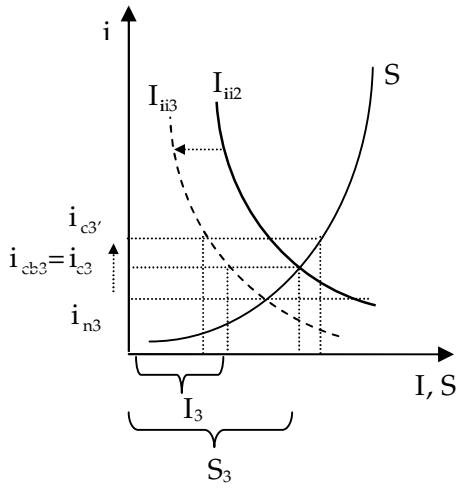
With the capital market interest rates rising, the threshold for the profitability of all previous and future investment projects is lifted. As the financing conditions on money and capital markets re-approach the natural interest rate $i_{n2}$, the downturn is triggered. Investment projects with an internal interest rate below the risen market rates have to be dismantled

causality can be also be reserved. The boom in the financial market triggers overconsumption and overinvestment via a positive wealth effect.

[6] Hayek (1935) stresses that investment in the consumer goods seems to become more profitable, when consumer prices increase. Therefore resources are reallocated from capital goods to consumer goods production. Higher interest rates following rising inflation cause the turn-around.

(Hayek 1929: 101; Minsky 1992: 8). Asset prices start to decline as economic sentiment is reassessed. As falling stock market prices signal declining profitability of both the real sector and the financial sector, asset prices and investment fall even further.[7] In Figure 2 the investment curve shifts from $I_{ii2}$ to $I_{ii3}$.

**Figure 2: The downswing**




Given the fact that during the upswing the price signals on financial markets were distorted and too risky investment (in specific sectors) has emerged, the economic downswing is endogenous to the boom. The recession will be the deeper the larger the "exuberance" has been. Previous overinvestment and overconsumption turns into austerity as the losses due to overinvestment and speculation have to be digested. The virtuous circle of buoyant credit growth, surging investment, and rising profits turns into a vicious circle of declining investment, rising losses, and credit crunch. When single investment projects are dismantled, others become unprofitable as general demand declines (negative multiplication effect). With the financial sectors suffering losses from loan default, stocks have to be sold and the credit

[7] The overinvestment theories assumed that the turn-around of the real business cycle changes the mood of financial markets. Today the direction of causality can be reserve. The turn-around on financial markets triggers the recession in the real sector of the economy, as overinvestment is dismantled, credit is tightened and consumption declines.

exposure has to be reduced. Asset prices decline. As investment and demand for capital decline, the natural interest rate falls to $i_{n3}$.

In the seminal overinvestment theories the reaction by the central bank or private banks can aggravate the crisis. In Wicksell's (1898) framework, this is the case when the central bank keeps the policy rate above the natural interest rate ($i_{cb3}>i_{n3}$). In Hayek's (1929, 1935) theory, the private banking sector keeps credit conditions too tight ($i_{c3}>i_{n3}$) ($S_3'>>I_3'$). Panic in financial markets may make private banks even more reluctant in providing credit to the private sector. This pushes the capital market interest rate even further upwards (in Figure to $i_{c3}'$) thereby accelerating the downturn and pulling more enterprises, consumers and financial institutions into the whirlpool of the crisis. A deflationary gap emerges as saving is larger than investment ($S_3>I_3$). In Figure 2 the gap between $i_{c3}$ and $i_{c3}'$ models the panic in financial markets. The central bank rate $i_{cb3}$ and the capital market rate $i_{c3}'$ diverge.

## 3 Policy Responses During the Downswing

Because the overinvestment theories had the intention to model business cycle fluctuations along a long-term equilibrium path, they constructed the economic downswing symmetrically to the upswing. Monetary conditions are too tight causing a dismantling of investment beyond what would be justified by the natural interest rate. The economic policy implication is that during the upswing the central bank should avoid a divergence of the policy rate from the natural interest rate (Wicksell 1898). The banking sector has to be prevented from expanding lending too far, for instance via financial supervision or higher reserve requirements. Hayek (1967) argues that money supply should be increased together with the fall in natural interest rates.[8] In the view of Minsky (1986) monetary expansion may

8 "*It is also a fact which has been established by long experience, that in times of crisis central banks should give increased accommodation and extend thereby their circulation in order to prevent panics, and that they can do it to a great extent without effects which are injurious.*" (Hayek 1967: 108-109)

not be sufficient. If negative expectations continue to depress investment and consumption,[9] fiscal expansions should support the economic recovery.[10]

In the light of the recent financial market turbulence, the question concerning the appropriate policy response in times of crisis has gained growing attention. From a historical perspective the Federal Reserve has been accused – in line with the overinvestment theories – to have held money supply too tight during the Great Depression (Bernanke et al. 1999, Romer 2009). As money supply was tightened too much, the downturn was aggravated as the credit channel dried out. Similarly, the Bank of Japan has been blamed by policy mistakes: To have increased the interest rate to prick the Japanese bubble and to have kept the interest rate too high for too long during the following downturn (Bernanke 2000).

Therefore the Federal Reserve under the chairmen Greenspan and Bernanke slashed central banks rates in times of crisis to prevent a financial meltdown. However, after the outbreak of the US subprime turmoil, the Fed has been accused to have held interest rates too low for too long in the recovery periods; in particular after the bust of the dotcom bubble (Taylor 2008).

*Monetary policy response*

Under normal conditions the central bank can influence capital market interest rates via the impact of its policy rate on refinancing costs of the banking sector. Modelling the upswing, we assumed that capital market interest rates follow the central bank rates. During financial market panic, however, as shown above the central bank rate and the capital market rate (in the short run) can diverge, with detrimental effects for growth and employment. This puts the

[9] This is similar to a capital market rate that stays above the natural rate in Hayek's framework, because either the natural rate continues to decline (negative acceleration), or the capital market rate will not decline due to panic which is equivalent to s a credit crunch.

[10] The fiscal stimulus may be wrong-headed and can cause mal-investment instead of good investment. Therefore Hayek and Mises opposed fiscal interventions for good reasons.

stage for an active monetary policy response during the crisis. To preserve financial and economic stability the central bank can expand money supply up to the point when it will nudge the capital market rate $i_{c3}$' downwards. Two scenarios can be distinguished.

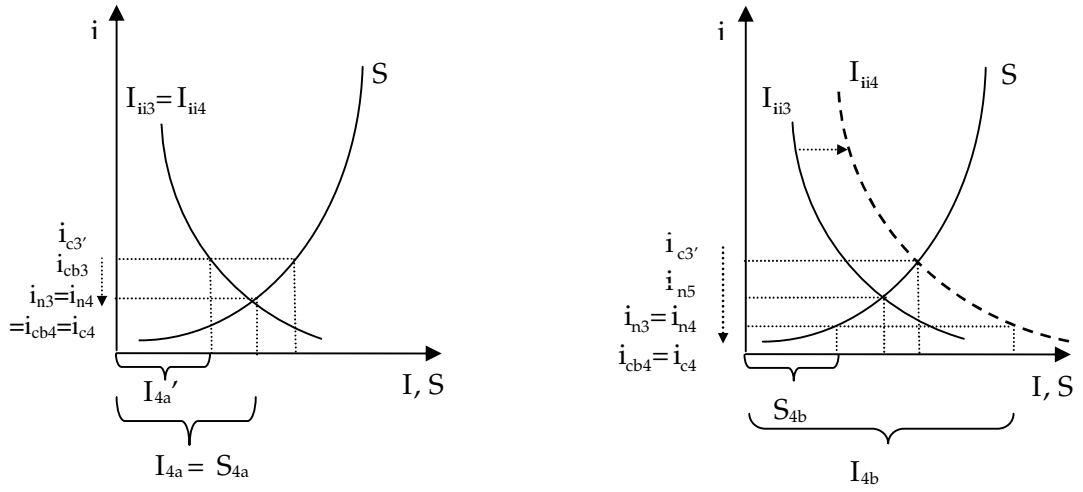
First, as modelled in Figure 3a, the central bank hits the natural rate $i_{n4}$, cutting the central bank rate from $i_{cb3}$ to $i_{cb4}$. Assuming a smooth transmission from the central bank rate to the capital market rate or sufficient quantitative easing, the capital market rate is pushed downwards to the natural interest rate ($i_{n4}=i_{c4}$). Two types of distortions are circumvented. The central bank does not – as assumed by Wicksell (1898) – keep interest rates too high thereby aggravating the downturn ($I_{4a}>I_3$). In addition, the negative spill-overs of central bank mistakes and financial panic are cured ($I_{4a}'<I_{4a}$). In the short-term, the interest rate behaviour of the central bank and private banking sector are asymmetric. Whereas the central bank rate is pushed downwards, the capital market rate set by the financial sector moves upwards ($i_{c3}'>i_{cb3}$) until the transmission from the policy rate to the market rate sets in and both rates converge ($i_{cb4}=i_{c4}=i_{n4}$). A new equilibrium which balances saving and investment ($I_{4a}=S_{4a}$) is reached while distorted investment has been cleared out. The lower interest rate level is the basis for the economic recovery.

In the second scenario, as modelled in Figure 3b, the central bank cuts the policy rate beyond the natural interest rate for three possible reasons. First, during the panic the central bank has incomplete information concerning the degree of financial instability and assumes the natural interest rate to be lower than it actually is. Second, the central bank makes a correct assessment, but there is no clear institutional separation between the financial sector and the central bank.[11] The central bank sets interest rates too low to minimize the losses of the financial sector (and to socialize the costs of overinvestment via rising inflation). Third,

[11] For instance caused by a high degree of labour mobility between the central bank, the government, the financial sector and the academic sector as it is observed in the US.

the central bank increases the probability of re-election for the government by minimizing unemployment and helping financing rising government deficits. [12]

**Figure 3a: Monetary policy response I** **Figure 3b: Monetary policy response II**




For one, both, or other reasons, the central bank policy rate may fall below the natural interest rate as modelled in Figure 3b ($i_{cb4}<i_{n4}$). Given sufficient monetary transmission and/or monetary easing the capital market rate follows the central bank rate below the natural interest rate ($i_{c4}<i_{n4}$). An extreme outcome is a zero (or close to zero) interest rate policy as observed in Japan since 1999 and in the US since 2009. Under zero interest rate conditions, the central bank can use further quantitative easing measures (for instance providing credit directly to the private sector), if the capital market rate does not converge towards the central bank rate.[13]

The outcome is in the first place the intended stabilization of the financial sector and real economy. Banks and enterprises profit from cheap re-financing conditions which help to cover the losses from the crisis. When central bank credit is rolled over to the domestic enterprise sector a credit crunch can be prevented, new investment will be financed and employment will stabilize. Stock and other asset markets re-bounce. The investment curve

[12] The "*facts suggest that the actions of the Federal Reserve Board have not been independent of the financing needs of the federal government. Our hypothesis is that political pressures also impinge on the decisions of monetary authorities.*" (Buchanan and Wagner 2000: 120)

[13] This would be equivalent to a credit crunch originating in the banking sector.

shifts to the right from $I_{ii3}$ to $I_{ii4}$, now due to an active monetary policy rather than due to an increase in the internal interest rate (as in Figure 1).

In the longer term, the policy as modelled in Figure 3b involves the risk of bringing the scenario back to Figure 1. If the central bank fails to reverse its measures as soon as the panic is cured, the capital market rate is far below the natural interest rate. A new wave of overinvestment emerges, where savings are smaller than investment ($S_{4b}<I_{4b}$). Compared to Figure 1 the interest rate level is lower and the saving investment gap is larger. The cheap liquidity provided by the central bank is invested in new – possibly speculative investment projects – probably in other sectors of the economy, financial markets or other regions of the world than during the previous bubbles. The upswing is accelerated, if the central bank rate and the capital interest rate are kept at this level while the natural interest rate increases together with rising investment to $i_{n5}$.

*Fiscal Policy Response*

In the face of financial distress, monetary and fiscal policies can interact in two ways. First, in a scenario where the interest rate level is high enough when the crisis strikes, monetary policy will be preferred over fiscal policy as stabilization tool, because monetary expansion can be implemented faster, is transmitted immediately, and incorporates lower costs for policy makers (as long as consumer price inflation remains moderate). This implies a negative "substitution relationship" between monetary and fiscal policy stimulus. While interest rates decline, government debt levels tend to remain stable.

Second, as argued by Minsky (1986, 287-334) even lowering central bank rates to zero may not be sufficient to jump start the economy due to persistent negative expectations which cause a fall in the "Keynesian liquidity trap". Then, the responsibility for macroeconomic stabilization is shifted to fiscal policies as observed in Japan during the 1990s and in US

during the 2008/09 financial turmoil. While quantitative easing remains in charge of financial stability, Keynesian fiscal stimulus targets the stability of the real economy.

Two settings of monetary and fiscal policy interaction are modelled in Figures 4a and 4b. First, it is assumed that in accordance with Figure 3a the central bank policy rate and the capital market rate are close to the natural rate. If fiscal policy supports the (moderate) monetary stimulus to increase investment and consumption by expanding government expenditure, this is equivalent to a shift of the investment curve from $I_{ii4}$ to $I_{ii5}$. The credit financed government stimulus leads to rising natural and capital market interest rates which would require the central bank to lift the policy rate to keep saving and investment in equilibrium ($I_{5a}=S_{5a}$). The consequence would be a typical *crowding out* of private investment. Otherwise, if interest rates remain unchanged, a new wave of overinvestment would emerge.

The scenario modelled in Figure 4b corresponds to fiscal policy in a (close to) zero interest rate environment building upon Figure 3b. The central bank holds monetary conditions loose to preserve financial and economic stability ($i_{cb5}=i_{cb4}$). However, in 4b the investment curve has not shifted to the right ($I_{ii3}= I_{ii4}$). As in Minsky's framework the capital market rate does not converge towards the central bank rate ($i_{cb4}<i_{n4}<i_{c4}$'), due to negative expectations of financial institutions (credit crunch). In this situation a fiscal stimulus helps to reverse expectations and cures the panic ($i_{cb5}=i_{c5}$). The fiscal expansion is very effective, as crowding out effects are neutralized by expansionary monetary policies. The investment curve shifts to the right (from $I_{ii4}$ to $I_{ii5}$). The gap between the natural and the capital market rate further rises. Monetary authorities would have to raise interest rates decisively to close the gap once markets stabilize. Otherwise banks can start lending excessively. If a monetary contraction is regarded as detrimental for growth in the aftermath of a crisis and rates are kept too low for too long an even larger disequilibrium between saving and investment ($I_{5b}>>S_{5b}$)

emerges. A new unsustainable wave of overinvestment and speculation starts, now guided by public expenditure.

**Figure 4a: Fiscal policy response I**

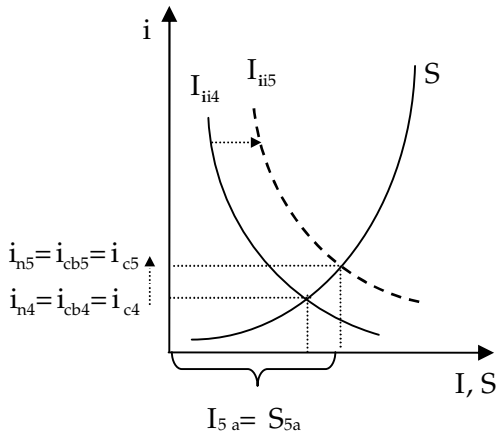
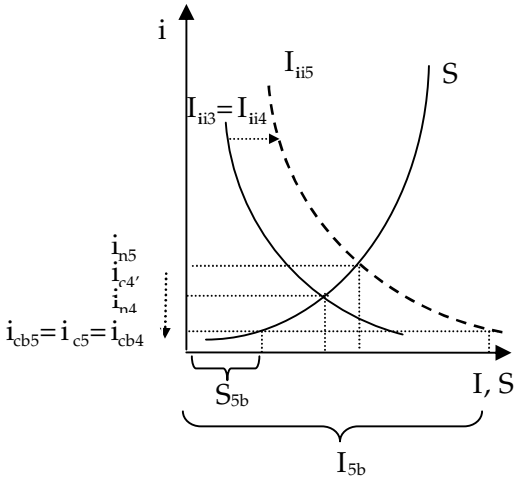



**Figure 4b: Fiscal policy response II**




## 4 Asymmetric Macroeconomic Policies and a Wave of Wandering Bubbles

While in the short-term macroeconomic expansion helps to smooth out the economic repercussions of a crisis, the overinvestment theories imply that too expansionary monetary and fiscal policies (as modelled in Figure 3b and 4b) conserve a distorted economic structure. Additional investment projects with low internal interest rates, i.e. low marginal efficiency are triggered which makes the exit from the low interest rate environment even more costly. Public investment may be wrong-headed because government cannot mimic the market process. As the monetary and fiscal authorities fear to destabilize the rebound, they hesitate to lift interest rates or to stop fiscal expansion (slippery slope argument).[14] The outcome are asymmetric macroeconomic policies. Governments are likely to run deficits during the recession while they miss running surpluses during the boom. Central banks cut interest rates

[14] Rizzo and Whitman (2009) argue that "*policies are particularly vulnerable to expansion.*" A government intervention is followed by more intervention if the effects are perceived positively.

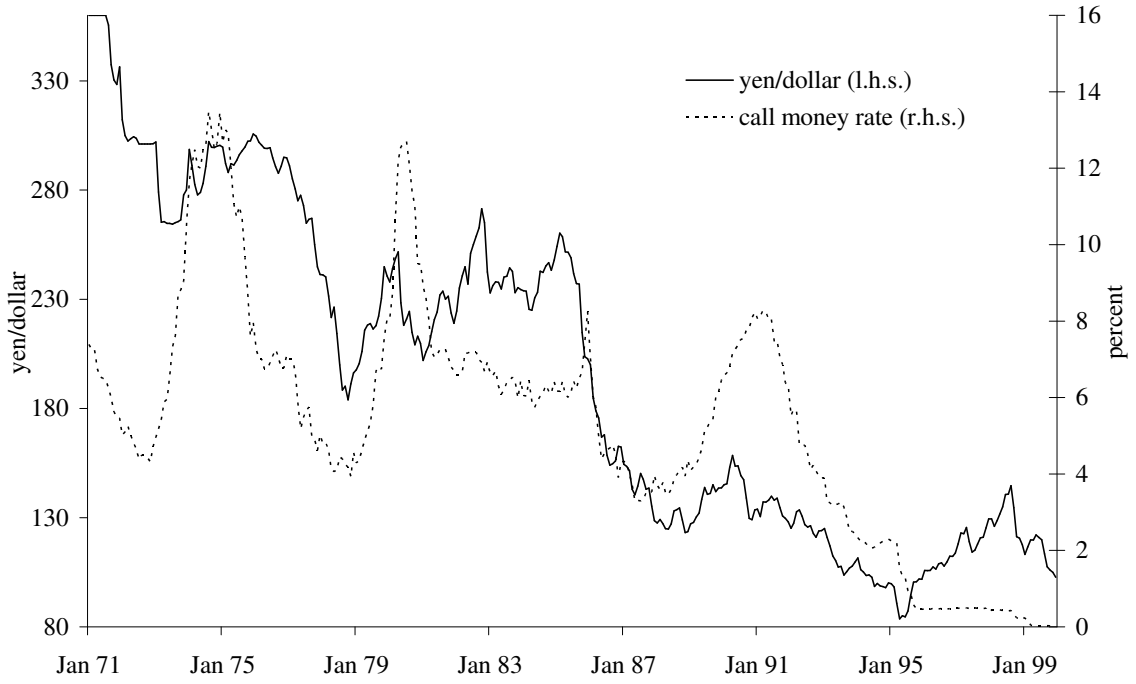
decisively during the crisis and lift them only hesitantly during the recovery. Asymmetric monetary policies have been observed since the 1980s particularly in Japan and the United States.

*Asymmetric Monetary Policies*

The structural decrease of both the nominal and real world interest levels began in Japan in the mid 1980s, driven by an asymmetric exchange rate policy (Danne and Schnabl 2008). Because with the exception of its dynamic export sector, the Japanese economy is highly regulated, yen appreciation constitutes a painful drag on growth. As a result foreign exchange intervention took place in times of yen appreciation to soften appreciation pressure. In contrast, Japanese monetary authorities remained inactive in foreign exchange markets when the yen depreciated (Figure 5).

Given this asymmetric intervention pattern, the Japanese foreign exchange reserves rose to record levels. Although Japanese foreign currency purchases were sterilized in the first place to neutralize effects on domestic monetary conditions, interest rates fell during appreciation phases while they were not proportionally raised when the yen depreciated (Figure 5). As a result, Japanese short-term interest rates fell in waves from approximately eleven percent in 1980 to four percent in 1987, to two percent in 1995, and ultimately to nil in 1999. Since then Japan remains stuck in the liquidity trap.

Figure 5
Yen/Dollar Exchange Rate and Japanese Call Money Rate

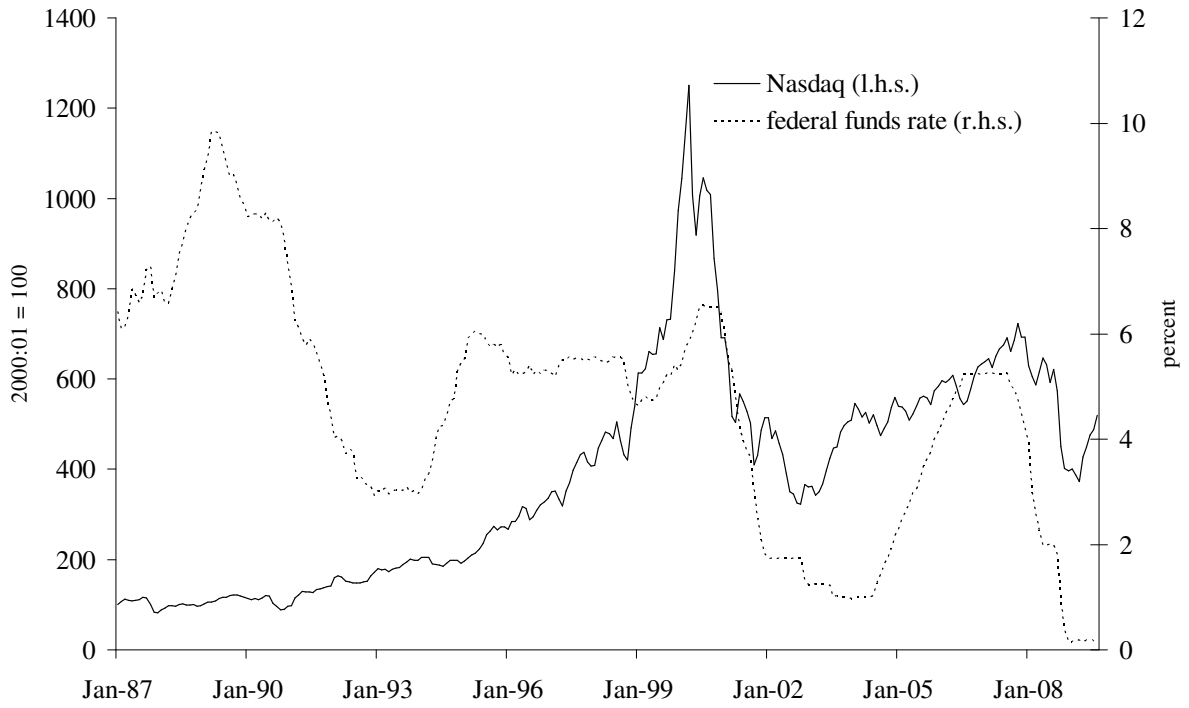



*Source: Danne and Schnabl, 2008.*

A similar scenario emerged in the US under Alan Greenspan with respect to stock markets, as monetary policy tended to respond to bear markets while it refrained from intervening in bull markets (Hoffmann 2009). The US Fed swiftly injected liquidity in the wake of the stock market crash in 1987 and the burst of the dotcom bubble in 2000 to stabilize financial markets. In contrast during the irrational exuberance of the dotcom and subprime booms Greenspan hesitantly lifted interest rates to slow down the speculation boom (Figure 6).

In the so called *Jackson Hole* Consensus US central bankers agreed that central banks do not have sufficient information to spot and prick bubbles, but should intervene in times of financial turmoil (Blinder and Reis 2005). As a result the key interest rate fell more quickly in the recession than it rose during the boom, from more than 18 percent in 1980, to six in 1986, to three percent during the crisis of the early 1990s, to one percent after the bursting of the dotcom bubble, to close to nil in 2009.

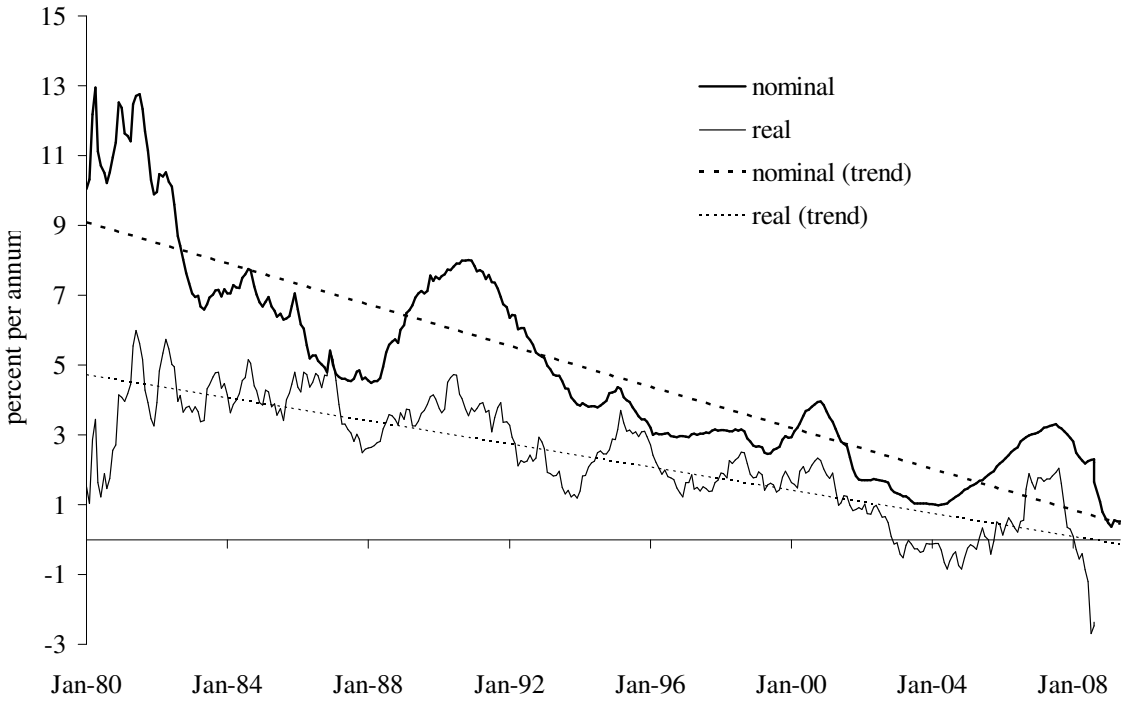
Figure 6
US Nasdaq and Federal Funds Rate




*Source: IMF, IFS, 2009.*

The EMU experienced a similar development, although on a smaller scale than in Japan or the United States. The institutional framework of the European System of Central Banks sets a clear inflation target of slightly less than two percent and pays – based on the second pillar of the monetary policy strategy – attention to monetary aggregates. Nevertheless, the euro zone cannot isolate itself from appreciation pressure on the euro which is caused by monetary expansion in other parts of the world. Short-term interest rates in Germany declined from 8.5 percent during the reunification boom to three percent at the formation of the EMU to close to one percent today. The resulting gradual downward trend in interest rates in the large capital markets – as proxied by the average money market rates of Japan, US and Germany/euro area – is shown in Figure 7. The nominal average money market rate is currently close to zero, the average real money market interest rate has stepwise declined from roughly four percent during the 1980s, to two percent in the 1990s and nil percent in the new millennium.

Figure 7
Nominal and Real Money Market Interest Rates in Japan, US, Germany/Euro Area




*Source: IMF: IFS, 2009. Arithmetic averages.*

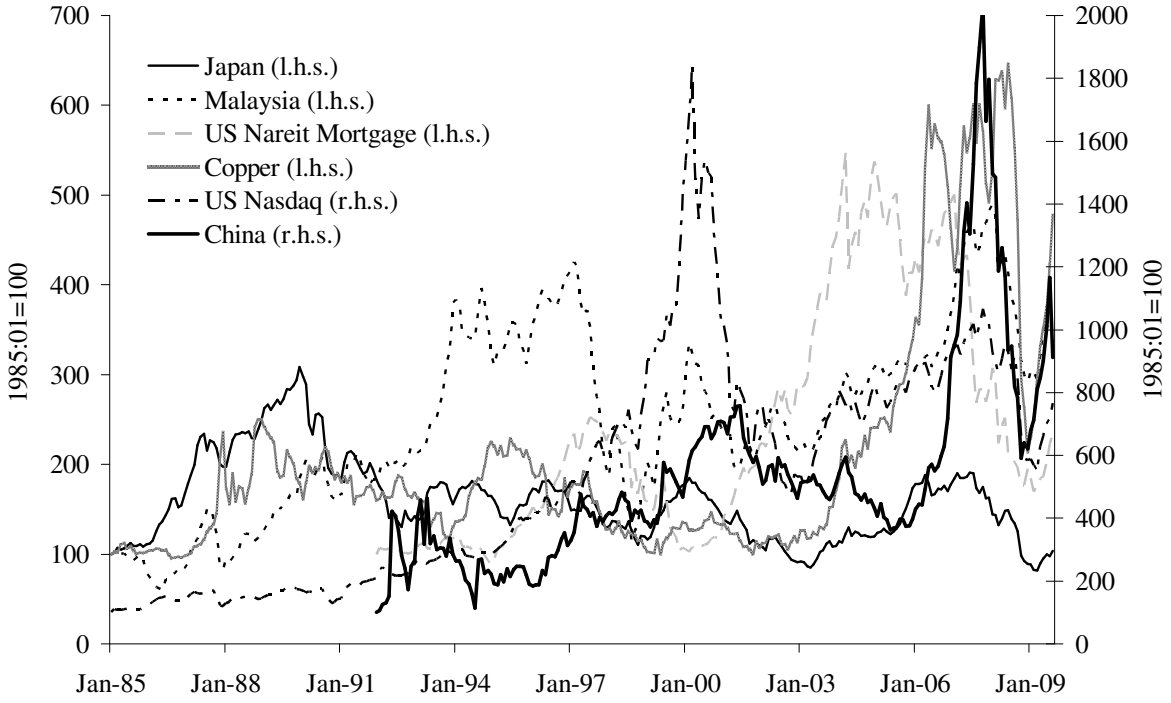
*A Wave of Wandering Bubbles*

The outcome of asymmetric monetary policy responses to bursting bubbles as described above and as modeled in Figure 3b and 4b and the resulting gradual decline of world interest rate levels was a wave of wandering bubbles as shown in Figure 8 (Hoffmann and Schnabl 2008). It is in line with Minsky's (1986) view, that in world with a large financial sector the crisis responses of governments and central banks increase the volatility of prices and output. The first stock and real estate boom emerged in Japan in the mid 1980s. After Japan had agreed to allow for a substantial appreciation of the yen in September 1985 (Plaza Agreement), the Bank of Japan lowered interest rates to stop a run into the Japanese yen. The sharp decline in interest rates contributed to the bubble in stock and real estate markets which reached its peak in December 1989 (first peak). The burst triggered a severe deflation in stock and real estate prices. The expansionary monetary policy during the following recession

created the breeding ground for the boom in South-East Asia as represented by Malaysia in Figure 8 (second peak).

The end of the East Asian euphoria was accompanied by rising instability in emerging market economies and a return of the global capital into the safe havens of the large financial markets. Now, favored by declining interest rates in the US the dotcom bubbles in the IT markets of the industrialized countries emerged as represented by the Nasdaq in Figure 8 (third peak). The burst of the irrational exuberance of the dotcom bubble was answered by Greenspan's interest rate cuts to a historically low level, the famous Greenspan put. The Federal Funds rate was kept too low for too long as indicted by the Taylor rule (Taylor 2008) and contributed to excessive lending and the subprime market boom (Diamond and Rajan 2009) (forth peak).

Figure 8
A Wave of Wandering Bubbles




*Source: IMF: IFS, 2009.*

The unprecedented US monetary expansion was not limited to the US. As most countries in East Asia, Latin America, the CIS and the Middle East used to peg their currencies to the dollar, the inflationary pressure arising from US monetary policy was transmitted – supported by a hike in raw material prices – to a large set of emerging market economies around the globe. Including China as the hub of industrial production bubbles in global stock, real estate and raw material markets emerged. In Figure 8 these bubbles are represented by the Chinese stock market and the development of the price for copper (fifth peak).

The burst of these bubbles following the end of the US subprime market boom trigged the largest financial and economic crisis since the Great Depression. As economic activity picked up the fastest in East Asia (excluding Japan), the next bubble might well emerge there. Also raw material markets may experience a new bubble as world raw material prices are less controlled by national governments and financial supervision which may have become more alert to irrational exuberance. Alternatively, if in the future bubbles will be prevented by appropriate policy intervention, bubbles will prick at an earlier stage, but will pop up elsewhere. The result would be a large number of "sparkling bubbles" and rising financial and output volatility.

*Exit strategies and future growth perspective*

In line with the overinvestment framework, Acemoglu's (2009: 190) argues that the tremendous decline in output was probably *"unavoidable […] given the overexpansion of the economy in prior years."* He argues that the economy will return to equilibrium without government intervention as *"within a decade or two, we may see modest but cumulative economic growth that more than outweighs the current economic contraction."*

Yet the asymmetric monetary and fiscal policies of the past render the future growth prospects misty. As interest rates have approached the zero bound monetary policies in the advanced economies have reached their limits. An unprecedented scope of unconventional measures has caused a tremendous expansion of central bank balance sheets during the crisis following substantial gradual expansions before crisis. Figure 9 provides a measure of the long-term evolvement of liquidity in the G3. Reflecting the quantity equation base money is plotted against real output.

In Japan, this ratio is constant up to the mid 1980s, increases in the second half of the 1990s and spurs since the mid 1990s when the interest rate approaches the zero bound and quantitative easing starts. In US the ratio falls until the mid 1980s and substantially increases under Alan Greenspan. The spike is the response to the recent crisis. In Germany, the ratio is by and large constant under the Bundesbank, and – controlling for the euro introduction – also in the first years of EMU. Since the turn of the millennium a sharp increase can be observed. In all three countries the present ratio is far above the ratio of the 1980s indicating a high monetary overhang in all large industrial countries. The monetary expansion in the center countries is reflected in a dramatic increase of foreign reserves in the periphery countries.

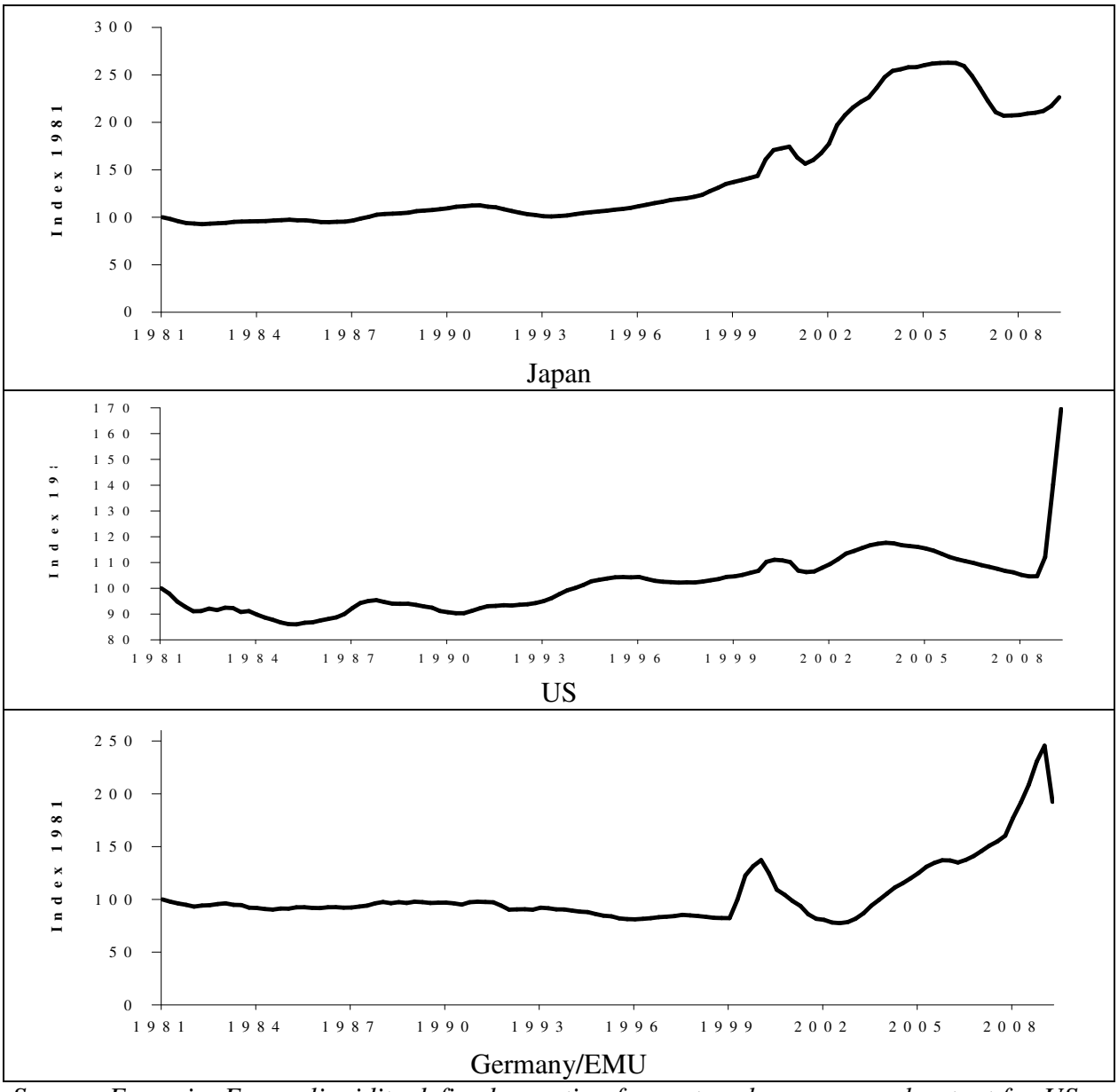
This would necessitate a reversal of asymmetric monetary policies and interest rate increases to return to the natural global interest rate level. Thus, the impressive increase of global excess liquidity poses the question of the exit strategy. Whereas chairman Bernanke has put forward the technical strategies to absorb the surplus liquidity (e.g. issuing central bank bonds, higher interest rates on deposits at the central bank etc.) the timing remains the pivotal political issue. If the economic recovery is seen as fragile, – as for two decades in Japan – the central banks may hesitate to lift interest rates.

For instance, Romer (2009), head of president Obama's council of economic advisers, has warned from restrictive monetary and fiscal policies at this stage. With the benefit of hindsight she argues that a monetary and fiscal tightening in 1936 has led to the second phase

of the Great Depression in 1937/38. In the mid 1930s commercial banks held excess reserves as a safety cushion. When the Federal Reserve decided to tighten the monetary stance to counteract inflation, commercial banks restricted lending and a credit crunch emerged. In addition, the fiscal stimulus was not renewed which further slowed down the recovery.

Figure 9

"Excess Liquidity" in US, Japan, Germany/Euro Area




*Source: Econwin. Excess liquidity defined as ratio of monetary base over real output for US, Japan, and Germany/Euro Area.*

From this point of view a reversal of the asymmetric monetary policy which would bring the world interest rate level back to a level that is neutral with respect to consumer and asset price inflation is even more unlikely. But if the interest rate level remains low in the long-term, the marginal efficiency of investment will further tend to decline and economic dynamics will further slow down. A vicious circle of macroeconomic stabilization and declining marginal efficiency of investment has set in (Schnabl 2009).

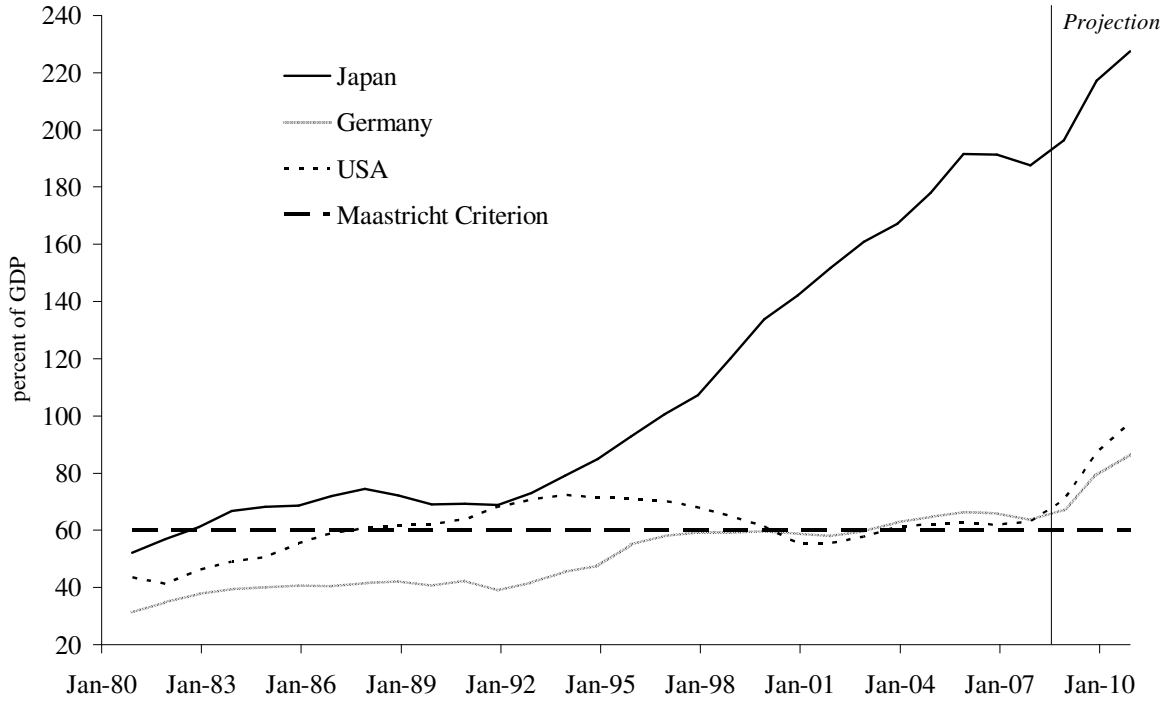
The resulting slow down in economic dynamics in the advanced economies would shift responsibility for macroeconomic stabilization even more to fiscal policies. Despite the recent sharp increases in levels of government debt in the US and Europe (Figure 10), there may be well more room for fiscal expansion. But the more the stock of government debt rises, the larger will be the interest of governments in a low interest rate level as observed in Japan. When the Japanese bubble burst in December 1989, government debt as percent of GDP was around 70 percent. With an interest rate for ten-year government bonds at around 6.5 percent, the interest rate burden as a share of the government budget was around ten percent. Since then the policy rate has fallen against zero and the government debt has risen to roughly 200 percent of GDP (Figure 10). Despite the worlds' highest gross debt, the interest rate burden remained moderate – at around 20 percent of the central government budget – because the ten year government bond yield has fallen to 1.5 percent. If, however, the yield would return to a "natural" level of around four percent the interest burden would ceteris paribus grow to around 50 percent. If the yield would be at eight percent, the government would have to use the whole budget to cover interest rate payments.

This explains, why also from a fiscal point of view, interest rates have to remain low. Yet, zero interest rates and a wave of government intervention in form of fiscal, exchange rate, trade and industrial policies increase the probability of moral hazard and investment with low marginal efficiency. Consumers, enterprises, and financial institutions are encouraged to take higher risk during the upswing and hope for macroeconomic stabilization or direct

subsidies during the downturn. Rising government spending contributes to an allocation of capital towards consumption and investment with low marginal efficiency. In the banking sector credit to the private sector is substituted by credit to the government. Overcapacities in infrastructure are likely to emerge. Banks and enterprises in financial distress, i.e. banks and enterprises with low marginal efficiency of investment, will tend to be subsidized. Distorted economic structures are conserved and created, with the costs being socialized via a higher tax burden or inflation.

Figure 10

Government Debt as share of GDP




*Source: EcoWin and WEO, 2009.*

## 5 The Case for a Coordinated Exit

We have shown that monetary and fiscal policies are tools to stabilize the economy in the face of financial crisis and recession. Yet from the overinvestment theories we have derived that asymmetric macroeconomic policies lead to distortions and are likely to paralyse the world's long-term growth perspective. As interest rates cannot be cut forever and government debt cannot grow to an unlimited extend a timely turn-around is necessary. Monetary easing has to be reversed decisively to signal banks and enterprises that the marginal efficiency of investment projects has to increase. Government debt has to decline to underpin the credibility of monetary policy. Such a turn-around in the world macroeconomic policy stance will be linked to a painful process of reallocation of resources in the short-run, while it is the prerequisite for a sustainable and stable recovery in the long run. As this policy change would be unpopular with voters and politicians, is it difficult to implement.

Therefore the key for the turn-around in monetary policy is in the US. Currently, given its institutional framework, the European Central Bank is most likely to engineer a decisive exit and a symmetric monetary policy. In addition, fiscal policies in Europe remain subject to fiscal rules. But this strategy will be unsustainable if Japan and the US keep their interest rates at zero. Then, the euro would come under appreciation pressure, which would force the European Central Bank to ease monetary conditions again. For this reason a coordinated action of the Federal Reserve, the Bank of Japan and the European Central Bank is needed to signal a credible return to the natural world interest rate to create the prerequisite for stable long-term growth.

REFERENCES


Acemoglu, D. (2009), The Crisis of 2008: Lessons for and from Economics. *Critical Review*, 21, 185-194.

Bernanke, B. (2000), Japanese Monetary Policy: A Case of Self-Induced Paralysis? In: Mikitani, Ryoichi / Posen, Adam (eds.): Japan's Financial Crisis and its Parallels to U.S. Experience, Institute For International Economics, Washington D.C., 149-166.

Bernanke, B.; M. Gertler and S. Gilchrist (1999), *The financial accelerator in a quantitative business cycle framework*, In: J. B. Taylor & M. Woodford (ed.), Handbook of Macroeconomics, eds 1, vol. 1, 21, 1341-1393.

Blinder, A. and R. Reis (2005), Understanding the Greenspan Standard. *Working Papers 88, Princeton University*, Department of Economics, Center for Economic Policy Studies.

Böhm-Bawerk, E. (1884): ‚Geschichte und Kritik der Kapitalzins-Theorien', *Kapital und Kapitalzins*, Band I, Jena.

Buchanan, J. and R. Wagner (2000), *Democracy in Deficit: The Legacy of Lord Keynes*. Liberty Fund.

Danne , C. and G. Schnabl (2008), A Role Model for China? Exchange Rate Flexibility and Monetary Policy Making in Japan. *China Economic Review* 19, 2, 183-196.

Diamond, D. and R. Rajan (2009), The Credit Crisis: Conjectures about Causes and Remedies.' *American Economic Review* 99, 606–610.

Feldstein, M (2009), Rethinking the Role of Fiscal Policy. American Economic Review: Papers and Proceedings 99, 2, 556-559.

Hayek, F. v. (1929) and (1976), *Geldtheorie und Konjunkturtheorie*, Salzburg.

Hayek, F. v. (1967) and (1935), *Prices and Production*. 2nd ed. Augustus M. Kelley, Clifton, NJ.

Hoffmann, A. (2009): Asymmetric Monetary Policy with Respect to Asset Markets. *Forthcoming in Oxonomics - Oxford University Economic Studies.*

Krugman, P. (2009): *The Return of Depression Economics.* New York.

Minsky, H. (1986), *Stabilizing an Unstable Economy*. Yale University Press.

Minsky, H. (1992), The Financial Instability Hypothesis. Working Paper No 74, Bard College. The Levy Economics Institute. Prepared for Handbook of Radical Political Economy, eds.: Ph. Arestis, M. Sawyer and E. Elgar: Aldershot, 1993.

Mises, L. v. (1912), *Die Theorie des Geldes und der Umlaufmittel*. Duncker und Humblot, Leipzig.

Prychitko, D. (2009), Competing Explanations of the Minsky Moment: The Financial Instability Hypothesis in Light of Austrian Theory. *Forthcoming in The Review of Austrian Economics*.

Rizzo, M. and G. Whitman (2003), Little Brother is Watching You: New Paternalism on the Slippery Slopes, *Arizona Law Review*, 51, 3 685-739.

Romer, C. (2009), The Lessons of 1937. The Economist June 18th 2009.

Schnabl, G. (2009): Asymmetrische Makropolitiken und eingetrübte Wachhstumsperspektiven. *Wirtschaftsdienst* 89, 10, 660-664.

Schnabl, G. and A. Hoffmann (2008), Monetary Policy, Vagabonding Liquidity and Bursting Bubbles in New and Emerging Markets – An Overinvestment View. *The World Economy* 31, 1226-1252.

Schnyder, M (2002), *Die Hypothese finanzieller Instabilität von Hyman P. Minsky.* Universität Freiburg i.Ue..

Schumpeter, J. (1912) and (1983), *The Theory of Economic Development*, Cambridge, Massachusetts, (In German: Theorie der wirtschaftlichen Entwicklung, Leipzig).

Taylor, J. (2008), The Financial Crisis and the Policy Responses: An Empirical Analysis of what Went Wrong. *Stanford University Working Paper*.

Wicksell, K. (1898) and (2005), Geldzins und Güterpreise, Jena und München.