UNIVERSITÄT LEIPZIG

Wirtschaftswissenschaftliche Fakultät
Faculty of Economics and Management Science

Working Paper, No. 121

Gunther Schnabl

The Global Move into the Zero Interest Rate and High Debt Trap

Juli 2013

ISSN 1437-9384

The Global Move into the Zero Interest Rate and High Debt Trap*

Gunther Schnabl
University of Leipzig
Grimmaische Str. 12, 04109 Leipzig, Germany
E-mail: schnabl@wifa.uni-leipzig.de

Abstract
The paper identifies based on the monetary overinvestment (malinvestment) theories by Wicksell (1898), Mises (1912) and Hayek (1929) monetary policy mistakes in large industrial countries issuing international currencies. It its argued that a benign neglect towards monetary policy reform in a world dominated by financial markets has led to a erosion of the allocation and signaling function of the interest rate, which has triggered an excessive rise of government debt and structural distortions in the world economy. The backlash of high government debt levels on monetary policy making is argued to lead to the hysteresis of low interest rates and high government debt levels. In this context, monetary reform is discussed with respect to the exit from low interest rates and high debt policies and a reform of the prevalent world monetary system. It is concluded that enhanced competition between dollar and euro as international currencies, which is refereed by East Asia, can be a promising approach towards a more stable world monetary system.

JEL: E42, E58, F33, F44.
Keywords: Economic Instability, Credit Cycles, Monetary Policy, Hayek, Mises, Monetary Policy Reform, Currency Competition.

* I thank Andreas Hoffmann and the participants of the April 2012 Liberty Fund Conference in Freiburg "In the Search for a Monetary Constitution Revisited" for very useful comments.

1 Introduction

„The wavelike movement effecting the economic system, the recurrence of periods of boom which are followed by periods of depression is the unavoidable outcome of the attempts, repeated again and again, to lower the gross market rate of interest by means of credit expansion." (Ludwig von Mises 1949: 572)

„The desirable behavior of the total quantity of money [...] can never legitimately be applied to the situation of a singly country which is part of an international economic system, and that any attempt to do so is likely in the long run and for the world as a whole to be an additional source of instability."

(Friedrich August von Hayek 1937: 93)

Since the mid 1980s the global monetary system has suffered from a swelling wave of wandering bubbles, which has cumulated into a series of crisis events and excessive monetary easing (Schnabl and Hofmann 2008). Whereas monetary easing has originated in the large industrial countries with independent central banks, boom-and-bust periods have emerged both in the industrialized and emerging world. Given that monetary policy rates in the industrialized countries have approached the zero bound and rising government debt levels herald further pressure on central banks towards monetizing government debt, doubts concerning the sustainability of the current world monetary system – which is based on fiat money and the discretionary use of monetary policy for business cycle stabilization – are growing (Selgin, Lastrapes, White 2012, Polleit 2011).

Although there can be few doubt that given the current scope of monetary expansion, price, financial, economic and political stability are at risk, very few action has been taken towards monetary policy reform so far. Policy makers, central bankers and economists seem absorbed by day-to-day crisis management rather than reflecting on the roots of financial fragility and crisis. The imminent threat of financial meltdown and rising unemployment is argued to make further monetary easing pressing with monetary policy success being regarded to be ensured by moderate consumer price inflation (Bernanke 2011, Draghi and Constâncio 2012).

To create a basis for the discussion of monetary policy reform the paper uses the Austrian monetary business cycle theories as put forward by Wicksell (1898), Mises (1912), Hayek (1929) as a theoretical framework. This allows to identify monetary policy mistakes in form of "benign neglect" towards monetary policy reform, which is argued to have led into a vicious circle of financial crisis and monetary expansion, and therefore into what will be dubbed low interest rate and high government debt trap. To identify the appropriate toehold for monetary policy reform the stability of non-exit equilibria and monetary policy based redistribution chains in favour of the current world monetary hegemon are derived. To solve the current dilemma of a hysteresis of a low interest rate and high government debt environment currency competition between dollar and euro with China as a referee is proposed.

2 The Failure of Monetary Policy Rules and the Supremacy of Keynes over Hayek

Since the mid 1980s starting with a too loose monetary policy in Japan the world has experienced a pendulum of monetary expansion and financial market boom and bust (Schnabl and Hoffmann 2008). The outcome has been an unprecedented scope of crisis, triggered by an unprecedented scale of monetary expansion, which has been justified by contained consumer price inflation.

The monetary overinvestment[1] theories by Wicksell (1898), Mises (1912), Hayek (1929) provide a valuable framework to understand the interaction dynamics between monetary expansion, boom and bust on financial markets and benign neglect towards monetary policy reform. Given a higher weight of financial markets for economic activity, goods market based monetary rules, which were originally designed to depoliticise monetary policy, became the gateway towards a revival of Keynesian macroeconomic fine-tuning based on monetary policy.

2.1 Monetary Policy Failure from a Wicksell-Hayek-Mises Perspective

Although the monetary overinvestment theories by Wicksell (1898), Hayek (1929) and Mises (1912) were designed to model real business cycles – with the impact on financial markets only playing a second-order role – they provide a useful starting point to understand the most recent boom-and-bust in financial markets and failure of monetary reform. Whereas, in the seminal overinvestment theories undue monetary expansion triggers (real) investment booms, which are followed by rising consumption, inflation and rising stock market prices, nowadays financial market booms (preferably in stock und real estate markets) are followed by consumption and investment booms. The move into recessions is triggered by financial market crisis rather than by rising inflation as in the seminal overinvestment theories.

To describe a Wickell-Hayek-Mises-type overinvestment boom four interest rates are distinguished. First, the *internal interest rate* is assumed to reflect the expected returns of investment projects. Second, the *natural interest rate* is defined to balance supply (saving) and demand (investment) on domestic capital markets (I=S). Third, the *central bank interest rate* 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. Forth, the *capital market*

[1] Alternatively "malinvestment".

interest rate is defined as the interest rate set by the private banking (financial) sector for credit provided to private enterprises (Hoffmann and Schnabl, 2011a). Following the interest rate concept of Wicksell (1898), Mises (1912) and Hayek (1929, 1935), the saving-investment decisions in an economy are in equilibrium, when the *natural rate of interest* is equal to the *central bank and capital market interest rate*.[2]

An upswing in a closed economy starts, for instance, because positive expectations due to real or financial innovation (Schumpeter, 1911; Hayek, 1929) increase the internal interest rate of investment. Given rising investment the natural rate of interest increases. In the endogenous business cycle models of Mises (1912) and Hayek (1929; 1935) a credit and overinvestment cycle emerges as the central bank keeps the policy rate constant during the upswing allowing for too easy refinancing conditions. Alternatively, because of competition for market shares, commercial banks hold capital market rates low by expanding credit lines (Hayek, 1929). Additional investment projects with lower marginal efficiency are financed which are not backed by rising saving, as the interest rate remains low. An unsustainable disequilibrium between saving and investment is constituted.

According to Hayek (1935) excessive lending at constant capital market rates during the upswing distorts the production structure of the economy. As capital market rates stay low despite higher investment, the credit expansion falsely signals to investors that saving (preferences of households to forgo present consumption) has increased. With consumption being expected to decline in the present and to increase in the future, high future returns on investment of capital goods (goods aimed at producing future consumer goods) are expected. Unemployed capacities and labour are drawn into the production of investment goods. More consumption is induced by rising employment, wages and income. The demand for consumer goods rises as well, providing an incentive to further increase capacities (Garrison, 2004).

[2] Usually, the capital market interest rate is assumed to follow the central bank interest rate. For the (temporary) divergence of capital market interest rates and central bank interest rates during crisis see Hoffmann and Schnabl (2011b).

The positive expectations can be transmitted to the asset markets where speculation may set in. According to Schumpeter (1911, 237) price expectations of stocks and other real assets can be disconnected from the real economic development. A speculative mania may emerge, in which speculative price projections set in and "*the symptoms of prosperity themselves finally become, in the well known manner, a factor of prosperity*" (Schumpeter 1911, 226).

Investment and consumption can co-move upwards as long as there are unemployed workforce and idle capacities. At some point, labor becomes scarce and capacity limits are reached. Resources are bound in the capital goods sectors, whereas the consumption goods sector is unable to satisfy increasing demand. The over-employment of capital and labour cannot be sustained to keep up the production level. Consumer price inflation accelerates. The central bank increases the interest rate to fight inflation (Mises, 1912; Hayek, 1929; 1935) and/or commercial banks reassess the credit risk. Investment projects turn unprofitable and cannot be finished due to scarce resources (Hayek, 1935). Central bank policy rates and capital market rates rise and credit is restricted.

The boom turns into bust. Investment projects with an internal interest rate below the increased interest rate have to be dismantled. Asset prices burst, which worsens the equity positions and credit worthiness of firms. Investment falls further, which pulls the natural interest rate below the central bank and/or the capital market rate. A saving overhang emerges because saving is more lucrative at relatively higher interest rates while investment is less profitable. This leads to further disinvestment. Production declines, unemployment rises and wages fall. Due to falling consumption (at higher interest rates), prices start to deflate. As the central bank and/or commercial banks hold the interest rate above the natural interest rate, the downturn is amplified.

2.2. The Natural Interest Rate and Monetary Policy Rules

Although the Austrian business cycle theories aimed to model real business cycles, they can be used as a framework for classifying and identifying monetary policy mistakes. Based on the Austrian concept of the natural interest rate – which balances saving and investment – two types of monetary policy mistakes can be defined.

First, during an economic upswing the central bank keeps the interest rate below the natural interest rate (for too long) (monetary policy mistake of type 1). This triggers an overinvestment boom as described above which inevitably leads into crisis and recession. Second, during recessions the central bank keeps the central bank rate above the natural interest rate (for too long), thereby aggravating the downturn (monetary policy mistake of type 2).

The policy implication arising from the monetary overinvestment theories is that central banks should keep central bank rates close to the natural interest rate both in boom and recession to smooth business cycles (Hayek 1929). Although the natural interest rate remains a theoretical concept and therefore unknown to policy makers, it should be the task of central banks to gain sufficient information to keep the central bank rate close to the natural interest rate. In this spirit, Taylor (1993) provided an inflation-targeting rule. It aims to isolate independent central banks from producing Philips-curve type short-term employment effects (Kydland / Prescott 1977). White (2010) characterizes such a constitutional constraint on monetary policy makers as „rule of law“ rather than „rule by authorities".

However, since the 1990s inflation targeting regimes as frameworks to contain inflationary pressure and economic stability failed for two reasons. First, given the fall of the iron curtain and the integration of a large set of low wage countries (in particular China) into the world economy, money supply in large industrial countries could grow without any visible impact on domestic consumer price inflation (Hoffmann and Schnabl 2011b).

Second, the gradual growth of international financial markets allowed money supply growth to be absorbed by capital markets rather than goods markets. Easing monetary conditions showed up in rising asset rather than goods prices. With national monetary expansion in the large industrialized countries being absorbed by foreign goods and/or domestic and/or foreign financial markets, monetary expansion could assume a Keynesian discretionary stimulus function, without violating consumer inflation based monetary policy rules.

During a period which was dubbed great moderation (Bernanke 2004) central banks could keep interest rates low for long during booms, as the impact of monetary expansion on consumer price inflation was postponed via a loop way through emerging market economies and financial markets. Easing monetary conditions fuelled bubbles in emerging and financial markets, which only made inflation rising with a significant lag, when wealth effects of rising asset prices made economic agents indulge in consumption.

In the large countries issuing the large international currencies these loop ways are particularly extended, as they take their ways through fast growing emerging market economies (Hoffmann and Schnabl 2011b). For instance, monetary expansion in the US stimulated capital outflows to China, where the resulting growth impulses helped absorbing the additional money supply and the government embarked on non-market based sterilization policies to keep dollar export prices low (McKinnon and Schnabl 2012). Only to the extend that Chinese monetary authorities allow domestic inflation to rise and the exchange rate to appreciate, the inflationary effects of US monetary expansion have feed back effects on the US itself, via US price inflation over imports from China (McKinnon and Schnabl 2009).

Second, the fast growth of emerging markets and financial markets allowed for persistently low consumer price inflation due to an asymmetric attitude towards monetary policy mistakes of type 1 and type 2. The monetary policies as observed since the mid 1980s in the large countries (Japan, US, Germany/euro area) became mainly subject to a monetary

policy mistake of type 1: Interest rates set by central banks tended to be kept too low for too long during economic upswings, in the US after 2001 under Alan Greenspan for instance below the Taylor (1993) target. In contrast, during recessions central banks tended to slash interest rate immediately to avoid the monetary policy mistakes of type 2.

2.3. Keynes' Supremacy over Hayek

The consequence has been the supremacy of Keynes over Hayek in a world where central bank independence and monetary policy rules seemed to thrive. Monetary policy reform towards a symmetric use of monetary policy over the business cycle (to avoid monetary policy mistakes of type 2 **and** type 1) with a larger role of financial markets for monetary policy did not occur as central banks were regarded to be unable to spot or to tame bubbles. Alan Greenspan pioneered a central bank system, which felt obliged to stabilize financial markets in times of crisis (the so-called Greenspan put), but which remained inactive in boom periods. In the so called *Jackson Hole* Consensus US central bankers agreed that central banks do not have sufficient information to spot bubbles, but should intervene in times of financial turmoil.

Whereas in the monetary overinvestment models central bank mistakes were modelled symmetrically to explain business cycle fluctuations, realized monetary policy patterns in the large industrial countries since the mid 1980s were asymmetric. Monetary policy mistakes of type 1 prevailed as the impact of expansionary monetary policies on asset price inflation (and volatility) was proclaimed to be outside the responsibility of central banks during boom phases. In contrast, monetary policy mistakes of type 2 were decisively addressed to prevent central banks from worsening recessions by too tight monetary policy stances. Given a rising sensibility of central banks concerning financial stability during crisis, they even tended to transform policy mistakes of type 2 into policy mistakes of type 1 during recessions, what

further amplified of the degree of asymmetry in monetary policy making. The ultimate outcome has been the convergence of central bank interest rates towards zero and the advent of unconventional monetary policy.

There are three possible reasons for a too expansionary monetary policy during crisis, i.e. a decline of the central bank rate below the natural interest rate: First, in times of financial 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, central banks make a correct assessment of the natural interest rate, but there is no clear institutional separation between the financial sector and the central bank. The central bank sets interest rates too low to minimize the losses of the financial sector. Third, the central bank is dependent on the government and increases the probability of re-election by minimizing unemployment and government deficits. For instance Buchanan and Wagner (2000) argue "*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.*"

The outcome has been the supremacy of Keynes over Hayek in monetary policy making. Monetary policy, gradually and covertly, took over the role of providing a growth stimulus, both in recession and in boom, instead of remaining solely obliged to price stability in a wider sense, i.e. stability of goods **and** asset prices. There are two types of justifications for the return of Keynesian monetary policy making despite the apparent success of central bank independence and monetary policy rules. First, during recessions, on the background of the spook of the world economic crisis, monetary expansion was justified with a Wicksell-Hayek-Mises monetary policy mistake of type 2 (Bernanke 2011). Yet, in practice, monetary policy mistakes of type 2 tended to be transformed in monetary policy mistakes of type 1.

Second, during booms central banks tended to remain inactive despite financial market exuberance, what can be characterized as discretionary benign neglect towards necessary

monetary policy reforms behind the fig leaf of outdated monetary policy rules. Central banks did not curtail excessive money supply growth, as domestic inflation remained contained and any impact of monetary expansion on future economic stability was claimed to be outside predefined rules. In Europe, where the monetary pillar of the ECB monetary policy strategy provided sufficient room to incorporate the impact of expansionary monetary policy on asset price inflation, the monetary pillar came under attack (De Grauwe 2006). The reference value for money supply growth became widely ignored.

3 The Global Move into the Low Interest Rate and High Debt Trap

Since the monetary counter revolution of the early 1980s, which marked the return towards a high weight of price stability for monetary policy, interest rate levels in the large industrial countries (Japan, US, Germany/euro area) gradually declined towards zero. Whereas in the US and the euro area the exit from the zero / historical low interest rate policy remains to be perceived to be only temporarily postponed, the zero interest rate policy in Japan persists since 1999 (Krugman 2012). It will be shown how the structural decline of monetary policy rates below the natural interest rate – and the resulting erosion of the signalling and allocation function of the interest rate – interacted with fiscal policy to further postpone monetary policy reform.

3.1 The Global Structural Decline of Interest Rates

The structural decline of both the nominal and real world interest levels began in Japan in the mid 1980s, driven by an asymmetric exchange rate policy. Because the dynamic export sector is the main pillar of growth, yen appreciation constitutes a painful drag on growth. Japanese monetary authorities intervened in foreign exchange markets in times of yen appreciation to

soften appreciation pressure, whereas they remained widely inactive when the yen depreciated.

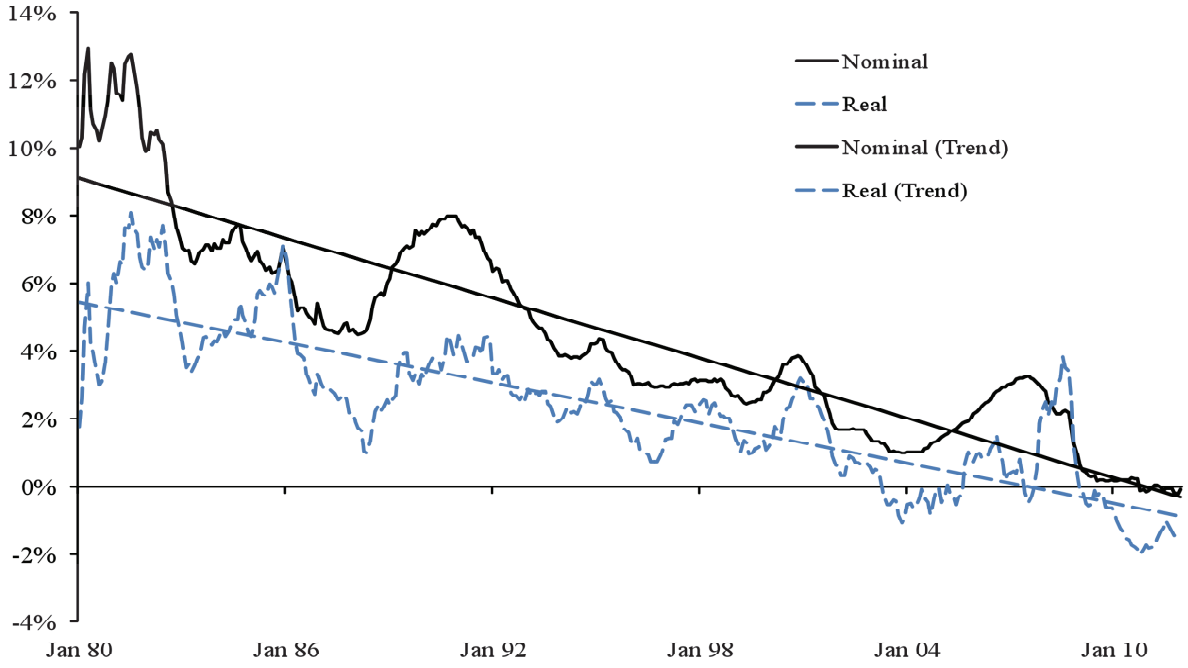
Given this asymmetric intervention pattern, the Japanese foreign exchange reserves rose to by then unprecedented levels. Although Japanese foreign currency purchases were sterilized in the first place to neutralize effects on domestic monetary conditions, interest rates fell during appreciation phases more than thay were raised during yen depreciation phases. As a result Japanese short-term interest rates fell in waves, often linked to crisis events, from approximately eleven percent in 1980 to nil in 1999. Since then Japan remains stuck in a zero interest rate environment (Schnabl 2013).

A similar scenario emerged in the US under Alan Greenspan with respect to stock markets, as monetary policy tended to respond to bear markets (1987 stock market crash, burst of the dotcom bubble, subprime crisis) while it refrained from intervening in the bull markets of the dotcom or the subprime booms (Hoffmann 2009). The key interest rate fell more quickly in recessions than it rose during booms, from more than 18 percent in 1980 to close to nil in 2009.

The EMU experienced a less pronounced development than in Japan or the United States as the German notion that monetary policy should be solely committed to price stability to some extend prevailed. The institutional framework of the European System of Central Banks sets an explicit inflation target and – based on the second pillar of the monetary policy strategy – pays attention to monetary aggregates. The growth of money supply M3 far beyond the reference value of 4.5% may have given information that inflationary pressure – in goods or financial markets – had emerged. Yet, the euro area did not remain isolated from foreign monetary trends due to appreciation pressure on the euro, which affected in particular the economic performance of former weak currency countries. During the most recent crisis also euro area interest rate levels declined to a historical low of 0.5 percents accompanied by unconventional monetary policy measures such as outright government bond purchases.

Figure 1 summarizes the structural decline of nominal and real interest levels in the large industrialized countries since the early 1980s close to and below zero.

Figure 1
Nominal and Real Money Market Interest Rates in Japan, US, Germany/Euro Area



Source: IMF: IFS, 2013. Arithmetic averages.

3.2 The Monetary Policy Induced Increase of Public Debt Levels

The structural decline of interest levels which reflects a gradual monetary expansion in the large industrial countries was followed by a growing wave of boom-and-bust cycles as described by Hoffmann and Schnabl (2011a). Both the boom and the bust periods contributed to a (partially hidden) gradual increase of government debt levels, as politicians around the world exhibited a benign neglect towards the Keynesian postulate of symmetric counter-cyclical fiscal policies. The gradual rise of government debt in the euro area could not be prevented by the Maastricht rules on fiscal sustainability.

During boom periods, when monetary expansion and financial market exuberance, inflated – often to the surprise of policy makers – tax revenues, policy makers could not resist the temptation to raise expenditure instead of reducing already considerable public debt levels. The pro-cyclical fiscal policy mistakes during increasingly financial market driven upswings had two dimensions. First, politicians did not behave anti-cyclically during the boom, as additional tax revenues were not completely saved and spending was not cut (fiscal policy mistake of type 1).

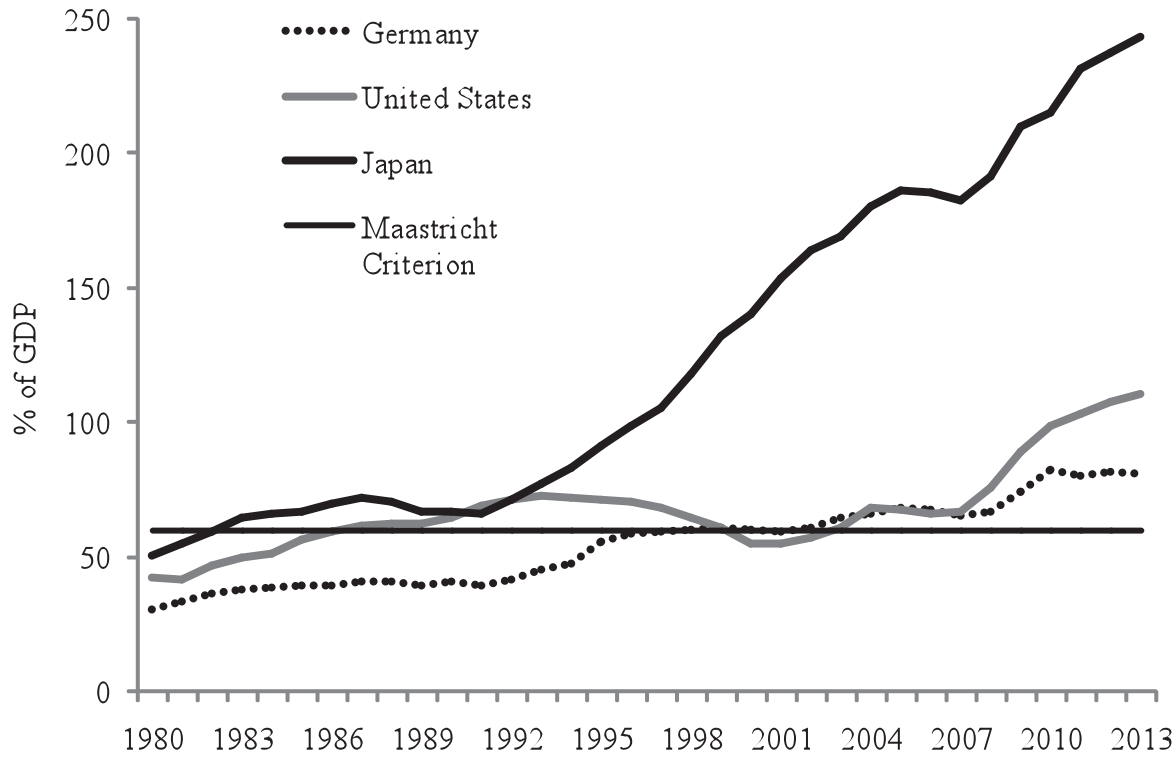
Second, although the statistical concept of cyclically adjusted fiscal balances existed, the calculation of cyclically adjusted fiscal balances – and thereby the target values for fiscal contraction during booms – did not incorporate the fact that during overinvestment (or speculation) booms tax revenues were inflated beyond the scope of conventional upswings (fiscal policy mistake of type 2). For instance in Ireland and Spain unsustainable financial market and real estate booms made look public budgets sound, although the rising imbalances put the stage for immense upcoming burdens on public finances.

The two types of the fiscal policy mistakes become visible during financial crisis, when the burst of financial or real estate bubbles leads to a sharp decline of tax revenues and to extraordinary expenditures to stabilize financial markets. The consequences of fiscal policy mistakes of type 1 and 2 can be hidden during crisis through monetary expansion as long as interest rates are high enough to embark on monetary expansion. Hoffmann and Schnabl (2011a) dub this phenomenon the "fiscal honeymoon". Yet, when monetary policy rates approach the zero bound public debt levels start to strongly increase as the effectiveness of unconventional monetary policy expansion remains limited. Where – as in the European Monetary Union – debts levels are constrained by institutionalized rules, these rules tend to be abandoned due to extraordinary circumstances.

The hike of public debt levels during crisis in the low interest rate environment has four dimensions. First, the declining effectiveness of monetary policy. Second, the

extraordinary need for fiscal stimulus during extraordinary crisis. Third, the lack of anti-cyclical saving during the boom in the Keynesian sense. Forth, the lack of anti-cyclical public saving in the Hayekian sense, which is linked to the inability of policy makers to spot bubbles and to anticipate the fiscal consequences. Figure 2 shows the resulting structural increase of public debt levels in the large industrial countries, which have reached with the most recent crisis historical peaks in the post-war period.

Figure 2: General Government Debt as Percent of GDP



Source: World Economic Outlook.

3.2. The Hysteresis of the Low Interest Rate Trap

Once countries have entered the low interest rate trap and public debt levels continue to increase the situation is likely to persist. The hysteresis of the low interest rate trap is caused by the "fear of structural adjustment" after the boom has turned into bust. The usual adjustment process of the private sector according the monetary and real overinvestment theories of Wickell (1898), Hayek (1929) and Schumpeter (1911) is the dismantling of investment projects which were started, when the interest rate was kept too low for too long and which have turned out unprofitable once credit conditions were tightened.

In the real sector, without policy intervention, enterprises faced by declining demand and declining prices either exit from the market, consolidate their business activities or struggle to survive on a lower level of production. Schumpeter (1911: 360-369) regards this "cleansing effect" of recessions as an essential part of a market economy for four reasons (Maurel and Schnabl 2012): Speculative investment is to be abandoned, inefficient enterprises have to leave the market, the efficiency of the remaining enterprises is strengthened (as wages decline and productivity rises), and new enterprises, products and production processes emerge at the cost of old ones.

To prevent such an adjustment process and the resulting rise in unemployment central banks will tend to keep policy rates low for long. This implies in the low interest rate trap "*the persistence of the unadpated and unlivable*" (Schumpeter 1911: 367). The marginal efficiency of private investment will tend to decline, as the allocation function of the interest rate is lost, and (speculative) investment projects with a very low marginal efficiency will persist.

From a financial market perspective, the zero interest rate policy of the central bank provides incentives for commercial banks to postpone the restructuring of the credit portfolio (Schnabl 2013). Investment projects with a low marginal efficiency will continue to be financed and – as the average marginal efficiency of the financed investment projects declines – commercial banks become more vulnerable to a tightening of monetary conditions. The central bank will feel urged to keep interest rates low to preserve financial stability.

From the government perspective, the pressure on the central bank to keep interest rates low results from the signalling function of the interest rate concerning the soundness of public debt levels. Under free market conditions rising default risk due to rising debt levels is reflected in higher risk premiums. For instance for the current European crisis countries since the turn of the millennium, rising (potential) debt levels would have led to rising risk premiums. Yet expansionary monetary policies, following the burst of the dotcom bubble, compressed the risk premiums on the demand and the supply side of the government bond market. On the supply side buoyant capital inflows into the later crisis economy created the illusion of lasting increases in tax revenues, which stimulated further bond sales. On the demand side, during credit booms the improving macroeconomic performance and rising tax revenues created the illusion of rising debt worthiness of governments.

The upshot is, that in low interest rate trap, after government debt levels have substantially increased, governments will be only able to circumvent painful spending cuts, if the central bank compresses risk premiums on government debt. They do this by keeping interest rates low and by conducting unconventional monetary policy measures such as outright government bond purchases.

During the downward path of interest rates since the early 1980s, central banks provided an incentive to increase government debt levels via a price and an income effect. The price effect results from reduced financing costs for government debt, which allow increasing debt levels without a major impact on the interest rate burden (as a share of expenditure). During the busts the deleveraging of private agents (due to hiking risk exposure) creates a negative income effect, which urges governments to raise expenditure.

With debt levels increasing, the central bank must keep interest rates low, because of the inversed income and price effects: Rising interest rates would increase the share of the interest rate burden in the public budgets, what would force the government into tax increases or spending cuts. The austerity measures would aggravate the recession, which is unpopular

among voters and policy makers. Therefore the most likely outcome is that the fiscal consolidation keeps being postponed preventing the exit from the zero interest rate policies.

4. The Failure of Monetary Policy Reform

Because the hysteresis of ultra low interest rates and high public debt levels is linked to a loss of the allocation and signalling function of the interest rate, a structural decline of the marginal efficiency of investment, and growing structural distortions in the world economy, reforms of the world monetary system are pressing. The question of how the world can return towards a free market based system with a sound macroeconomic environment can be addressed based on two levels: The exit strategy from ultra low interest rates and high debt as well as the constitution of an alternative world monetary system which impedes central banks of large countries to embark on undue monetary expansion.

4.1. The Exit Dilemma

The prevalent institutional monetary policy framework – being based on central bank independence and monetary policy rules – still seems to be widely accepted among policy makers, central bankers and academics. Given this status quo monetary policy reform in a world of central banks would focus on the exit from low interest rate and high debt policies rather than changing the fundament of the world monetary system. The exit from the low interest rate and high debt traps has a macroeconomic policy dimension – which refers to the coordination of the monetary exit with the fiscal exit concerning the timing – and a country dimension – which refers to the monetary policy stance of other countries versus the US as the global monetary hegemon.

The overinvestment theories as discussed above stand for the monetary exit moving first. As decision making, implementation and transmission of fiscal tightening is slow, any approach, which regards fiscal consolidation as a prerequisite for monetary consolidation, would be equivalent to a postponed monetary policy exit. Boom-and-bust cycles, crisis and structural distortions would be perpetuated and the scale of future structural adjustment would increase.

In contrast, by moving timely towards monetary consolidation, i.e. gradually pushing the central bank rate towards the natural interest rate, would create a clear incentive to policy makers to consolidate public expenditure and public debt levels. The reconstitution of the signalling and allocation function of interest rates would turn all current attempts to substitute the signalling function of interest rates by fiscal policy rules redundant.[3] The cleansing effect (Schumpeter 1911) would trigger – after a painful restructuring process – a sustainable upswing on the back a gradual increase of the marginal efficiency of investment. Yet short-term oriented policy makers would be inclined to circumvent creative destruction by urging the central bank to keep interest rates low.

From an international perspective a credible exit from low interest rate policies hinges on the US as the hegemon in the world monetary system, as any move towards monetary expansion in the US implies an inherent pressure on other central banks to follow (McKinnon 2010, Hoffmann and Schnabl 2011b, Löffler, Schnabl, Schobert 2013). With the Federal Reserve having announced that the Federal Funds Rate will remain close to zero at least up to the year 2014 a restriction is set on the exit from low interest rate policies for all members of the informal dollar standard (McKinnon 2010), as well as the European Monetary Union.

The transatlantic transmission of the non-exit from the low interest rate trap works via the euro/dollar exchange rate, economic heterogeneity and crisis in the euro area. As US monetary policy expands, the euro – ceteris paribus – appreciates. The resulting moderation in

[3] This approach would be even more appealing, as non-automatic fiscal policy rules in European Union have proofed to be weak.

inflation opens the door for further monetary expansion in the euro area, while capital inflows from the US and declining interest rates encourage risk taking in financial markets. The multinational ECB decision making body will be inclined to embark on monetary expansion, as the heterogeneity between countries with weak and strong economic performance in the monetary union is amplified.

4.2 Global Imbalances and Redistribution as Impediments to Monetary Reform

For this reason the efforts towards monetary policy reform should be focused on a mechanism to control the monetary hegemon against monetary expansion. Hayek (1937: 93) argued that "*a really rational monetary policy could only be carried out by an international monetary authority, or at any rate by the closest cooperation of the national authorities and with the common aim of making the circulation of each country behave as nearly as possible as if it were part of an intelligently regulated international system*."

Although Hayek's (1937) proposition addresses the core flaw of the current fiat money based international monetary system, it suggests that any monetary policy reform strongly hinges on the willingness of the United States as the prevailing monetary hegemon. The monetary expansion in large industrial countries has inflated not only asset market prices on a global level but has also caused imbalances in current accounts. This sets the stage for systematic international redistribution processes, which reinforce the benign neglect towards monetary policy reforms by the global monetary hegemon.

The structural decline of interest rates has encouraged rising debt and consumption levels of households, enterprises and government, as interest rate cuts have kept the interest burden as a share of income constant. The outcome have been growing shares of consumption, government spending, government debt and current account deficits as percent of GDP, with the latter having led to a growing net nominal international liability position.

At the periphery of the informal world dollar standard, countries are forced into rising current account surpluses based on their attempts to cope with buoyant capital inflows and hiking raw material prices (see McKinnon and Schnabl 2012 for China, Löffler, Schnabl and Schobert 2013 for East Asia). Given declining US interest rates, carry trades are encouraged to hunt for yield in a rising number of emerging markets where growth perspectives are inflated by capital inflows in a self-fulfilling manner.

Becouse both goods and capital markets of emerging market economies are less developed than in industrial countries, the absorption capacity for capital inflows and monetary expansion without inflationary and asset market pressure is comparatively low. This has forced the emerging markets at the periphery of the informal dollar standard into relatively restrictive monetary policies – in form of nominal exchange rate stabilization and non-market-based sterilization – and thereby into the financing of US current account deficits (Schnabl and Freitag 2012).

Similarly, in Europe the divergence of current account balances between Germany and many European periphery countries since the turn of the millennium has been driven by divergent fiscal policy stances (Schnabl and Wollmershäuser, 2013). Whereas in Germany serious attempts were made to consolidate public finances and the competitiveness of the enterprise sector based on wage austerity, many countries at the periphery of the European (Monetary) Union embarked on expansionary fiscal and wage policies. The resulting rise of current account deficits at the periphery of the European (Monetary) Union was financed by capital inflows from countries with tighter fiscal policy stances such as Germany. The divergence in intra-European current account imbalances, international assets, and liability positions was amplified by a low interest rate policy of the European Central Bank after the burst of the dot-com bubble in the year 2000, which compressed risk premiums on interest rates.

The rising divergence of international asset positions within the informal dollar standard and within the European (Monetary) Union has become the breeding ground of redistribution schemes, which erode the incentive of international debtor economies to initiate monetary policy reform. In the informal world dollar standard, the supremacy of the US over monetary policy decisions is linked to the exorbitant privilege of the dollar as an international curreny which provides the US an quasi unlimited line of credit (McKinnon 2010). Given the structural characteristics of underdeveloped goods and capital markets, the countries at the periphery of the world dollar standard are inevitably forced into the accumulating of dollar reserves.[4]

The outcome has been an unprecedented surge of foreign (dollar) reserves in the balance sheets of the dollar periphery countries' central banks. This provides an incentive for the US to embark on further monetary expansion, as any additional US monetary expansion is equivalent to a real devaluation of the foreign dollar assets. In the case of fixed exchange rates international assets are devalued in real terms due to imported inflation. In the case of flexible exchange rates international dollar assets are devalued in nominal and real terms via dollar depreciation.

This redistribution process from dollar periphery central banks to the US government is not linked to crisis as it takes place among the public sectors with losses being realized by periphery central banks. The upshot is that any move towards monetary reform by the US is equivalent to a move away from the US' exorbitant privilege of providing an international currency, and therefore unlikely at the current point of time. This is in particular the case as US government debt is to a large extent held by foreign rather than by domestic agents.

[4] This phenomenon is independent from the exchange rate regime (Schnabl and Freitag 2012). Given fix exchange rates such as in Hong Kong and many oil exporting countries, US monetary expansion is directly translated into domestic monetary expansion. Given more flexible exchange rate regimes, the threat of inflation and asset price bubbles, sterilization costs (which erode central bank independence) or revaluation losses on foreign currency denominated reserves provide an inherent incentive to intervene against appreciation pressure on domestic currencies (Löffler, Schnabl and Schobert 2013).

An incentive towards a move of the US towards monetary policy reform could be created by a stability oriented monetary policy stance in Europe, which would enhance the international role of euro and thereby would undermine the widely unchallenged exorbitant privilege to issue the leading international currency. However, also in Europe the move towards a tighter monetary policy stance is unlikely given the current economic instability in the southern part of the euro area.

5 Conclusion: Checks and Balances in the International Monetary System

Hayek (1937) argued that national monetary policies themselves bear the danger of international (economic) instability if they aim to stimulate domestic growth without taking into account the international repercussions. It has been shown that the temptation by monetary hegenoms to stimulate growth based on consumption, debt and redistribution has led into an unprecedented scale of US monetary expansion. The outcome is an unprecedented scale of monetary expansion on a global level, which has triggered financial and economic instability.

Accepting the current central bank based international monetary system as given, any monetary reform – with the aim of nudging back central bank interest rates towards the natural interest rate – presupposes a disciplining mechanism on the world monetary hegemon. As this hegemon is unlikely at the current point of time to impose any constraint on monetary policy making by itself, the constraint has to come from outside, i.e. from the periphery countries of the world dollar standard.

Such an external constraint could be achieved based on a credible commitment of the East Asian countries, in specific China, to gradually re-peg their currencies from the dollar to euro. Although this would entail significant revaluation losses for China and other East Asian

countries on their dollar denominated foreign assets, future accumulation of foreign assets would be protected against (real) devaluation. The euro could serve as a more credible anchor currency, as the resulting seigniorage gains of the ECB could be used to solve the current crisis and would allow for a reconstitution of the stability oriented monetary policy. The prevalent two-pillar monetary policy strategy, would allow, based on the second monetary pillar, to put a larger weight on the impact of money supply growth on financial market exuberance and crisis.

In this environment of enhanced competition for the privileges of an international currency, East Asia (in particular China) could assume the role of a mediator. A stronger diversification of East Asian foreign reserve holdings and exchange rate stabilization based on dollar- and euro-based currency baskets with changing weights could create a disciplining mechanism concerning undue monetary expansion in the US and the euro area. This system of monetary checks and balances could path the way towards credible monetary reform to create more global financial, economic and political stability.

References

Bernanke B. (2004): The Great Moderation. Remarks by Governor Ben S. Bernanke at the meetings of the Eastern Economic Association, Washington, DC, February 20, 2004.

Bernanke B. (2011): The Effects of the Great Recession on Central Bank Doctrine and Practice. Speech at At the Federal Reserve Bank of Boston 56th Economic Conference, Boston, Massachusetts.

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

De Grauwe P. (2006): Flaws in the Design of the Eurosystem. *International Finance* 9, 1, 137-144.

Draghi M. and V. Constâncio (2012): Introductory Statement to the Press Conference, Frankfurt/Main, 04.10.2012.

Garrison R. (2004): Overconsumption and Forced Saving in the Mises-Hayek Theory of the Business Cycle. *History of Political Economy* 36, 2, 323-349.

Hayek F. v. (1929): Geldtheorie und Konjunkturtheorie. Reprint 1976. Philosophia Verlag, Salzburg.

Hayek F. v. (1935): Prices and Production. 2nd ed. Augustus M. Kelley, Clifton, New York, 1967.

Hayek F. v. (1937): Monetary Nationalism and International Stability, London.

Hoffmann A. (2009): Asymmetric Monetary Policy with Respect to Asset Markets. Oxonomics - Oxford University Economic Studies 4, 2, 26-31.

Hoffmann A. and G. Schnabl (2011a): A Vicious Cycle of Manias, Bursting Bubbles and Asymmetric Policy Responses – An Overinvestment View. *The World Economy* 34, 3, 382-403.

Hoffmann A. and G. Schnabl (2011b): National Monetary Policy, International Economic Instability and Feedback Effects – An Overinvestment View. *Global Financial Markets Working Paper 19.*

Krugman P. (2012): End This Depression Now. W. Norton & Company, New York and London.

Kydland F. E. and E. C. Prescott (1977): Rules Rather than Discretion: The Inconsistency of Optimal Plans. *Journal of Political Economy* 85, 3, 473-92.

Löffler A., G. Schnabl and F. Schobert (2013): Limits of Monetary Policy Autonomy and Exchange Rate Flexibility by East Asian Debtor Central Banks. *Mimeo.*

Maurel M. and G. Schnabl (2012): Keynesian and Austrian Perspectives on Crisis, Shock Adjustment, Exchange Rate Regime and (Long-Term) Growth. *Open Economies Review* 23, 5, 847-868.

McKinnon R. (2010): Trapped by the International Dollar Standard. *Journal of Policy Modeling* 27, 4, 477-485.

McKinnon R. and G. Schnabl (2009): The Case for Stabilizing China's Exchange Rate: Setting the Stage for Fiscal Expansion. *China and the World Economy* 17, 1-32.

McKinnon R. and G. Schnabl (2012): China and its Dollar Exchange Rate. A Worldwide Stabilizing Influence? *The World Economy* 35, 6, 667-693.

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

Mises L. v. (1949): Human Action. Yale University Press, New Haven.

Polleit T. (2011): Fluch des Papiergeldes, Finanzbuchverlag.

Schnabl, G. (2013): The Macroeconomic Policy Challenges of Balance Sheet Recession: Lessons from Japan for the European Crisis. *CESifo Working Paper 4249.*

Schnabl, G. and T. Wollmershäuser (2013): Fiscal Divergence and Current Account Imbalances in Europe. *CESifo Working Paper 4108*.

Schnabl G. and S. Freitag (2012): Reverse Causality in Global Current Accounts. *Review of International Economics* 20, 4, 674-690.

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, 9, 1226-52.

Selgin G. and L. White (2005): Credible Currency: A Constitutional Perspective. Constitutional Political Economy 16 (1)

Selgin G., W. Lastrapes and L. White (2010): Has the Fed Been a Failure? *Journal of Macroeconomics* 34, 3, 569-596.

Schumpeter J. (1911): Theorie der wirtschaftlichen Entwicklung. Duncker und Humblot, Leipzig.

Taylor J. (1993): Discretion versus Policy Rules in Practice. *Carnegie-Rochester Conference Series on Public Policy* 39, 195-214.

White L. (2010): The Rule of Law or the Rule of Central Bankers? *Cato Journal* 30, 3, 451-463.

Wicksell, K. (1898): Geldzins und Güterpreise, München.

Universität Leipzig
Wirtschaftswissenschaftliche Fakultät

Nr. 1	Wolfgang Bernhardt	Stock Options wegen oder gegen Shareholder Value? Vergütungsmodelle für Vorstände und Führungskräfte 04/1998
Nr. 2	Thomas Lenk / Volkmar Teichmann	Bei der Reform der Finanzverfassung die neuen Bundesländer nicht vergessen! 10/1998
Nr. 3	Wolfgang Bernhardt	Gedanken über Führen – Dienen – Verantworten 11/1998
Nr. 4	Kristin Wellner	Möglichkeiten und Grenzen kooperativer Standortgestaltung zur Revitalisierung von Innenstädten 12/1998
Nr. 5	Gerhardt Wolff	Brauchen wir eine weitere Internationalisierung der Betriebswirtschaftslehre? 01/1999
Nr. 6	Thomas Lenk / Friedrich Schneider	Zurück zu mehr Föderalismus: Ein Vorschlag zur Neugestaltung des Finanzausgleichs in der Bundesrepublik Deutschland unter besonderer Berücksichtigung der neuen Bundesländer 12/1998
Nr: 7	Thomas Lenk	Kooperativer Förderalismus – Wettbewerbsorientierter Förderalismus 03/1999
Nr. 8	Thomas Lenk / Andreas Mathes	EU – Osterweiterung – Finanzierbar? 03/1999
Nr. 9	Thomas Lenk / Volkmar Teichmann	Die fisikalischen Wirkungen verschiedener Forderungen zur Neugestaltung des Länderfinanz-ausgleichs in der Bundesrepublik Deutschland: Eine empirische Analyse unter Einbeziehung der Normenkontrollanträge der Länder Baden-Würtemberg, Bayern und Hessen sowie der Stellungnahmen verschiedener Bundesländer 09/1999
Nr. 10	Kai-Uwe Graw	Gedanken zur Entwicklung der Strukturen im Bereich der Wasserversorgung unter besonderer Berücksichtigung kleiner und mittlerer Unternehmen 10/1999
Nr. 11	Adolf Wagner	Materialien zur Konjunkturforschung 12/1999
Nr. 12	Anja Birke	Die Übertragung westdeutscher Institutionen auf die ostdeutsche Wirklichkeit – ein erfolg-versprechendes Zusammenspiel oder Aufdeckung systematischer Mängel? Ein empirischer Bericht für den kommunalen Finanzausgleich am Beispiel Sachsen 02/2000
Nr. 13	Rolf H. Hasse	Internationaler Kapitalverkehr in den letzten 40 Jahren – Wohlstandsmotor oder Krisenursache? 03/2000
Nr. 14	Wolfgang Bernhardt	Unternehmensführung (Corporate Governance) und Hauptversammlung 04/2000
Nr. 15	Adolf Wagner	Materialien zur Wachstumsforschung 03/2000
Nr. 16	Thomas Lenk / Anja Birke	Determinanten des kommunalen Gebührenaufkommens unter besonderer Berücksichtigung der neuen Bundesländer 04/2000
Nr. 17	Thomas Lenk	Finanzwirtschaftliche Auswirkungen des Bundesverfassungsgerichtsurteils zum Länderfinanzausgleich vom 11.11.1999 04/2000
Nr. 18	Dirk Bültel	Continous linear utility for preferences on convex sets in normal real vector spaces 05/2000
Nr. 19	Stefan Dierkes / Stephanie Hanrath	Steuerung dezentraler Investitionsentscheidungen bei nutzungsabhängigem und nutzungsunabhängigem Verschleiß des Anlagenvermögens 06/2000
Nr. 20	Thomas Lenk / Andreas Mathes / Olaf Hirschefeld	Zur Trennung von Bundes- und Landeskompetenzen in der Finanzverfassung Deutschlands 07/2000
Nr. 21	Stefan Dierkes	Marktwerte, Kapitalkosten und Betafaktoren bei wertabhängiger Finanzierung 10/2000
Nr. 22	Thomas Lenk	Intergovernmental Fiscal Relationships in Germany: Requirement for New Regulations? 03/2001
Nr. 23	Wolfgang Bernhardt	Stock Options – Aktuelle Fragen Besteuerung, Bewertung, Offenlegung 03/2001

Nr. 24	Thomas Lenk	Die „kleine Reform“ des Länderfinanzausgleichs als Nukleus für die „große Finanzverfassungs-reform“? 10/2001
Nr. 25	Wolfgang Bernhardt	Biotechnologie im Spannungsfeld von Menschenwürde, Forschung, Markt und Moral Wirtschaftsethik zwischen Beredsamkeit und Schweigen 11/2001
Nr. 26	Thomas Lenk	Finanzwirtschaftliche Bedeutung der Neuregelung des bundestaatlichen Finanzausgleichs – Eine allkoative und distributive Wirkungsanalyse für das Jahr 2005 11/2001
Nr. 27	Sören Bär	Grundzüge eines Tourismusmarketing, untersucht für den Südraum Leipzig 05/2002
Nr. 28	Wolfgang Bernhardt	Der Deutsche Corporate Governance Kodex: Zuwahl (comply) oder Abwahl (explain)? 06/2002
Nr. 29	Adolf Wagner	Konjunkturtheorie, Globalisierung und Evolutionsökonomik 08/2002
Nr. 30	Adolf Wagner	Zur Profilbildung der Universitäten 08/2002
Nr. 31	Sabine Klinger / Jens Ulrich / Hans-Joachim Rudolph	Konjunktur als Determinante des Erdgasverbrauchs in der ostdeutschen Industrie? 10/2002
Nr. 32	Thomas Lenk / Anja Birke	The Measurement of Expenditure Needs in the Fiscal Equalization at the Local Level Empirical Evidence from German Municipalities 10/2002
Nr. 33	Wolfgang Bernhardt	Die Lust am Fliegen Eine Parabel auf viel Corporate Governance und wenig Unternehmensführung 11/2002
Nr. 34	Udo Hielscher	Wie reich waren die reichsten Amerikaner wirklich? (US-Vermögensbewertungsindex 1800 – 2000) 12/2002
Nr. 35	Uwe Haubold / Michael Nowak	Risikoanalyse für Langfrist-Investments Eine simulationsbasierte Studie 12/2002
Nr. 36	Thomas Lenk	Die Neuregelung des bundesstaatlichen Finanzausgleichs auf Basis der Steuerschätzung Mai 2002 und einer aktualisierten Bevölkerungsstatistik 12/2002
Nr. 37	Uwe Haubold / Michael Nowak	Auswirkungen der Renditeverteilungsannahme auf Anlageentscheidungen Eine simulationsbasierte Studie 02/2003
Nr. 38	Wolfgang Bernhard	Corporate Governance Kondex für den Mittel-Stand? 06/2003
Nr. 39	Hermut Kormann	Familienunternehmen: Grundfragen mit finanzwirtschaftlichen Bezug 10/2003
Nr. 40	Matthias Folk	Launhardtsche Trichter 11/2003
Nr. 41	Wolfgang Bernhardt	Corporate Governance statt Unternehmensführung 11/2003
Nr. 42	Thomas Lenk / Karolina Kaiser	Das Prämienmodell im Länderfinanzausgleich – Anreiz- und Verteilungsmitwirkungen 11/2003
Nr. 43	Sabine Klinger	Die Volkswirtschaftliche Gesamtrechnung des Haushaltsektors in einer Matrix 03/2004
Nr. 44	Thomas Lenk / Heide Köpping	Strategien zur Armutsbekämpfung und –vermeidung in Ostdeutschland: 05/2004
Nr. 45	Wolfgang Bernhardt	Sommernachtsfantasien Corporate Governance im Land der Träume. 07/2004
Nr. 46	Thomas Lenk / Karolina Kaiser	The Premium Model in the German Fiscal Equalization System 12/2004
Nr. 47	Thomas Lenk / Christine Falken	Komparative Analyse ausgewählter Indikatoren des Kommunalwirtschaftlichen Gesamt-ergebnisses 05/2005
Nr. 48	Michael Nowak / Stephan Barth	Immobilienanlagen im Portfolio institutioneller Investoren am Beispiel von Versicherungsunternehmen Auswirkungen auf die Risikosituation 08/2005

Nr. 49	Wolfgang Bernhardt	Familiengesellschaften – Quo Vadis? Vorsicht vor zu viel „Professionalisierung" und Ver-Fremdung 11/2005
Nr. 50	Christian Milow	Der Griff des Staates nach dem Währungsgold 12/2005
Nr. 51	Anja Eichhorst / Karolina Kaiser	The Instiutional Design of Bailouts and Its Role in Hardening Budget Constraints in Federations 03/2006
Nr. 52	Ullrich Heilemann / Nancy Beck	Die Mühen der Ebene – Regionale Wirtschaftsförderung in Leipzig 1991 bis 2004 08/2006
Nr. 53	Gunther Schnabl	Die Grenzen der monetären Integration in Europa 08/2006
Nr. 54	Hermut Kormann	Gibt es so etwas wie typisch mittelständige Strategien? 11/2006
Nr. 55	Wolfgang Bernhardt	(Miss-)Stimmung, Bestimmung und Mitbestimmung Zwischen Juristentag und Biedenkopf-Kommission 11/2006
Nr. 56	Ullrich Heilemann / Annika Blaschzik	Indicators and the German Business Cycle A Multivariate Perspective on Indicators of Ifo, OECD, and ZEW 01/2007
Nr. 57	Ullrich Heilemann	"The Suol of a new Machine" zu den Anfängen des RWI-Konjunkturmodells 12/2006
Nr. 58	Ullrich Heilemann / Roland Schuhr / Annika Blaschzik	Zur Evolution des deutschen Konjunkturzyklus 1958 bis 2004 Ergebnisse einer dynamischen Diskriminanzanalyse 01/2007
Nr. 59	Christine Falken / Mario Schmidt	Kameralistik versus Doppik Zur Informationsfunktion des alten und neuen Rechnungswesens der Kommunen Teil I: Einführende und Erläuternde Betrachtungen zum Systemwechsel im kommunalen Rechnungswesen 01/2007
Nr. 60	Christine Falken / Mario Schmidt	Kameralistik versus Doppik Zur Informationsfunktion des alten und neuen Rechnungswesens der Kommunen Teil II Bewertung der Informationsfunktion im Vergleich 01/2007
Nr. 61	Udo Hielscher	Monti della citta di firenze Innovative Finanzierungen im Zeitalter Der Medici. Wurzeln der modernen Finanzmärkte 03/2007
Nr. 62	Ullrich Heilemann / Stefan Wappler	Sachsen wächst anders Konjunkturelle, sektorale und regionale Bestimmungsgründe der Entwicklung der Bruttowertschöpfung 1992 bis 2006 07/2007
Nr. 63	Adolf Wagner	Regionalökonomik: Konvergierende oder divergierende Regionalentwicklungen 08/2007
Nr. 64	Ullrich Heilemann / Jens Ulrich	Good bye, Professir Phillips? Zum Wandel der Tariflohndeterminanten in der Bundesrepublik 1952 – 2004 08/2007
Nr. 65	Gunther Schnabl / Franziska Schobert	Monetary Policy Operations of Debtor Central Banks in MENA Countries 10/2007
Nr. 66	Andreas Schäfer / Simone Valente	Habit Formation, Dynastic Altruism, and Population Dynamics 11/2007
Nr. 67	Wolfgang Bernhardt	5 Jahre Deutscher Corporate Governance Kondex Eine Erfolgsgeschichte? 01/2008
Nr. 68	Ullrich Heilemann / Jens Ulrich	Viel Lärm um wenig? Zur Empirie von Lohnformeln in der Bundesrepublik 01/2008
Nr. 69	Christian Groth / Karl-Josef Koch / Thomas M. Steger	When economic growth is less than exponential 02/2008
Nr. 70	Andreas Bohne / Linda Kochmann	Ökonomische Umweltbewertung und endogene Entwicklung peripherer Regionen Synthese einer Methodik und einer Theorie 02/2008
Nr. 71	Andreas Bohne / Linda Kochmann / Jan Slavík / Lenka Slavíková	Deutsch-tschechische Bibliographie Studien der kontingenten Bewertung in Mittel- und Osteuropa 06/2008

Nr. 72	Paul Lehmann / Christoph Schröter-Schlaack	Regulating Land Development with Tradable Permits: What Can We Learn from Air Pollution Control? 08/2008
Nr. 73	Ronald McKinnon / Gunther Schnabl	China's Exchange Rate Impasse and the Weak U.S. Dollar 10/2008
Nr: 74	Wolfgang Bernhardt	Managervergütungen in der Finanz- und Wirtschaftskrise Rückkehr zu (guter) Ordnung, (klugem) Maß und (vernünftigem) Ziel? 12/2008
Nr. 75	Moritz Schularick / Thomas M. Steger	Financial Integration, Investment, and Economic Growth: Evidence From Two Eras of Financial Globalization 12/2008
Nr. 76	Gunther Schnabl / Stephan Freitag	An Asymmetry Matrix in Global Current Accounts 01/2009
Nr. 77	Christina Ziegler	Testing Predictive Ability of Business Cycle Indicators for the Euro Area 01/2009
Nr. 78	Thomas Lenk / Oliver Rottmann / Florian F. Woitek	Public Corporate Governance in Public Enterprises Transparency in the Face of Divergent Positions of Interest 02/2009
Nr. 79	Thomas Steger / Lucas Bretschger	Globalization, the Volatility of Intermediate Goods Prices, and Economic Growth 02/2009
Nr. 80	Marcela Munoz Escobar / Robert Holländer	Institutional Sustainability of Payment for Watershed Ecosystem Services. Enabling conditions of institutional arrangement in watersheds 04/2009
Nr. 81	Robert Holländer / WU Chunyou / DUAN Ning	Sustainable Development of Industrial Parks 07/2009
Nr. 82	Georg Quaas	Realgrößen und Preisindizes im alten und im neuen VGR-System 10/2009
Nr. 83	Ullrich Heilemann / Hagen Findeis	Empirical Determination of Aggregate Demand and Supply Curves: The Example of the RWI Business Cycle Model 12/2009
Nr. 84	Gunther Schnabl / Andreas Hoffmann	The Theory of Optimum Currency Areas and Growth in Emerging Markets 03/2010
Nr. 85	Georg Quaas	Does the macroeconomic policy of the global economy's leader cause the worldwide asymmetry in current accounts? 03/2010
Nr. 86	Volker Grossmann / Thomas M. Steger / Timo Trimborn	Quantifying Optimal Growth Policy 06/2010
Nr. 87	Wolfgang Bernhardt	Corporate Governance Kodex für Familienunternehmen? Eine Widerrede 06/2010
Nr. 88	Philipp Mandel / Bernd Süssmuth	A Re-Examination of the Role of Gender in Determining Digital Piracy Behavior 07/2010
Nr. 89	Philipp Mandel / Bernd Süssmuth	Size Matters. The Relevance and Hicksian Surplus of Agreeable College Class Size 07/2010
Nr. 90	Thomas Kohstall / Bernd Süssmuth	Cyclic Dynamics of Prevention Spending and Occupational Injuries in Germany: 1886-2009 07/2010
Nr. 91	Martina Padmanabhan	Gender and Institutional Analysis. A Feminist Approach to Economic and Social Norms 08/2010
Nr. 92	Gunther Schnabl /Ansgar Belke	Finanzkrise, globale Liquidität und makroökonomischer Exit 09/2010
Nr. 93	Ullrich Heilemann / Roland Schuhr / Heinz Josef Münch	A "perfect storm"? The present crisis and German crisis patterns 12/2010
Nr. 94	Gunther Schnabl / Holger Zemanek	Die Deutsche Wiedervereinigung und die europäische Schuldenkrise im Lichte der Theorie optimaler Währungsräume 06/2011
Nr. 95	Andreas Hoffmann / Gunther Schnabl	Symmetrische Regeln und asymmetrisches Handeln in der Geld- und Finanzpolitik 07/2011
Nr. 96	Andreas Schäfer / Maik T. Schneider	Endogenous Enforcement of Intellectual Property, North-South Trade, and Growth 08/2011
Nr. 97	Volker Grossmann / Thomas M. Steger / Timo Trimborn	Dynamically Optimal R&D Subsidization 08/2011

Nr. 98	Erik Gawel	Political drivers of and barriers to Public-Private Partnerships: The role of political involvement 09/2011
Nr. 99	André Casajus	Collusion, symmetry, and the Banzhaf value 09/2011
Nr. 100	Frank Hüttner / Marco Sunder	Decomposing R^2 with the Owen value 10/2011
Nr. 101	Volker Grossmann / Thomas M. Steger / Timo Trimborn	The Macroeconomics of TANSTAAFL 11/2011
Nr. 102	Andreas Hoffmann	Determinants of Carry Trades in Central and Eastern Europe 11/2011
Nr. 103	Andreas Hoffmann	Did the Fed and ECB react asymmetrically with respect to asset market developments? 01/2012
Nr. 104	Christina Ziegler	Monetary Policy under Alternative Exchange Rate Regimes in Central and Eastern Europe 02/2012
Nr. 105	José Abad / Axel Löffler / Gunther Schnabl / Holger Zemanek	Fiscal Divergence, Current Account and TARGET2 Imbalances in the EMU 03/2012
Nr. 106	Georg Quaas / Robert Köster	Ein Modell für die Wirtschaftszweige der deutschen Volkswirtschaft: Das "MOGBOT" (Model of Germany's Branches of Trade)
Nr. 107	Andreas Schäfer / Thomas Steger	Journey into the Unknown? Economic Consequences of Factor Market Integration under Increasing Returns to Scale 04/2012
Nr. 108	Andreas Hoffmann / Björn Urbansky	Order, Displacements and Recurring Financial Crises 06/2012
Nr. 109	Finn Marten Körner / Holger Zemanek	On the Brink? Intra-euro area imbalances and the sustainability of foreign debt 07/2012
Nr. 110	André Casajus / Frank Hüttner	Nullifying vs. dummifying players or nullified vs. dummified players: The difference between the equal division value and the equal surplus division value 07/2012
Nr. 111	André Casajus	Solidarity and fair taxation in TU games 07/2012
Nr. 112	Georg Quaas	Ein Nelson-Winter-Modell der deutschen Volkswirtschaft 08/2012
Nr. 113	André Casajus / Frank Hüttner	Null players, solidarity, and the egalitarian Shapley values 08/2012
Nr. 114	André Casajus	The Shapley value without efficiency and additivity 11/2012
Nr. 115	Erik Gawel	Neuordnung der W-Besoldung: Ausgestaltung und verfassungsrechtliche Probleme der Konsumtionsregeln zur Anrechnung von Leistungsbezügen 02/2013
Nr. 116	Volker Grossmann / Andreas Schäfer / Thomas M. Steger	Migration, Capital Formation, and House Prices 02/2013
Nr. 117	Volker Grossmann / Thomas M. Steger	Optimal Growth Policy: the Role of Skill Heterogeneity 03/2013
Nr. 118	Guido Heineck / Bernd Süssmuth	A Different Look at Lenin's Legacy: Social Capital and Risk Taking in the Two Germanies 03/2013
Nr. 119	Andreas Hoffmann	The Euro as a Proxy for the Classical Gold Standard? Government Debt Financing and Political Commitment in Historical Perspective 05/2013
Nr. 120	Andreas Hoffmann / Axel Loeffler	Low Interest Rate Policy and the Use of Reserve Requirements in Emerging Markets 05/2013
Nr. 121	Gunther Schnabl	The Global Move into the Zero Interest Rate and High Dept Trap 07/2013