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Issues of modern macroeconomics: new post-crisis perspectives on the world economy

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Summary Modern macroeconomics has failed in the analysis of both the US banking and the euro crises, respectively, and there is also a rather inadequate view on a range of relevant policy issues. The approach presented herein looks at the reasons for analytical failure and suggests means of improvement – picking up proposals from the literature as well as contributing new ones. The economics profession did not anticipate the banking crisis and there is reluctance to switch to a new paradigm for stabilization policy analysis. Beyond this, there are several analytical challenges which should be integrated into a post-crisis approach: for example, the question of the true degree of economic openness and the role of multinational companies. Moreover, the macroeconomic impact of the digital economic expansion is largely underestimated. The traditional view on asset bubbles has become doubtful. A new paradigm should emphasize the triple analytical challenge of short-term financial market analysis, the routine new questioning of the systemic stability of economic systems and standard macroeconomic modeling – with some refinements; a "Schumpeterian Mundell-Fleming-Solow-Akerlof-model" and sustainability aspects are important on the one hand, on the other hand NKM models have to integrate a broader array of market imperfections. The

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perspectives presented could jump-start a new paradigm that combines a more realistic macro perspective with a complementary critical institutional analysis.

Keywords Banking crisis · Macroeconomics · Forecasting · International economics · Economic policy

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1 Introduction

> *"I bought a dozen volumes on banking and credit and investment securities, and they stood on my shelf in red and gold like new money from the mint, promising to unfold the shining secrets that only Midas and Morgan and Maecenas knew." F. Scott Fitzgerald, The Great Gatsby (1925)*

Macroeconomics is mainly concerned with the analysis of inflation—or deflation—, business cycle dynamics, growth, structural change, trade and capital flows as well as economic crisis. Research on the Great Depression of 1929–33 was what most economists in the western world before 2008 would have associated with the word crisis, while in the developing world it was the Latin American debt crisis of the 1980s and the Asian crisis of 1997/98 which would have appeared on the analytical radar. Since September 15, 2008, when the US investment bank Lehman Brothers unexpectedly collapsed, the word crisis has another connotation as well, the US subprime crisis or more broadly defined "The Transatlantic Banking Crisis"; indeed many banks in the UK and some in the euro area have also been involved in the subprime crisis which stands for the collapse of the refinancing of asset-backed securities in the US in 2007/08. A maturity mismatch, namely, the short-term refinancing of long-term ABS/MBS (MBS= mortgage-based securities) through commercial papers, was one of the key problems in the US subprime crisis and it was, given the experience of the Asian crisis of 1997/98, not the first financial market and banking crisis related to such mismatches. A serious confidence crisis in the interbank market unfolded and with the collapse of the US investment bank Lehman Brothers in late 2008 there followed a transatlantic crisis which brought the Big Recession and showed that economists had encountered difficulties in anticipating the dangerous dynamics of western financial markets, including financial innovations. The US subprime crisis and the Transatlantic Banking Crisis both raise some unpleasant questions for economists.

Asset-backed securities started to play a larger role as part of financial innovations since the 1980s (BIS, 1986), but the strong expansion of mortgage-backed securities in the US in the decade after 1998 played a critical role in the banking crisis. The entry of investment bankers, in the context of the repeal in 1999 of provisions of the Glass-Steagall Act of 1933, contributed to raising market volumes in ABS papers and derivatives markets. The temporarily strange pricing of risk also contributed to the US banking crisis (Goodhart 2008) which visibly started in 2007 and raised the question of whether or not a euro crisis was bound to follow as the appetite for risk had suffered an apparently massive decline after the collapse of Lehman Brothers (Welfens, 2009, pp. 158–159). The western world has overhauled all major rules for big

banks—including through a new set of rules for higher equity capital ratios (Basel III); the US has also implemented the Dodd-Frank Act which runs to 848 pages—slightly more than the 37 pages of the Glass-Steagall Act. Could this indicate that we have allowed financial markets to become too complicated so that they are very difficult to regulate and rather difficult to analyze, with the result that a major crisis is hard to anticipate? Financial markets in which information asymmetries and moral hazard problems lead to non-transparency may be expected to be more crisis prone than financial markets which would have an institutional framework that encourages standardization, information disclosure and financial innovations that are subject to both competition and formal testing procedures through external specialized institutions.

An economic crisis typically lasts for several years, undermines political stability and has international spillover effects. Asset prices and output will fall sharply and the full range of policy instruments, often including IMF intervention, is needed to overcome the crisis. In an extreme case, the economic or political system could collapse. There has been a rather narrow debate about the banking crisis in scholarly articles (cf. Dooley and Hutchison, 2009; Wagner, 2010, Eichengreen et al., 2011, Welfens, 2009; 2012, 2013) and there were also, of course, many reports by the IMF (Financial Stability Reports), in the US by the Council of Economics Advisors, in the EU by the European Commission and in individual member countries, for example see the 2008/09, 2010/11 and 2011/2012 annual reports of the Council of Economic Experts/Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung).

It would be desirable that economic researchers could anticipate an upcoming crisis in order to limit the depth of the crisis and the many negative side-effects associated with a typical crisis, i.e. mass unemployment, rising poverty and political radicalization. However, learning from past crises is imperfect: The IMF introduced the Financial Sector Assessment Program for member countries (FSAP reports) after the Asian crisis, the goal being that never again would IMF member countries be taken by surprise, namely, due to the sudden collapse of banks and capital market transactions as had occurred in Asia in 1997 despite rather fair economic conditions. However, the report on the US was never written during the Bush Jr. Administration which considered such a report a squandering of resources (obviously assuming that the US banking system was fundamentally sound). The reports on some countries in the first decade of the 21st century—including Ireland and Switzerland—were quite misleading, so that few market participants correctly anticipated the negative dynamics of 2007–09 in the US and Europe; and the following exceptional policy measures adopted by the central banks in the US and the UK. In 2014, the world economy is still facing an exceptional situation in which central bank interest rates in the US, the UK and the euro area are at historical lows and in which both the US central bank and the Bank of England have adopted unusual monetary policy approaches, i.e. Quantitative easing (QE), which stands for massive open market operations in the context of economies in which the central bank interest rate is very close to zero bound, meaning traditional monetary policy cannot be used to stimulate the economy.

The key fields of economics have a long history of analysis with some generally accepted insights and a modern theoretical body of research. However, in the context of the Transatlantic Banking Crisis doubts have been raised about key approaches of macroeconomic analysis—for example the Queen of England during her visit to the London School of Economics in 2009 asked why economists had not anticipated the banking crisis. The answer from the British Academy was not really convincing - it was

argued that indeed many economists had seen the crisis coming, which, however, is not really in line with the facts but rather stands for wishful thinking as will be argued subsequently. As Robert Shiller (2003, p. 84) has remarked: "Wishful thinking can dominate much of the work of a profession for a decade, but not indefinitely."

With the US, the UK and the euro area facing deficits and debt problems during the period from 2008–2013, there was a broader challenge for the world economy. Moreover, there was a paradox situation since the simultaneous problems in the US, the UK and parts of the euro area generally raised the nervousness in global capital markets, but there was no interest rate increase in the US, the UK and part of the euro area. Rather the US, the UK, Germany and France (and some smaller euro countries) benefitted from rising global inflows of capital and safe haven effects, respectively. QE policies in the US and the UK, in combination with save haven effects, have helped to reduce interest rates considerably and naturally such QE policies had a positive spillover effect in the euro area. There, the ECB also adopted a rather expansionary monetary policy, not an inflationary policy. In fact the euro area is facing deflationary pressures in 2014.

While the debt-GDP ratios in many OECD counties increased strongly in the five years after 2008, central bank interest rates reached record lows and this, in turn, helped to alleviate the government interest burden—relative to GDP. The exit from this unusual situation of very low interest rates in the context of QE policies in the US and the UK might become difficult; the FED started the first phasing-out of QE in 2014, but it is not clear that a repetition of the Transatlantic Banking Crisis could not occur in the future. What consequences one should draw from that crisis and to what extent there is a need for a new paradigm should be discussed.

The following analysis looks into the challenges from the banking crisis and part of the euro crisis on the one hand, on the other hand key analytical challenges of the world economy are highlighted. A new economic paradigm is needed and it should look not only at the lessons from the Transatlantic Banking Crisis, rather other key analytical challenges also should be included for a broader and better economic analysis. In addition, some innovations as well as institutional innovations are presented, including a policy innovation for more financial stability. Section 2 looks at the explosion of debt-GDP ratios in many western OECD countries. Section 3 presents the key issues of the analysis of the banking crisis. Section 4 examines the issue of asset bubbles and financial market adjustment. Section 5 considers selected new trade aspects, while Section 6 explores the role of foreign direct investment. Section 7 presents the role of information and communication technology. In section 8 there is an analysis on sustainable growth. Section 9 is devoted to the modeling aspect and Section 10 takes a look at the conclusions.

2 The Explosion of Debt-GDP Ratios in Western OECD Countries

Somewhat surprisingly, the key destabilizing shock of the early 21st century came from the US and the UK in the form of the banking crisis of 2007–09 and this very serious shock to western OECD countries was not anticipated by economists as a profession; however some influential economists argue that many economist did indeed see the problem. It will be argued here that this is not the case and that this failing implies that there were considerable losses in OECD countries and their main trading partners which could have been avoided if we had had a more powerful analysis in modern macroeconomics.

Economic analysis has witnessed some improvements in terms of data availability since the 1990s. With the systemic transformation in eastern Europe and the active role of China in many international organizations, the volume of accessible data is larger than ever and from that perspective one should expect that the conditions for bright economic analysis and "convincing" forecasts are better than ever. This, however, is not true if we take into account the shocking Transatlantic Banking Crisis. However, ex post, we can focus on some of the key effects of the banking crisis.

Poorly regulated financial globalization—led by the US and the UK—has been organized in a highly destabilizing and inefficient way which brought not only a Great Recession in 2008/09, but also caused debt-GDP ratios to skyrocket in several countries in 2008–2013: in the US by about 30 points (104.5 in 2013; see subsequent table), in the UK by almost 40 points, in Spain by about 50 points, in Ireland by almost 80 points and in Greece by more than 100% (the table below indicates +60,9% but the Greek hair cut/debt restructuring in 2012 eliminated a public debt equivalent to about 60% of GDP). All these countries had a major banking crisis and inadequate regulation played a role in each of these countries. Greece, however, is a special case as the government there caused the problem mainly through its record deficit-GDP ratio in 2009 (Table 1).

The cost of the banking crisis is not only output lost and jobs lost but a rough calculation would also simply add the change in the government debt-GDP ratio times a normal long-term interest rate of 3% on government debt which amounts to 1.1% of GDP per year as permanent cost of this banking crisis—this is the kind of resource cost that tax payers will have to pay in the form of higher income tax rates. The implied rise of the income tax rate for the US is 1% and for the euro area it is 0.7%. Picking Ireland, as an individual case, the implied increase of the income tax rate is 2.4%. With a Cobb Douglas function $Y=K^{ß}(AL)^{1-ß}$ – with Y for output, K for capital, A for knowledge, L for labor, $(0<ß<1)$ and a savings function $S=s(1-\tau)Y$, the implication is that the level of the long run growth path will fall since that level for per capita output Y/L:=y is given

Table 1 Debt-GDP Ratios in the US, the UK, Germany, France, Spain, Italy, Netherlands, Belgium, Ireland, Greece, Euro Area: 2000, 2008, 2013

Country/Year	2000	2008	2013	Change2013/2008
Belgium	107,8	89,2	99,7	10,5
France	57,4	68,2	93,9	25,7
Germany	60,2	66,8	90,1	11,3
Greece	103,4	112,9	104,5	60,9
Ireland	37	44,2	122,8	78,6
Italy	108,6	106,1	132,5	26,4
Netherlands	53,8	58,5	74,9	16,4
Spain	59,4	40,2	93,9	53,7
United Kingdom	40,5	51,9	90,1	38,2
United states	53	72,8	104,5	31,7
Euro area	69,3	70,3	95,2	24,9

Note: * value for 2001 Source: IMF (2014), World Economic Outlook, April 2014, www.imf.org

(with a denoting an exogenous progress rate, τ the income tax rate, n the exogenous population growth rate and δ the depreciation rate of capital, A_0 the initial level of knowledge, t the time index and e' the Euler number and # for steady state) by:

$$y\# = ((s(1-\tau)/(a+n+\delta))^{\beta/(1-\beta)}A_0e'^{at} \quad (1)$$

If one assumes for simplicity that the progress rate "a" is not affected by the banking crisis and that ß=0.33 – a typical parameter value for OECD countries – we obtain, after taking logs:

$$\ln y\# = (\beta/(1-\beta))(\ln s - \tau - \ln(a+n+\delta)) + \ln A_0 + at \quad (2)$$

We have used here the approximation ln (1- τ)≈ −τ which holds, however, only for the income tax rate being close to zero, but it should suffice to get a rough estimate for the lowering of the level of the per capita income in Ireland, namely 0.5 × 2.4%= 1.2%. This is a serious economic loss since it will hold forever and if one wants to capitalize this over an infinite time horizon at the same discount rate as the interest rate, the implication is that the discounted economic loss from the banking sector is 0.5 times the increase in the debt-GDP ratio: Based on the figures for the period 2008–2013 this implies roughly −19% of annual output for the UK, −16% for the US – this is 2/3rds of the cumulated output decline during the Great Depression—and −12% for the euro area (in the general public there is no broad awareness that the level of the growth path has shifted down considerably). As regards the latter, one may argue that in the sub-period 2010–13 it was not only the banking crisis which played a role but also special impulses from the crisis in the Greece, Ireland, Portugal, Spain (requiring assistance for the stabilization of the banking system), Cyprus and Italy. As regards the implicit welfare loss from the debt-GDP increase in the UK, the discounted output loss is more than twice as high as in the Great Depression. As the Great Recession was basically only a major negative output shock in 2008/09 followed by new economic growth in leading OECD countries, there is no general perception of how deep the banking crisis really was. However, it has affected the largest 40 banks in western OECD countries, with the exception of very few banks in the US, Germany, France and Italy.

Canada's leading banks did not suffer much in 2007–09 – beyond negative US spillover effects on Canada; but Canada's regulation of real estate loans had been much stricter than that in the US. In the United States, the big winner of all bank mergers and restructuring was the Wells Fargo Bank from California: Hence the New York banking center has been shaken and part of national financial leadership is now located in the West of the US. The US FDIC has closed down or restructured many banks: In the period from 2009–2014, there were about 480 banks that failed, the total volume of assets was $38.7 bill. in the year 2009, $22.9 bill. in 2010, $8 bill. in 2011, $2.8 bill. in 2012 and $1.2 bill. in 2013; for 2014 less than $1 bill. may be expected. The biggest strategic rescue measure of government in 2008 (immediately after the failure of Lehman Brothers) related to AIG, one of the largest US insurance companies. AIG had sold insurance against risk in an aggressive way—with much activity coming from its London subsidiary, and one can only wonder with the benefit of hindsight how indifferent the prudential supervisors of the US, the UK and the euro area countries were in the relevant field of derivatives.

Some OECD countries might point out that the increase in the debt-GDP ratio is largely reflective of public investment; a relevant point to some extent for example in Germany. However, it is absolutely inconceivable to increase the public capital stock relative to output within five years by 30%, 40% or 80%. To the extent that governments have recapitalized or nationalized banks, the long-term bill for avoiding a collapse of the banking system could look better than the figures discussed so far suggest: Privatization efforts or the selling of a government stake in a bank on the stock exchange could generate profits, and the joint repair efforts of leading OECD countries in combination with ultra-low interest rates in 2012–2014 in the US, the UK, the Euro area and Switzerland makes such effects rather likely. Hence it is too early to draw a final balance, however, it is fair to say that the explosion of debt-GDP ratios witnessed in 2008–2013 is unparalleled in history except for war-time.

At the same time, it is unclear what additional negative welfare effects will result, for example in the US from the physical degradation of more than 20 million houses/apartment which remained empty over many years after the collapse of the subprime market in 2008, and it is also unclear how big the price is that EU countries and the US pay in the form of a reduced option for expansionary fiscal policy in future periods of adverse shocks: The banking crisis has raised the government's debt-GDP ratio of so many countries to such high levels that it might become much more difficult to use fiscal policy for stabilization purposes, the increased output and consumption volatility plus the rise of unemployment and the associated negative side effects—i.e. higher health care expenditures—would all have to be considered in a broader analysis.

The massive shock of the banking crisis in many western OECD countries may have additional costs, i.e. in the form of a destruction of the economically relevant initial stock of knowledge A_0—so if part of this knowledge was related to banking (and the banking sector in the future will be smaller than in 2007/08) there is a strong negative impact on the level of per capita income: If there is a 5% reduction of A_0, the steady state output per capita also falls by 5%; the larger the size of the banking sector relative to GDP is, the higher the potential loss here could be. Since the US, the UK and the euro area are three big economies, the fall of aggregate output to the new lower permanent level (or per capita level of output—this would only be the same if there is a stationary population) will reduce output in partner countries, i.e. in Russia, China, India, the ASEAN countries etc.; through, for example, lower US and EU imports.

However, there could also be lower foreign direct investment outflows from the US and the EU and, hence, lower international technology transfer and this will negatively affect the supply-side of the South in the world economy. Add to this the permanent negative international spillover effects from the output reduction in the steady state and it is fairly clear that there are considerable global costs of the banking crisis and the underlying problems with regulation and competition.

Part of the problem behind the tendency of many big banks in both the US and some EU countries to take too big risks was certainly related to "too big to fail" considerations, which implied a non-level playing field in favor of big (private) banks on the one hand, on the other hand a hidden incentive for such

banks to incur excessive risk and to implicitly take a bet on such risk that says: If the risky projects or certain financial innovations bring additional profits, we—the managers and bank owners—will pocket those profits, however if a critical number of these projects go wrong and the bank goes bankrupt, then government will save the bank and the taxpayer will have to pay for bank restructuring or recapitalization. With the new EU banking union expected to start in late 2014, that type of behavior should be less of a problem in the future, since banks will have to hold higher equity capital ratios (in line with Basel III and EU regulation, respectively). At the same time, the EU regulatory requirement to set up a living will could make the too-big-to-fail problem less pressing in the future: Even big banks could be closed, their activities unwound and the assets/liabilities of the respective bank be allocated to other banks in an orderly way at manageable cost.

One should ask, what is so specific about the financial innovation process that this sometimes delivers so many shoddy product innovations which make investors, under opaque circumstances, incur high losses of income or wealth? Compared to goods markets there is a serious difference, which is related to the fact that 'market for lemons' problems are not much articulated in the financial sector. If a customer buys a lemon car—defined here as a new car with a massive quality problem—the buyer will typically complain about the product, so that both exit and voice (Hirschman 1970) as mechanisms are working in the competition process of goods markets. If, however, the clients of a bank get bad advice in the field of wealth management and portfolio investment, often the clients—most certainly those in the lower and medium income groups of society—will not complain among friends or relatives, simply because one does not want to suffer, in addition to financial losses, a loss of reputation or status which would immediately follow from revealing how the simple but inadequate investment advice of certain banks was causing massive wealth losses. There are several reasons for discreet communications about financial matters and such confidentiality largely rules out that voice will play a crucial role in many fields of banking services. Hence, competition in banking services for the needs of ordinary people is often weak and poorly regulated banks might effectively stand for silent private redistribution in favor of the top income strata who, in turn, stand in large part also for the owners of big private banks. Given the fact that so much is at stake in the rare but extreme banking crisis, it is interesting to note how modest the budgets of financial regulators are. The probability that top experts will switch sides is obviously low. There is an apparent challenge here for democratic systems, as parliaments like cheap prudential supervisors (read: small budgets) but often fail to see that the cost to the taxpayer of inadequate modest supervisory agencies can be enormous. To my knowledge, a serious cost-benefit analysis of a prudential supervisory agency has never been published.

A key problem of the US subprime crisis and the Transatlantic banking crisis, respectively, was the enormous leverage of banks in the US: Losses from subprime loans were about $ 500 bill. which was equivalent to 2% of US stock market capitalization, however, the loss of wealth in real estate markets altogether was $ 7000 bill. (about ½ of annual US GDP) so that a considerable amplification has occurred—in contrast the burst of the dot.com bubble a few years earlier was $ 8000 bill., but the negative effects on the real economy of the US were rather modest as in

contrast to the banking crisis there had been no strong financing of the dot.com bubble through loans and liquidity mismatch also was not a crucial factor (Brunnermeier, 2014). The deleveraging process in 2014/2015 is an ongoing challenge.

While expansionary fiscal policy, recession effects and the cost of recapitalization of banks through government raised debt-GDP ratios in leading OECD countries, the case of Greece was special since there government had tried to effectively buy the 2009 election results through a record deficit-GDP ratio of 15.6%, while only 4% had been notified to the European Commission in the Spring of that year. Since it is well known from economic history that reducing the deficit-GDP ratio by more than 3 points per year is very difficult to achieve, the Greek government's decision to let the deficit explode automatically implied that the country would lose access to international capital markets since a hypothetical sequence of deficits-GDP ratios of 15%, 12%, 9%, 6%, 3% would raise the debt-GDP ratio by 45 points within five years; and this with a starting figure of already about 110% in 2008 and after the bankruptcy of Lehman Brothers in an international capital market environment in which most investors had decided to massively reduce risk exposure. In normal times, one year with a very high deficit-GDP ratio might not have been a disaster, but in the shaky international financial world immediately after the collapse of Lehman Brothers it was clear rather quickly in the Spring of 2010 – only then had the revised deficit figures of Greece been fully understood – that Greece faced very serious problems. The side-effects of the Transatlantic Banking Crisis thus amplified euro area problems, however, it is noteworthy that the rise of the debt-GDP ratio of the euro area in 2008–2013 was 7 percentage points slower than in the US and 13 points slower than in the UK. The international perception was not that the euro area had a smaller problem than the US or the UK, since it became quite obvious in the five years after 2008 that the FED and the Bank of England were willing to act as a lender of last resort while in the euro area the ECB did not have such a position. While the FED and the Bank of England could also buy national government bonds, the ECB had no equivalent for this in the euro area as the European Community's budget cannot have a deficit and thus there are no euro bonds; the political will of member countries of the euro area to create a synthetical euro bond in turn is rather weak and Germany's Constitutional Court has raised barriers against the new OMT programme of the ECB in 2013. With limited monetary policy options and lack of structural reforms and policy coordination the euro area unnecessarily faces problems. Also the QE policies in the US and the UK have brought about a devaluation of the dollar and the pound, conversely this implies an appreciation of the euro and hence reduced prospects for higher exports; plus lower FDI inflows (and thus reduced international technology transfers) in the euro area if one follows the view of Froot and Stein (1991)) emphasizing this mechanism in a setup with imperfect capital markets.

3 An Unanswered Royal Question About the Analysis of the Banking Crisis

The banking crisis in the US and the UK in 2007/08 – with negative spillover effects into the euro area in 2008/09 – caused the big recession of 2009 in western OECD countries which suffered seriously from a rapid fall of output. As regards this massive banking crisis in the US and the UK and parts of the euro area, many observers,

including the Queen of England during a visit at the London School of Economics, have asked why experts did not broadly anticipate the banking crisis. As the website of LSE states in 2009, pointing to the British Academy Forum of June 17, 2009, whose title was "The Global Financial Crisis – Why Didn't Anybody Notice?": The Queen and the Duke of Edinburgh visited LSE to officially open its New Academic Building on Wednesday 5 November 2008. It was during this visit that she asked: if these things were so large, how come everyone missed them? On 17 June, the British Academy convened a group of leading academics, economics journalists, politicians, past and present civil servants, and other practitioners for a roundtable discussion to address this question.

Two professors, Tim Besley and Peter Hennesey (henceforth referred to as BH) wrote a three page letter as response to the Queen that has some strange elements and the whole letter, dated 22 July 2009, is a disappointing text in the sense that it does not identify facts correctly and lacks self-criticism as much as a perspective on how to improve the quality of research in economics in the specific field of crisis forecasting. The letter, which is supposed to give a summary view of the Forum and indeed provide an answer to the Queen's question, states at the beginning of the second paragraph:

"Many people did foresee the crisis". This statement is totally misleading. It is a strange sentence as it gives the impression that a considerable percentage of economists had indeed warned about a forthcoming financial crisis in the US and the UK. In the US prior to 2008, there were less than 10 papers, by scholars who were members in the American Economic Association, which had been critical about the growth of Asset Backed Securities (including mortgage backed securities) – this refers to an oral statement by Robert Shiller at the AEA annual meeting in 2009—and, while not all professors in the American Economic Association have specialized in macroeconomics or financial markets, it is fair to say that less than 1% of the experts had warned about an upcoming crisis. In the UK the percentage has been similarly low. Therefore to write that many people did foresee the crisis is not in line with basic facts, even if one may argue that scholars at the Bank of International Settlements and at the Bank of England issued critical warnings on financial market dynamics as BH emphasize:

> *"There were many warnings about imbalances in financial markets and in the global economy. For example, the Bank of International Settlements expressed repeated concerns that risks did not seem to be properly reflected in financial markets. Our own Bank of England issued many warnings about this in their bi-annual Financial Stability Reports. Risk management was considered an important part of financial markets…Risk calculations were most often confined to slices of financial activity, using some oft he best mathematical minds in our country and abroad. But they frequently lost sight of the bigger picture."*

Again, as a statement, this is quite misleading as only a small group of economists within the Bank of England and the BIS was critical and prepared to write critical remarks, however, the consensus of leading central bankers meeting at the annual Jackson Hole conference was that financial globalization and financial innovation dynamics posed no problems. The fact is that the pricing of risk was biased downwards in 2003–06 in the US (Goodhart, 2008), the UK and other countries and that financial

markets are not efficient in periods of turbulence and possibly in periods of tranquility as well. Financial markets are efficient if all key actors use all generally available information systematically—but, interestingly, the important rating agencies are not doing this. This can clearly be concluded from the findings of an interesting paper (Becker and Milbourn, 2010) in which the authors make a default forecast on the basis of rating agencies' ratings of company bonds.

Let us define here efficient rating as the scientific, rational analysis of the default probability of governments, firms and financial products, respectively, it is clear that, for example, rating in the corporate bond sector is inefficient if publicly available balance sheet data are not used as complementary information to corporate ratings in order to improve the quality of the default forecast of ratings; this, however, is the finding of an empirical study by Becker/Milbourn (2010) on the rating of US companies. While the authors of that paper are not concerned with the efficiency of financial markets and efficient rating, respectively, one may clearly draw the conclusion that leading US rating companies systematically do not give efficient ratings in the field of company bonds and thus financial markets are not efficient. As all assets are substitutes in terms of yields, the incomplete work of rating companies in the US corporate bond market will affect all other interest rates and yields, respectively. It was rather strange situation that in the US less than ten stock companies had a AAA rating, while some 30,000 CDOs (asset-backed securities) had AAA in 2007—there were too much Alice in the Wonderland-ratings for CDOs in the US.

After the collapse of Lehman Brothers, there is a rather new widespread perception in economics that money is not neutral. This is in sharp contrast to the research consensus of the 1970s, 1980s and 1990s, when many papers were published on the neutrality of money—and this implicitly suggested that financial markets could also be neutral, so that only one interest rate was considered in almost all macro models.

Assume that we want to consider the domestic corporate bonds market, the government bonds market, the market for foreign bonds and the money market. Due to the budget constraint of the portfolio investor only three of these equations are independent. Let us assume for simplicity that the government bond interest rate can be written as r =r' - R' where r' is the corporate bonds yield and R' is a risk premium on corporate bonds. Note that the interest payments of government relative to GDP can be written as r (B/P)/Y where Y =r'K +wL (B is the nominal debt, P the price level, Y is real GDP, K is the capital stock, L is labor and w is the real wage rate). Rearranging gives r (B/P)/Y =1/[(K/(B/P)) (1+R') +w/((B/P)/L)]. It is assumed that $Y= K^{ß}L^{1-ß}$ (with $0<ß<1$). The ratio of the capital stock to the real stock of government bonds must be a positive function of the marginal product of capital ßY/K which will, in turn, under profit maximization – and assuming no capital depreciation - be equal to r'. Hence, K= ßY/r'. A refined Branson model is needed and part of that model will be picked up subsequently – such a model in combination with a growth model can be shown to explain the effectiveness of QE policies.

3.1 Analytical issues and policy issues

Among the key issues to be raised in a macroeconomic context is the question of how ratings can be incorporated in a basic macroeconomic model and how the efficiency of the

rating process can be enhanced (Welfens, 2010). As regards the latter, an institutional innovation is necessary, namely to introduce a two-stage rating business in which – looking at sovereign bond ratings—all governments will contribute to financing ratings from a joint pool which will organize rating jobs on the basis of competitive tendering; and each government will contribute to total rating costs on the basis of its market share in the placement of new bonds. Thus, there will be no distorting incentives for rating companies.

Looking at the EU, several cases of the well-founded downward rating of sovereign debt can be found in the so-called Euro Crisis, and in certain cases the respective governments are fully responsible for excessive deficit dynamics and related unfavorable rating developments. However, in a broader perspective, there are also reasons to raise doubts about the rating process in several cases and certainly the arguments presented by S&P for the downgrading of the rating of the US in 2010 are largely unconvincing and contradictory.

S&P certainly has considerable know-how and experience in the rating business; however, the case of the downgrading of the US in summer 2011 suggests that its analytical basis in the field of sovereign debt rating is relatively weak. It is a serious paradox that thousands of top investors in the world economy want to rely on doubtful rating signals of certain rating companies with a second-class rating process. The US SEC has presented a report in 2008 on the quality of the rating processes of the leading rating agencies for the previous years and the findings—looking mainly at the rating of asset-backed securities – were quite sobering: weak quality standards and many cases of sloppy work did suggest that the rating oligopoly is not delivering the high quality signals that international capital markets, banks, hedge funds and insurance companies, as well as other companies, urgently need. It is absolutely unclear whether or not the methodology of rating and the quality of the underlying workflow process have strongly improved.

It is high time to improve the overall process of the rating business (basic proposals for improvement: Welfens, 2010; 2011a): One way to improve the quality of ratings is to involve more scientific knowledge. It would probably require €50 million per year, as a minimum investment, to start a new rating agency which would be based on a network of university researchers or new research units external to universities – here the EU could give a decisive impulse for better transatlantic and global ratings. There could be a public tendering process that would be open to various research institutions that would cooperate under the umbrella of a newly created rating foundation. Every ten years or so there should be a new tendering process for scientific rating networks.

Looking at housing price dynamics in the US and the UK, the letter of BH sees a particular role for China (and India) and the global savings glut: "Many were also concerned about imbalances in the global economy…Countries like the UK and the USA benefitted from the rise of China which lowered the costs of many goods that we buy, and through ready access to capital in the financial system it was easy for UK households and businesses to borrow. This in turn fuelled the increase in house prices both here and in the USA. There were many who warned of the dangers of this." Again, the latter sentence is quite misleading, there was a very small minority of university economists in the US and the UK – and other EU countries – who had warned of the housing boom and the massive increase in real housing prices in the US, the UK and Ireland. It is also not clear that it was mainly increasing savings from China which caused a global savings glut, rather the ageing process in OECD countries might also have contributed to a rise of the global savings rate (Welfens, 2013). Also, the housing

price in Ireland had roughly quadrupled in the decade between 1998–2008 and this bubble certainly shifted market prices for real estate far away from long run equilibrium prices; there are unquoted sources from academia that argue that the leading Irish developers bribed government officials in order to make sure that light regulation was continued. Part of the Irish banking problems as well as the banking problems in Spain (Villaverde et al. 2013) were obviously linked less to Chinese excess savings but rather to corruption problems and the inadequate regulation of banks. While the corruption index differs across countries, one may point out that it has reduced in 2008–2013, but it is unclear to what extent the external intervention of the Troika (IMF, ECB and European Commission) has contributed to this. Ireland was obviously perceived as being relatively corrupt in 2000–2010, the index has slightly reduced thereafter. Interestingly, Germany also has a rather high corruption index. The index leaves unclear as to what extent corruption in individual countries has been a problem of the manufacturing industry as opposed to banking or non-banking services, but it would be worthwhile to introduce a refined corruption index in the future. With hindsight it seems that many banks in the US were involved in semi-legal transactions and the role of out-of-court settlements between banks and US prosecutors was impressive from 2009 to mid-2014: Bank of America, JP Morgan, Citigroup and Wells Fargo made combined payments of more than $120 bill. - Bank of America alone paid $75 billion. What was the view of economists on banks in the USA and Western Europe (Table 2)?

The BH letter continues (p.2): “But against those who warned, most were convinced that banks knew what they were doing.” With hindsight one can only hope that this statement is not true since “most” probably did not have a clear idea as to what extent certain big banks in the US, the UK, Germany, France and Switzerland had, over many years, been involved in business practices that were partly illegal or violated key regulations (not to mention the outright fraud by the investment fund managed by Mr. Madoff whose bankruptcy alone caused damages of some $50 bill.). Parts of big banks in the countries mentioned have, over years, been acting in certain fields outside of the legal framework and one must raise the question of what spirit of banking entrepreneurship was typical in big banks where so many illegal activities – in some cases the fixing of interest rates, exchange rates or certain asset prices – could thrive. It seems that the too big to fail thinking in many big banks had encouraged a strategy

Table 2 Corruption Perception Index: Germany, Spain, Greece, Portugal, Ireland, USA 2000–2013

Country/ Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Germany	7,6	7,4	7,3	7,7	8,2	8,2	8,0	7,8	7,9	8,0	7,9	8,0	79	78
Greece	4,9	4,2	4,2	4,3	4,3	4,3	4,4	4,6	4,7	3,8	3,5	3,4	36	40
Ireland	7,2	7,5	6,9	7,5	7,5	7,4	7,4	7,5	7,7	8,0	8,0	7,5	69	72
Portugal	6,4	6,3	6,3	6,6	6,3	6,5	6,6	6,5	6,1	5,8	6,0	6,1	63	62
Spain	7,0	7,0	7,1	6,9	7,1	7,0	6,8	6,7	6,5	6,1	6,1	6,2	65	59
United States	7,8	7,6	7,7	7,5	7,5	7,6	7,3	7,2	7,3	7,5	7,1	7,1	7,3	7,3

Note: In the period 2000–2011 values lie in the range between 0 and 10; in 2012–2013 between 0 and 100.
Source: Transparency International (2014), http://www.transparency.org/

where private business was aimed at maximizing profits, while potential losses were expected to be borne by government by bailing out ailing banks. A crucial feature of the banking crisis was its international nature where the US dynamics put pressure on banks in the EU:

- The new magic number of a required rate of return on equity of 25% which had been the new high Wall Street benchmark since the turn of the century: It put pressure on banks in Europe to adopt a similar target rate of return – banks in the EU were afraid that the announced higher US target rate of return would increase the stock market value of US big private banks and this in turn implied a higher probability that US banks could take over rather cheap EU banks.
- EU big banks sought to fend off the threat of US takeover by adopting a similar target for the rate of return on equity and that in turn could only be expected if bank managers were engaging in more rather risky projects (Artus and Virard, 2005). With enormous bonus payments earned in London, Dublin, Frankfurt, Paris and other EU banking centers the demand for apartments in southern European was bound to increase—and countries such as Portugal, Spain, Italy and Greece had enjoyed historically low real interest rates on top of that in 2004–2008, which was bound to stimulate certain sectors of the economy, including the construction sector.

As regards incentives for rather risky bank expansion strategies, the central bank itself can be a source of instability if one considers the middle of the 19th century when the Bank of England indirectly encouraged bankers to take big risks and the political pressures from bank owners on legislation to indeed let the Bank of England take care of the major losses of big banks was part of the financial and political dynamics (Calomiris, 2009). Inadequate incentives for the whole banking system call for institutional reforms. Banking crises are relatively rare events—they can show up in the form of banking panics or waves of bank failures or a combination of the two (Calomiris, 2009), but they can heavily affect the real economy where massive changes in asset prices and bank credit problems, with debtors facing problems of repayment for various reasons, are typical problems observed.

After 2012, a large body of new legislation, designed to keep bonus payments under control and to discourage banks from overly aggressive expansion strategies, has been adopted in the US and Europe, but one should not overlook the fact that financial globalization is going on and that the new wave of regulating many financial products does not necessary imply that post-crisis bankers now think longer term and develop financial innovations more carefully than previously. It seems that in the euro area and the EU, respectively, a big step forward has been taken with the creation of a banking union in 2014.

One major question to be raised in a serious analysis can be stated simply: What is to be concluded from the failure of economists to anticipate the near-collapse of the western economic system—just 19 years after the collapse of the socialist command economy in the Soviet Union and eastern Europe's socialist countries in 1989, respectively? An answer could look carefully at those few economists whose papers have anticipated a major crisis; additionally, one will have to critically assess traditional macro models and raise the questions of what should and could be improved in terms of modeling so that the financial market crisis could be timely anticipated, should it return

in a similar fashion. A key issue is, of course, the risk taken—and indeed created (and traded)—by banks.

3.2 Key Analytical Macro Issues from the Banking Crisis

From a theoretical perspective the Transatlantic Banking Crisis has raised several issues for macroeconomists:

- Why was the risk management of banks so inadequate? Here, the analysis has to ask for incentives on the side of banks – with Rajan (2005) already giving an answer which was ignored by the banking community, economists and policymakers alike; and one has to raise the question of why prudential supervision has been rather weak and how the signals from rating agencies could become more accurate.
- How can confidence in the interbank market be restored? To the extent that one finds answers on the first question, there is naturally a perspective for improving confidence amongst banks.
- To what extent should one make a distinction between various types of households—for example risk averse households versus risk-loving households?
- To what extent is it necessary to switch from concepts of looking at net wealth of the private sector to a gross debt/gross wealth perspective? The last two questions are mainly theoretical questions, but looking at the reality of market participants also matters here.

Banking services in standard macro models were not explicitly modeled—certainly not before the US banking crisis of 2007–09. The basic assumption made was that the sector worked smoothly and thus a market interest rate could be modeled from the interaction from loan markets, the money market and other asset markets plus the real economy. A useful model of asset market analysis in an open economy under flexible exchange rates was the Branson model (Branson, 1977), however, risk was not explicitly considered in this approach.

The US banking crisis of 2008—most visible with the bankruptcy of Lehman Brothers bank in New York - came as a big surprise to most observers. However, it was in 2007, the year before Lehman Bros., that the bank run on Northern Rock in the UK rang the first alarm bells in the core of the Anglo-Saxon banking community that the real estate markets loan business – the key activity of this British bank—stood for particular risks. This was rather surprising at first sight, as the big banks in the EU typically complained that they were the heaviest regulated sector of the economy; in reality there was an 8% minimum equity requirement from Basel I that had been refined to an 8% minimum on risk-weighted bank assets and the weighting of risk then turned out to be the soft spot of the innovative financial industry and big banks, respectively. Financial innovations apparently had accelerated with all the increasing computer power available to banks and most supervisors had not much of an idea what the dynamics of such innovations meant. In contrast to the real sector where patents and industry standards create rather clear patterns and dynamics of innovation, the financial sector is characterized by wild-cat innovation. This has not changed to date, although there is now

new and possibly more regulation for financial markets than before 2008. A 2013 test for banking services concerning basic portfolio selection and wealth management by the German public foundation *Stiftung Warentest* found that not a single bank obtained a grade better than "Satisfactory" (no Excellent and no Good grades were achieved). This suggests that there is a deep-rooted quality problem in parts of the German banking business, and it is likely that banking services for ordinary people are poor in other leading OECD countries as well.

4 A New Perspective on Asset Bubbles and Financial Market Adjustment

4.1 The Role of Bubbles

As regards the role of bubbles in asset markets, the conventional wisdom (e.g. Issing, 2009) was that monetary policy should not react to bubbles, the implicit conclusion being that economic policy—including fiscal policy—cannot fight asset bubbles. Given the shocking experience of the US asset bubble in 2003–2007, one may raise doubts about the finding that economic policy cannot and should not fight or prick asset bubbles: After the implosion of the bubble in 2008—around the collapse of the investment bank Lehman Brothers – monetary policy lost its standard policy instruments at the lower zero bound for the central bank interest rate and was forced to adopt quite unconventional monetary policy instruments, namely quantitative easing that consisted mainly of buying large quantities of government bonds and other safe assets from the private sector.

The standard view of central banks on bubbles is summarized in Issing (2009, p. 46) who argues that 1) central banks should not target asset price levels; 2) central banks should not try to prick asset price bubbles and 3) after the bursting of the bubble the central bank should mainly "mop up" the problems and inject sufficient liquidity to avoid an asset price melt-down. As Issing also emphasizes in his analysis, the Jackson Hole consensus relied on the belief in efficient financial markets, namely, that market participants would exploit all publicly available information. However, this view is flawed, as Robert Shiller's work (Shiller, 2009; Shiller 2000) has shown. The massive shocks of 2008 only partly reflected a bubble problem, namely, in the US housing market—and in the British housing market (and the Irish housing market). These real estate bubble dynamics were, however, closely linked to potential banking instability through the rapid growth of banks' ABS papers and the time-incongruent short-term financing (commercial papers) of long-term investment (Welfens, 2009). Hence, inadequate prudential supervision was at least a key element of the distortions in US and British financial markets that were supported by banks' massive use of modern information & communication technology to launch an enormously diverse range of financial product innovations and differentiated financial products; such products probably went along with a tendency to shift consumers rents in financial markets to the supply-side in loan markets, namely, banks.

Hence, the push for higher required rates of return on equity capital in banks was partly influenced by technology and the shifting in rents would bring about a rising income inequality as the ownership of banks and firms is typically represented by a small share of rather wealthy people in society. Those low-income and medium-income

households that were forced into foreclosure in the US, and thus lost their house to the respective bank giving loans for house financing, effectively suffered from a wealth transfer in the sense that banks obtained real estate at artificially depressed prices and the owners of banks – the wealthy strata of society – could expect high capital gains and higher profit income in the medium and long-term. Whether or not this an explanation for the growing gap between the rise of US per capita income and the stagnation and temporary fall of the real median income in the US in the period 2003–2014 is difficult to assess and more research is needed here.

However, a non-intervention rule for economic policy and monetary policy, respectively, that allows bubbles to fully unfold while destroying the basis of standard monetary policy is quite doubtful as the social costs are enormous. There is considerable uncertainty with the transmission mechanism and the side-effect of non-conventional monetary policy and the necessary push for lower long-term interest rates – going along with lower short-term interest rates that might even bring negative real interest rates that are a doubtful signal for capital markets—is associated with considerable side-effects and potential distortions. While one could argue that economic analysis has not identified a clear critical bubble ratio, it is fairly obvious that a pragmatic approach with asset bubbles could be adequate. Housing price inflation can be dealt with prudential supervision instruments or with a tax policy that reduces the growth rate of loans for the housing markets or makes it less attractive to invest in real estate projects.

An interesting theoretical contribution to the bubble issue and monetary policy is from Filardo (2001) who presents a model with a standard goods market equilibrium equation (IS) and an inflation equation (PC) which includes an asset bubble term π_B. Then he asks which optimum monetary policy can be derived within this model and what simulation results show. The two basic equations are straightforward where the goods market equation assumes that current output is a negative function of the lagged real interest rate and a positive function of lagged per capita income and the lagged real asset price; finally there is a white-noise error term. The inflation rate is assume to be equal to lagged inflation plus an impact from real GDP plus a negative impact from an asset bubble plus the impact of a white noise error term.

$$y_t = -0.2r_{t-1} + 0.6y_{t-1} + 0.2\left(\pi_{AP,\,t-1} - \pi_{t-1}\right) + \varepsilon_t \tag{3}$$

$$\pi_t = \pi_{t-1} + 0.15y_{t-1} - 0.1\pi_{B,t-1} + \eta_t \tag{4}$$

The key findings in the words of the author are (p.1):

"Should central banks respond to asset price bubbles? This paper explores this monetary policy question in a hypothetical economy subject to asset price bubbles. Despite the highly stylized structure of the model, the results reveal several practical monetary policy lessons. First, a monetary authority should generally respond to asset prices as long as asset prices contain reliable information about inflation and output. Second, this finding holds even if a monetary authority cannot distinguish between fundamental and bubble asset price behavior. Third, a monetary authority's desire to respond to asset prices falls

dramatically as its preference to smooth interest rates rises. Finally, a monetary authority should not respond to asset prices if there is a considerable uncertainty about macroeconomic role of asset prices."

Taking into account the different size of stock market capitalization, it seems obvious that there is a considerable role for asset prices in the USA and the UK, but a possibly smaller one in the euro area and certainly a much smaller role in China—there, the uncertainties of the impact of asset price changes on the macroeconomy are considerable.

An important conclusion from the bubble debate thus is that the old consensus view on bubbles is no longer existing. One may emphasize that bubbles associated with distortions of risk premiums over several years are particularly doubtful and certainly it would be wise if institutional reforms could be adopted which would help to avoid the continuous mispricing of risk, as was the case in the US during the period of 2003–06 (Goodhart, 2008). The acceptability of bubbles in asset markets also seems difficult to defend as financial markets are not efficient in a strict sense.

To some extent the international policy community had become worried about the role of financial markets after the shock of the Asian Crisis in 1997/1998 and the Financial Sector Assessment Program had been introduced as a new policy monitoring tool by the IMF. However, in the US and Europe the FSAP approach failed in the run-up to the banking crisis. President George Bush Jr. did not allow an FSAP report to be published during his tenure and when the IMF finally compiled an FSAP report on the US in 2010 it was not really informative. It is also noteworthy that the IMF had published in July of 2006 a misleading FSAP report (IMF, 2006) on the financial and banking systems of Ireland and this report stated that there were no problems in the banking sector, it was only in insurance and reinsurance that there seemed to be some challenges. Rarely have IMF reports been so misleading and one may argue that the IMF indirectly contributed to the Euro crisis due to the poor analytical reports on Greece and Ireland; incidentally, the earlier FSAP report on Switzerland was also characterized by major misperceptions (the IMF suggested that UBS did not have problems, while Crédit Suisse seemed to face critical problems). Surprisingly, the key stakeholders of the IMF have not criticized this institution for such misreporting and it is unclear to what extent the IMF has implemented reforms that will help to strongly increase the quality of reports in the Financial Sector Assessment Program and Article IV reports.

4.2 The Role of the Housing Market and Financial Market Imperfections

An important avenue of research concerns monetary business models with nominal loans and collateral constraints linked to housing values where Iocaviello (2004) and Iocaviello and Neri (2007) have made important contributions. Financial factors were already emphasized as an important driver of the business cycle by Fisher (1933) who argued that a fall of the general price level in particular could dampen output as growing real debt burdens and falling asset prices could simultaneously dampen the economy and contribute to further deflation and stagnation or recession. Early models which emphasized the role of financial markets and output dynamics were Bernanke and Gertler (1989), the role of financial frictions and business cycles were emphasized

by Kiyotaki and Moore (1997), Carlstrom and Fuerst (1997) and Bernanke et al. (1999)); there is no lack of empirical evidence on such links (e.g. Hubbard, 1998). One may also emphasize that the empirical evidence on the relevance of financing constraints at the household level has been highlighted, for example by Zeldes (1989), Jappelli and Pagano (1989), Campbell and Mankiw (1990) and Carroll and Dunn (1997). The transmission mechanism in Iocaviello (2004) who emphasizes the different perspectives of debtors and lenders is fairly clear:

- Consider a positive demand shock: consumer prices and asset prices will rise and the rise of asset prices will raise the borrowing capacity of the respective debtors so that these can spend or invest more.
- With the rise in the consumer price index, the real value of all outstanding debt obligations will fall and this will raise the net worth in the household sector.
- Since borrowers will typically have a higher propensity to spend than lenders, the net effect on aggregate demand is positive so that there could be a broad amplification mechanism.

Iacoviello (2004) thus emphasizes the role of making a distinction between debtors and lenders; moreover, he argues that consumer price inflation will dampen the shocks that induce a negative correlation between real gross domestic product and inflation. In Iocaviello's view, adverse supply shocks are positive for borrower's net worth if the stock of obligations are held in nominal terms so that the sign of the financial accelerator clearly depends on the type of shocks occurring: There is a financial accelerator for demand shocks, but a decelerator of current supply shocks. Iocaviello and Neri (2007) build a two-sector model which considers that housing can serve as collateral for loans – as in the contribution of Iacoviello (2005). The two authors present – following Christiano et al., 2005 and Smets and Wouters, 2007 - a dynamic equilibrium model with nominal and real frictions; adding to this analytical framework is housing ownership and construction, respectively, and the supply side follows Davis and Heathcote (2005). As per Iacoviello and Neri (2007, p. 2–3), the key feature is:

"the non-housing sector produces consumption and business investment using capital and labor; and the housing sector produces residential investment using capital, labor and land. On the demand side, both housing and consumption enter households' utility, and housing can be used as collateral for loans…Since housing and consumption goods are produced using different technologies, the model generates heterogeneous dynamics both in residential vis-à-vis business investment and in the price of housing. At the same time, fluctuations in house prices affect the borrowing capacity of a fraction of households, on the one hand, and the relative profitability of producing new homes, on the other: these mechanisms generate feedback effects for the expenditure of households and firms…What drives the housing market? …we find that three main factors drive the housing market. Housing demand shocks and housing technology shocks account for roughly one quarter each of the cyclical volatility of housing investment and housing prices. Monetary shocks account for between 15 and 20%. Over the sample period we examine, we find that, housing demand shocks aside, the housing price boom of the 1970s was mostly the consequence of faster technological progress in the non-housing sector. Instead the boom in housing prices and residential

investment at the turn of the 21st century (and its reversal in 2005 and 2006) was driven, in non-negligible part, by monetary factors."

Financial market imperfections have also been discussed in a new form by other authors, namely, as segregated supply of assets by more or less risk averse households (Kollman et al., 2012). From that perspective the introduction of financial market imperfections could lead to considerable analytical progress. It seems that adequately modified NKM models could be useful for a refined modeling approach. New Keynesian macro models can help to understand the medium term adjustment dynamics in a world with frictions in goods and factor markets and asymmetric household groups. This, however, is not ruling out that one will additionally need to look at short-term pure financial models, for example an enhanced Branson model in which various assets are considered (i.e. money, domestic bonds, foreign bonds, domestic stocks). A rather simple model is already sufficient to highlight the short-term effects from QE: an expansionary open market policy (dM= −dB) – the central bank buys domestic bonds so that overall real wealth (A':= M/P +B/P +eF*/P) remains unchanged; M is the nominal stock of money, B the nominal stock of short-term bonds, e is the nominal exchange rate, F* is the stock of foreign bonds – expressed in foreign currency units - and P the price level). The equilibrium condition for the domestic bonds market (see the BB line) has a steeper slope than that for foreign bonds (F*F* line) and expansionary open market policy/QE policy means that the BB curve shifts to the left so that we get a devaluation of the currency (e rises) and a fall of the nominal interest rate i. The equilibrium condition for the foreign bonds market is that eF*/P =f (i,i*) A' where f is the desired share of foreign bonds in total wealth (b is the desired share of bonds in real terms, f the share of foreign bonds in real terms, h is the desired share of real money balances in A'). As b +f +h =1, only two of the three equilibrium conditions for the money market, the bonds market and the foreign bonds market are independent (Fig. 1).

If the current account position should improve in the medium term, the nominal stock F* will increase so that the F*F* curve shifts downwards. The standard Branson model assumes that the demand for each asset is proportionate to wealth: e.g. in the domestic bonds market we can write as an equilibrium condition:

$$B/P = b(i, i*)[M/P + B/P + eF*/P] \tag{5}$$

If we want to cover a setting with a safe-haven effect, one can assume that the desired share of domestic bonds in total wealth is a positive function of R* where R* denotes the risk premium on foreign bonds. The domestic bonds market equilibrium now reads

$$B/P = b(i, i*, R*)[M/P + B/P + eF*/P] \tag{6}$$

A rise of R* shifts the BB curve to the left so that there is a fall of the interest rate. Germany and France have benefitted considerably from the safe-haven effect. An early estimate by the Deutsche Bundesbank (2010) is that the additional inflows bring a 2 percentage points reduction of the interest rate which should thus translate into a large saving of interest payments on the side of government that might save €5-40 bill. per year (depending on the maturity profile the

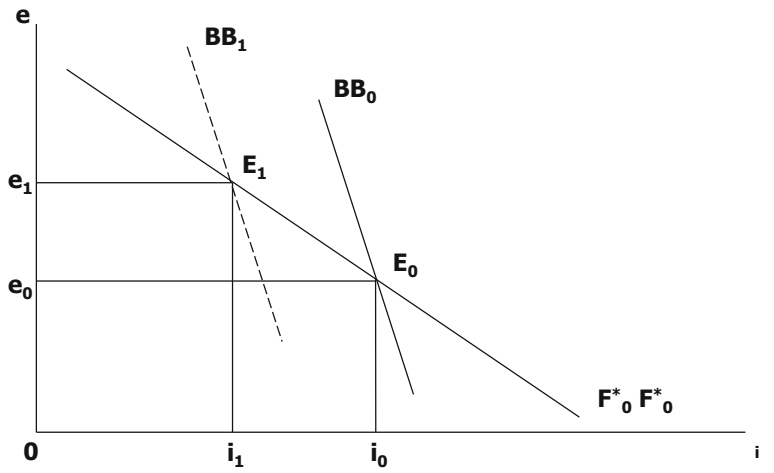

Fig. 1 Branson Model and QE

effect initially is rather small but in the long run refinancing of a debt of about €2,000 bill. at 2% lower interest rates implies an advantage of €40 bill. or about 1,3% of GDP. If one assumes that firms will enjoy half the advantage in terms of interest rate reduction as government the firms in Germany should have an advantage of about 1 point and thus the investment-GDP ratio should slightly increase. It is, however, also true that euro countries with a banking crisis and a government debt crisis will face a risk premium – notably Spain, Greece, Cyprus, Ireland (plus Italy through contagion effects) – and this will reduce export growth for Germany's tradables sector so that the domestic investment effects might be rather modest. At the same time the interest rate advantage exploited by households, namely Ricardian households which can borrow against future wage income or other income, has to be take into account, but again it is not clear that the sum of the demand side effects on net exports, investment and consumption will be positive for Germany and some other countries in the euro area.

Thus, if both the US and the UK adopt QE there will be a euro appreciation that will, in the medium term, dampen the price level development, at the same time a real appreciation undermines export growth and stimulates imports of goods and services: this undermines net export expansion of the euro area. If exports are proportionate to the foreign gross national product (not foreign GDP Y) one will have to consider that the export function is $X= x (q^*) [Y^* +\alpha^*ßY/q^*]$ where $q^*:=eP^*/P$ (* denotes foreign variables; α^* is the share of the capital stock of country 1 owned by investors from abroad and ß is the share of profits in GDP of country 1). A rise of q* will not only raise x (q*) but it also reduces the foreign GNP which is the sum of foreign GDP and profits accruing from country 1. This shows for the simple case of asymmetric foreign direct investment flows (only country 1 has FDI inflows) that the standard Marshall Lerner condition has to be modified in the presence of multinational companies (for the more complex case of symmetric FDI flows – the Marshall-Lerner condition under globalization - see Welfens, 2012)

4.3 Towards a New Paradigm?

Stiglitz (2010, August 19) has been a vocal critic of the traditional macroeconomic models that relied so much on simplistic ingredients such as permanently efficient financial markets, homogenous rational economic agents and absence of information asymmetries. Stiglitz wrote in his contribution "Needed: A New Economic Paradigm" in the Financial Times:

> *It is hard for non-economists to understand how peculiar the predominant macroeconomic models were. Many assumed demand had to equal supply – and that meant there could be no unemployment. (Right now a lot of people are just enjoying an extra dose of leisure; why they are unhappy is a matter for psychiatry, not economics.=Many used "representative agent models" - all individuals are assumed to be identical, and this meant there could be no meaningful financial markets (who would be lending money to whom?). Information asymmetries, the cornerstone of modern economics, also had no place: they could arise only if individuals suffered from acute schizophrenia, an assumption incompatible with another of the favoured assumptions, full rationality.*
>
> *Bad models lead to bad policy: central banks, for instance, focused on the small economics inefficiencies arising from inflation, to the exclusion of the far, far greater inefficiencies arising from dysfunctional financial markets and asset price bubbles. After all, their models said that financial markets were always efficient. Remarkably, standard macroeconomic models did not even incorporate adequate analyses of banks. No wonder former Federal Reserve chairman Alan Greenspan, in his famous mea culpa, could express his surprise that banks did not do a better job at risk management. The real surprise was his surprise: even a cursory look at the perverse incentives confronting banks and their managers would have predicted short-sighted behaviour with excessive risk-taking.*
>
> *The standard models should be graded on their predictive ability – and especially their ability to predict in circumstances that matter. Increasing the accuracy of forecast in normal times (knowing whether the economy will grow at 2.4 per cent or 2.5 per cent) is far less important than knowing the risk of a major recession. In this the models failed miserably, and the predictions of policymakers based on them have, by now, totally undermined their credibility. Policymakers did not see the crisis coming, said its effects were contained after the bubble burst, and thought the consequences would be far more short-lived and less severe than they have been.*
>
> *Fortunately, while much of the mainstream focused on these flawed models, numerous researchers were engaged in developing alternative approaches. Economic theory had already shown that many of the central conclusions of the standard model were not robust – that is, small changes in assumptions led to large changes in conclusions."*

An important new step in macroeconomic analysis concerns business cycle analysis and forecasting, respectively. It will be necessary to change the analytical approach and the forecasting routine in a decisive way if repetition of the banking crisis is to be avoided. Going forward, the first question to be pondered in a model simulation or forecasting analysis should be: Is there a high probability of a systemic crisis in the near future? This should not simply mean that some extreme shocks should be considered in a routine fashion, rather the basic incentives in the economic system have to be critically analyzed and the long-term impact on the system has to be analyzed. It seems adequate that research institutes would raise this question in a routine fashion in the future, but this would require that the government would put this question up in the task list of research (for example in Germany, the Council of economic experts/ *Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung* is not expected to come up with a systemic risk analysis).

Raising this question in a routine fashion would be a new paradigm indeed; economists would not naively assume that markets will continue to be inherently stable, rather one should take into account that in rather rare cases there can be a systemic crisis on the horizon: This would imply that no traditional forecasting exercise makes sense, rather one has to first ask the question about the risk of systemic instability. In a nutshell, Rajan (2005) did raise this issue and his analysis clearly shows that economic analysis has, in principle, the tools to identify prospective cases of massive financial market instability. It would be wise if forecasters would raise the question about a potential systemic crisis as a new matter of routine – if the answer is no, one can present the results from the model simulations, if, however, the answer is that with high probability there will be a systemic crisis, the model simulations would have to be adjusted very carefully. In the case of a prospective serious financial market crisis, one would still have to ponder the relative size of the financial market: Is one considering the US or the UK where stock market capitalization is roughly twice as high as the share of (PPP) GDP in world income? Or is it rather a case like China where the share of the country's GDP in world income is about 15%, while the share of China in global market capitalization is only about 2% (these figures for the five year average before the start of the banking crisis are based on IMF data). In the case of the US or the UK, a major financial market shock will imply a more serious challenge to national stabilization policy than a similar financial market shock in China.

The good news is that in the EU, the interaction of the ECB's broad bank stress test (first set of results will be available at the end of 2014) and the European Commission's medium term forecasting are a first step towards such a new research paradigm: Ask about the probability of big systemic risk first and then run some model simulations around the central scenario. Such an approach could at least signal a move to a kind of new business cycle analysis that is broader and indeed better than traditional models. One may, however, raise doubts that the ECB is the natural candidate to come up with critical analysis on financial markets and economic dynamics since there is some risk of a self-fulfilling prophecy if a powerful policy maker such as the ECB should publish a very pessimistic scenario of medium term development – such a scenario could

easily feed into the formation of expectations of market participants and then indeed bring about the very negative scenario discussed by the ECB. One may also consider for the case of the euro area: The ECB's Systemic Risk Council could be an institution that could publish relevant reports here; however, as a central bank, the ECB is facing the problem that it could not only identify serious external systemic risk – rather its publication of studies on systemic risk could lead to a self-fulfilling prophecy. The ECB's Systemic Risk Council should analyze systemic risk problems, however, communication with fiscal policy actors in the euro area has to be confidential; in reality this is a rather difficult challenge as 18 countries would be involved. This shows that the US has a strategic advantage here, since in the US only the FED and the government plus the Congress have to agree on the fiscal and monetary policy mix or broad institutional reforms. The US has been rather fast to implement broad institutional reforms after the banking crisis. The US output growth from 2008-2015 (forecast values for 2015) reveals that in comparison with the euro area the latter is almost 10% of GDP behind the US in 2015. This shows that the euro area pays a price for slow reforms of euro member countries on the one hand and for a very small fiscal role of the supranational policy layer. Fiscal policy at that level plays no role and the coordination of fiscal policy of member countries of the euro area is rather weak. Moreover, there was no QE policy.

A better way to organize research on stabilization policy would be that individual researchers or research institutions come up with a three-stage analysis in the future:

- The first question is to ask about prospective systemic risk, namely in an open economy perspective that has to take into account not only domestic risk sources but external risk sources as well (this would be in contrast to a statement from Germany's main prudential supervisor from 2008: the preface of the *BaFin*, noted that one did not have any idea about risky developments that had shaped the US financial markets for many years).
- In a second step one can conduct the standard macro and forecasting analysis, respectively. If the first analytical step suggests that there could be a systemic collapse there is not much use to present a traditional forecasting analysis as the standard models – and parameters used – are not designed to reflect an economic system on the verge of collapse.
- In a third step – as will be argued below – it would be useful to consider economic and environmental sustainability in a very simple way, namely, on the basis of data on adjusted net savings rates as published by the World Bank; this concept looks at net savings rates and adds expenditures on education (human capital formation), but it deducts depletion of natural resources as a kind of additional depreciation item; it also deducts damages resulting from particulate emissions and CO2 emissions – again as an additional effective depreciation item. Countries with negative adjusted net savings rates are effectively consuming the capital stock (the latter broadly defined as physical capital plus the stock of natural resources).

Subsequent analysis shows that the adjusted net savings rate of Portugal and Greece had already been negative prior to the crisis and, on the basis of the data for Greece, it is

difficult to consider Greece as a country that has overcome the crisis in 2014 – even if that country has gained new access to international financial markets.

5 New Trade Aspects

While open economy macroeconomics is a fairly standard element of research there are nevertheless some key shortcomings. One crucial aspect concerns the measurement of openness that is relevant, for example, to assess the exposure of a country to world market competition and globalization, respectively**.** Bretschger and Hettich (2002) have argued that trade-GDP ratio is not an adequate ratio for measuring economic openness, rather this ratio has to be corrected for the size effect of countries. Before the banking crisis – in the period from 2005–07 - the true openness indicator (correcting for country size effect) for France, Italy, Spain, Portugal, Greece and Japan was negative, the true openness indicator (Welfens, 2013, p. 29) for the US was rather high both before and after the crisis. Belgium, the Netherlands, Germany, Ireland and Estonia were also rather open based on the true openness indicator. Switzerland was rather open before the crisis, but showed a relatively modest true openness indicator (Welfens, 2013, p. 29) after the crisis (2008–2010).

One could argue that looking at size-corrected openness indicators on the import side is a relevant indicator for assessing the role of import competition; a further refinement could be to drop natural resources imports and to indeed also consider the degree of import sophistication in the ladder of value-added. Finally, one may add the integration question here, namely, whether or not the country is part of a regional single market (i.e. the EU market, the ASEAN market after 2017, the MERCOSUR market etc.). Where would a size-corrected import intensity indicator matter? In the inflation function or the price equation, respectively: The larger the true import openness – corrected for natural resources – really is, the more imports could help to limit inflationary pressures and this refers, of course, to the sector of tradable goods. Does this mean that the world economy is not relevant for the sector of non-tradables dynamics? Not really, since, for example, foreign direct investment inflows into the non-tradables sector could bring more (or less) competition in the non-tradables sector. Alternatively, massive portfolio capital inflows could raise the stock market price index P' relative to the GDP deflator P – the latter is assumed for simplicity to also stand for the price index of investment goods so that P'/P indeed is Tobin's Q. A rise of Q will stimulate investment in all sectors and, depending on sectoral adjustment costs in the expansion of the nontradables sector or the tradables sector, structural change could occur as a temporary or permanent phenomenon.

A key challenge is to combine trade development and the dynamics of information and communication technology on the one hand, and the role of multinational companies on the other hand. Jungmittag and Welfens (2009) have shown that declining international telecommunication costs and rising telecommunication volumes will stimulate trade volume and, since the relevant variable is T_{ij} x T_{ji} (with country indices i and j, T is communication volume), there is a need for an explicit two country model if one wants to fully understand international fiscal policy interaction, namely, to the extent that enhancing competition in international telecommunications or raising public

investment for the modernization of digital telecommunication networks at home and abroad are considered.

The role of multinational companies is a third element which needs to be carefully integrated for adequate analysis and derivation of policy multipliers. MNCs are everywhere but they are rarely considered in any macroeconomic model.

6 The Role of MNCs

The world economy is increasingly characterized by foreign direct investment. According to UNCTAD (2014), the share of FDI flows in total global capital formation has considerably increased in the long run. As the role of multinational companies is rising in the world economy, it is obvious that cumulated foreign direct investment has a considerable weight in many host countries. The share of the capital stock K owned by foreign investors is crucial for macroeconomic modeling because in an open economy with foreign direct investment flows one has to make a careful distinction between real gross domestic product (Y) and gross national product (Z). Since Z is equal to Y plus net profits from abroad – assuming that net factor income from abroad consists only of dividend payments – one can calculate Z rather easily if both country 1 (home country) and country 2 (foreign country; * denotes foreign variables) are producing on the basis of a Cobb-Douglas function with K, labor L and knowledge A as factor inputs.

$$Y = K^{\beta}(AL)^{1-\beta}; \quad 0 < \beta < 1; \tag{7}$$

$$Y* = K*^{\beta*}(A*L*)^{1-\beta*}; \quad 0 < \beta* < 1 \tag{8}$$

Assuming competition in goods markets and factor markets, the profit share in Y in country 1 will be equal to ß, in country 2 the share of profits in Y* is equal to ß*. Hence, if α^* ($0<\alpha^*<1$) denotes the share of K owned by foreign investors from country 2 and if α ($0<\alpha<1$) stands for the share of K* owned by investors from country 1, the real income Z in the home country can be calculated from Y by subtracting α^*ß and by adding αß*Y*q* (multiplying profits accruing from abroad αß*Y* with the real exchange rate q* is necessary to translate foreign real profit units into goods units of country 1).

National income in country 1 and in country 2 therefore will be given by

$$Z = Y(1 - \alpha * \beta) + \alpha\beta * Y * q * \ (q* := eP*/P); \tag{9}$$

$$Z* = Y*(1-\alpha\beta*) + \alpha*\beta Y/q* \tag{10}$$

The distinction between Z and Y is quite important since consumption will be proportionate to Z (and not Y, as in standard models without FDI) and similarly real imports J should be proportionate to Z and real exports should be proportionate to Z*. Denoting the income tax rate by τ, a simple consumption function thus is $C= cZ (1- \tau)$ where $0<c<1$; in country 2 we have $C^*=c^*(1-\tau^*) Z^*$ where $0<c^*<1$. Given the definition of Z and Z*, respectively, we can immediately recognize that domestic

consumption is not only a positive function of Y but of Y* (and q*) as well and for country 2 it holds similarly that consumption C* is both a function of Y* and of Y and of the real exchange rate q*:=eP*/P (e is the nominal exchange rate, P the price level). A real devaluation will raise gross national income in country 1 – even if there is no effect on net exports of goods and services. A rise of q* will reduce Z* directly, since profits accruing from subsidiaries in country 1 – expressed in units of goods of country 2 – are now lower than before. If the share of the US GDP in the world GDP is 0.25, while US investors own 10% of the capital stock in the rest of the world, this translates (assuming ß*=0.4) into a US national income that exceed US GDP by 3% on the one hand, at the same time one has to consider that foreign investors own about 5% of the US capital stock which implies (assuming ß= 0.33) that the GDP going into national income is 0.15% lower than GDP; the hypothetical shares considered here imply no big difference for the US in terms of GDP versus national income. However, in the case of Ireland – with much cumulated FDI inflows and not much Irish FDI outflows – the difference between GNP and GDP is considerable (14-21% during the period from 2005–2012)

7 The Role of Information and Communication Technology

In macroeconomics it took many years for the role of information and communication technology (ICT) to be analyzed more broadly. Strong emphasis has been placed on the role of the high progress rate in the ICT-producing sector and productivity-enhancing effects of ICT-using sectors (Jorgenson et al., 2005). Thus, ICT has largely been considered as a driver of economic growth, where ICT expansion in the US stood in empirical studies for about 1 percentage point of economic growth; moreover, the share of ICT patents in total US patents has been growing over time so that ICT innovation dynamics have strongly contributed to output growth in leading OECD countries. It was also noted that absolute ICT prices were falling strongly over many years – more than three decades – which is a rather unusual characteristic of a major sector of the economy. In prices of 1995, the ratio of real investment, including ICT investment deflated by the sectoral price deflator (that falls over time), to real GDP in Germany in 2007, was about 4.5 percentage points higher than the ratio of nominal investment to nominal real GDP; in the USA the difference between real effective investment to GDP ratio – including ICT investment in real terms relative to real GDP – was about 3.5% points higher than the ratio of nominal ICT investment to national investment. The adjusted real effective investment ratio is calculated here as nominal investment without ICT investment/nominal GDP plus real ICT Invest/real GDP.

With the relative price of ICT goods falling over time, the share of ICT investment in total investment was bound to increase over time. Relative to real gross domestic product, ICT investment in real terms has increased in the US and Germany (and many other OECD countries) over the whole period from 1990–2012, while the fall of absolute prices of ICT capital goods has brought about a decline of the ratio of ICT investment relative to nominal GDP after 2001 in the US and Germany. The share of nominal ICT investment in nominal GDP has reduced after 2001 in the USA and Germany, but real ICT investment as a share of real GDP has increased all the time Welfens and Perret (2014); it also should be noted that digital network effects increasingly play a key role in modern economies (Fig. 2).

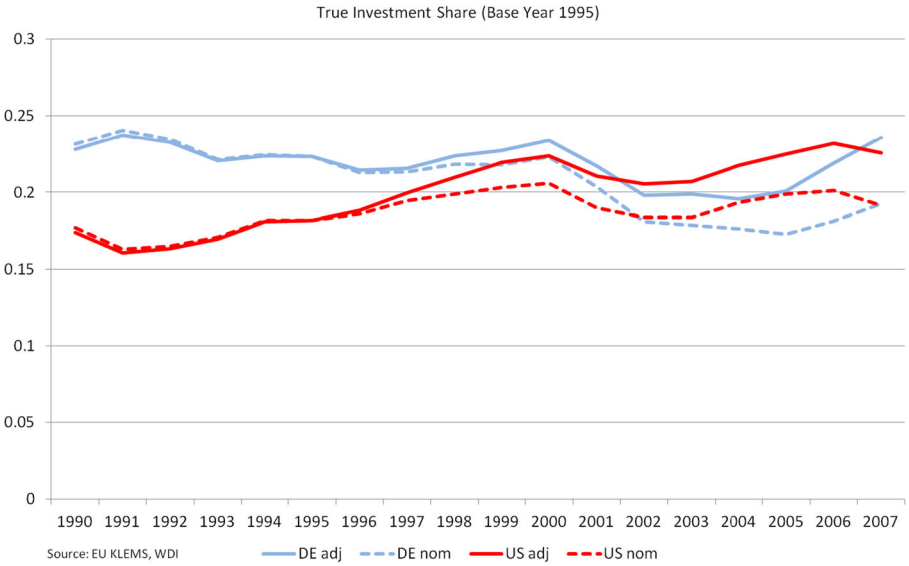

Fig. 2 Difference Between Nominal Investment-GDP Ratio and Real Effective Investment-GDP Ratio for Germany and the US

To the extent that one wants to identify a potential investment gap in OECD countries, this real ICT investment paradox should be taken into account carefully. At the same time, one should be aware that the fall of the relative ICT investment price implies for all sectors of the economy to invest more in ICT; to the extent that ICT investment stimulates firms' innovativeness, one may therefore expect banks to continue the pre-2008 product innovation dynamics that could, over time, undermine the transparency of financial markets for both the clients of banks and for bank regulators. This in turn raises the issue of building a more coherent financial innovation system which might include options to get a patent for major innovations and to define joint "industry standards" in the global banking sector.

8 Sustainable Growth as a Challenge

For all countries, sustainable growth in the sense of long-term environmentally-friendly growth is a key challenge in the 21st century. The emphasis on long-term growth is naturally linked to growth modeling and environmental policy analysis – the latter includes the internalization of external effects through Pigou taxes on emissions or tradable emission permits. The latter should normally be superior to national Pigou taxes because a tradable emission permit amounts to a quasi-international taxation of emission so that cross-border spillover effects normally should be internalized through an efficient permission certificate trading system. There can, however, be two key problems that undermine certificate trading:

- Certificate trading is part of the international financial markets and to the extent that there are temporarily non-efficient financial markets this will have an impact on certificate pricing and trading, respectively. Assume that there is a high volatility of

government bonds; then one should also expect a rather high volatility of emission certificate prices and thus the price signal for emission-reducing investment projects will be more opaque than in a world with efficient financial markets and rather limited volatility of asset prices. The economic order created with respect to financial markets thus also matters for sustainability. If one does not have stable financial markets then the policy option of using tradable emission certificates cannot be exploited in a comprehensive way.

- Governments (including the EU Commission) might be unwilling or unable to allocate an adequate amount of emission certificates or to buy an adequate amount of certificates over time. Considering the latter case this would imply that certificate prices are rather low and hence the internalization stimulus will be rather low. This would, in turn, imply for the case of CO2 certificates that the incentive to invest in low-carbon conventional fossil fuels (as opposed to fossil fuels with high specific carbon intensity such as hard coal or lignite) and renewables will be rather low. The share of renewable energy, the revealed comparative advantage in green – environmentally-friendly – products and the adjusted net savings ratio of the World Bank have been used in the literature to create a composite global sustainability indicator (as seen in the EIIW-vita sustainability indicator (Welfens et al., 2010)).

The role of the adjusted net savings ratio – as defined by the World Bank - is quite crucial not only in the sense of environmental sustainability but also for long run economic growth: That ratio is computed as the gross savings minus physical capital depreciations plus spending on education (used for human capital accumulation) minus natural resource depletion plus damages through particulate and CO2 emissions. If this adjusted net savings ratio is negative, then it is obvious that there is no sustainable growth. Taking a look at the adjusted net savings ratio for Portugal and Greece in the period 2005–2012, one can see that Portugal already had negative adjusted net savings ratios in 2005–07 so that one should anticipate a fall of the level of the growth path. Interestingly, the UK switched to a negative adjusted net savings ratio in 2012 and therefore one may raise the question of whether the country really has overcome the banking crisis (Table 3).

The difference between the gross savings rate and the adjusted net savings rate is considerable as the subsequent table shows. Countries that have a negative adjusted net savings rate and a negative current account deficit-GDP ratio over many years should be quite vulnerable, since running down the national capital stock and facing increasing foreign indebtedness is bound to create instability; lack of sustainability and economic instability could go hand in hand. Italy is a rather large economy that has switched to a slightly negative adjusted net savings rate in 2010–2012 and it also has a long history of a negative current account-GDP ratio; in 2012/2013 the latter has improved however. Brazil has a rather small adjusted net savings ratio, but both Indonesia and China have a much higher ratio and therefore might stand for more stable long-term growth. Here more research is needed, but it is apparently an important question to look more into the issue of double sustainability – in the environmental sense and in the sense of a stable economy. Stable economy means basically stable financial markets, including new markets for emission certificates trading that plays a prominent role in the EU but still has to be introduced in China and other countries eager to cut greenhouse gases in an efficient way; the theoretically obvious advantage of tradable emission permits over a

Table 3 Net Adjusted Saving Ratio and Gross Saving Ratio in Selected Countries

Year	United States				Germany			
	Adjusted savings: net national savings (% of GNI)	Gross savings (% of GNI)	(a) - (b)	Current account (% of GNI)	Adjusted savings: net national savings (% of GNI)	Gross savings (% of GNI)	(a) - (b)	Current account (% of GNI)
	(a)	(b)	(c)	(d)	(a)	(b)	(c)	(d)
2005	6.06	17.79	−11.73	−5.59	7.49	22.06	−14.58	5.01
2006	7.07	18.84	−11.78	−5.65	9.85	24.08	−14.22	6.16
2007	5.17	17.26	−12.09	−4.89	11.93	26.19	−14.26	7.36
2008	3.04	15.51	−12.47	−4.61	10.44	25.08	−14.64	6.17
2009	1.58	14.40	−12.82	−2.63	6.50	21.89	−15.39	5.90
2010	2.70	15.01	−12.31	−2.97	8.21	23.09	−14.88	6.15
2011	3.52	15.63	−12.11	−2.89	9.16	23.88	−14.72	6.02
2012	2.26	16.27	−14.01	−2.67	8.87	23.62	−14.75	6.86
Year	France				United Kingdom			
	Adjusted savings: net national savings (% of GNI)	Gross savings (% of GNI)	(a) - (b)	Current account (% of GNI)	Adjusted savings: net national savings (% of GNI)	Gross savings (% of GNI)	(a) - (b)	Current account (% of GNI)
	(a)	(b)	(c)	(d)	(a)	(b)	(c)	(d)
2005	7.00	19.33	−12.33	−0.47	4.18	14.94	−10.76	−2.51
2006	7.46	20.02	−12.56	−0.57	3.58	14.57	−10.99	−3.28
2007	7.89	20.55	−12.66	−1.01	4.93	15.72	−10.80	−2.46
2008	6.82	20.01	−13.19	−1.73	5.40	15.69	−10.29	−1.50
2009	3.19	16.87	−13.69	−1.33	1.22	12.49	−11.26	−1.66
2010	3.49	17.08	−13.59	−1.29	1.01	12.11	−11.10	−3.25
2011	4.13	17.79	−13.66	−1.73	2.10	13.23	−11.13	−1.31
2012	3.85	17.22	−13.38	−2.16	−2.57	10.91	−13.48	−3.77
	Italy				Spain			
	Adjusted savings: net national savings (% of GNI)	Gross savings (% of GNI)	(a)-(b)	Current account (% of GNI)	Adjusted savings: net national savings (% of GNI)	Gross savings (% of GNI)	(a)-(b)	Current account (% of GNI)
	(a)	(b)	(c)	(d)	(a)	(b)	(c)	(d)
2005	4.69	20.17	−15.48	−1.66	8.48	22.78	−14.30	−7.48
2006	4.80	20.34	−15.54	−2.55	8.09	22.63	−14.54	−9.12
2007	5.23	20.90	−15.67	−2.43	7.01	21.76	−14.76	−10.27
2008	2.66	19.00	−16.34	−2.86	5.05	20.28	−15.24	−9.96
2009	0.02	17.15	−17.13	−1.95	3.90	19.76	−15.86	−4.89
2010	−0.54	16.67	−17.20	−3.55	2.66	18.96	−16.30	−4.57

Table 3 (continued)

2011	−0.76	16.88	−17.64	−3.08	1.16	17.93	−16.77	−3.86
2012	−0.36	17.68	−18.04	−0.40	2.23	19.16	−16.93	−1.16
Year	Portugal				Greece			
	Adjusted savings: net national savings (% of GNI)	Gross savings (% of GNI)	(a) - (b)	Current account (% of GNI)	Adjusted savings: net national savings (% of GNI)	Gross savings (% of GNI)	(a) - (b)	Current account (% of GNI)
	(a)	(b)	(c)	(d)	(a)	(b)	(c)	(d)
2005	−2.94	14.33	−17.28	−10.49	0.04	12.46	−12.42	−7.71
2006	−4.18	13.32	−17.50	−11.00	0.31	12.84	−12.53	−11.56
2007	−3.66	13.63	−17.29	−10.48	−1.88	10.72	−12.60	−15.03
2008	−6.58	11.36	−17.94	−13.13	−5.50	7.73	−13.23	−15.53
2009	−8.00	10.43	−18.43	−11.42	−9.15	5.32	−14.47	−11.47
2010	−7.59	10.65	−18.24	−10.95	−10.86	5.65	−16.51	−10.59
2011	−6.16	12.64	−18.80	−7.33	−13.65	5.53	−19.18	−10.15
2012	−3.35	16.00	−19.35	−2.11	−11.27	10.34	−21.61	−2.46
Year	Ireland				Russian Federation			
	Adjusted savings: net national savings (% of GNI)	Gross savings (% of GNI)	(a) - (b)	Current account (% of GNI)	Adjusted savings: net national savings (% of GNI)	Gross savings (% of GNI)	(a) - (b)	Current account (% of GNI)
	(a)	(b)	(c)	(d)	(a)	(b)	(c)	(d)
2005	17.60	29.42	−11.82	−4.09	25.82	31.86	−6.03	11.33
2006	16.70	28.73	−12.03	−4.03	26.47	31.60	−5.13	9.61
2007	12.85	24.57	−11.72	−6.16	26.01	30.81	−4.81	5.68
2008	7.70	19.40	−11.70	−6.68	27.47	32.44	−4.97	6.44
2009	3.95	16.48	−12.53	−2.66	17.49	23.43	−5.94	4.26
2010	4.13	16.27	−12.14	1.32	22.78	28.05	−5.27	4.56
2011	4.05	16.30	−12.25	1.54	26.19	31.03	−4.84	5.27
2012	8.21	19.64	−11.42	5.38	24.57	29.11	−4.53	3.69
Year	Brazil				China			
	Adjusted savings: net national savings (% of GNI)	Gross savings (% of GNI)	(a) - (b)	Current account (% of GNI)	Adjusted savings: net national savings (% of GNI)	Gross savings (% of GNI)	(a) - (b)	Current account (% of GNI)
	(a)	(b)	(c)	(d)	(a)	(b)	(c)	(d)
2005	6.25	17.86	−11.61	1.63	38.67	48.31	−9.64	5.91
2006	6.16	18.03	−11.87	1.28	41.76	51.61	−9.85	8.56
2007	6.32	18.46	−12.15	0.12	41.56	51.72	−10.17	10.08
2008	6.77	19.23	−12.46	−1.75	42.52	53.01	−10.49	9.24
2009	3.85	16.23	−12.38	−1.53	42.50	53.21	−10.71	4.88
2010	5.17	17.86	−12.69	−2.25	41.53	52.46	−10.92	4.03
2011	4.65	17.56	−12.91	−2.16	39.33	50.61	−11.28	1.88
2012	2.14	14.87	−12.73	−2.45	39.87	51.27	−11.40	2.36

Table 3 (continued)

Year	India				Indonesia			
	Adjusted savings: net national savings (% of GNI)	Gross savings (% of GNI)	(a) - (b)	Current account (% of GNI)	Adjusted savings: net national savings (% of GNI)	Gross savings (% of GNI)	(a) - (b)	Current account (% of GNI)
	(a)	(b)	(c)	(d)	(a)	(b)	(c)	(d)
2005	23.98	33.90	−9.92	−1.24	22.11	27.37	−5.26	0.10
2006	25.41	35.24	−9.83	−0.99	23.90	29.13	−5.22	3.11
2007	27.00	36.76	−9.76	−0.65	21.93	27.15	−5.21	2.53
2008	23.96	34.06	−10.10	−2.55	22.16	27.34	−5.18	0.03
2009	23.86	34.10	−10.25	−1.93	27.09	32.27	−5.18	2.04
2010	24.60	34.52	−9.92	−3.22	27.61	32.76	−5.14	0.75
2011	22.78	32.67	−9.89	−3.35	27.70	32.85	−5.15	0.21
2012	20.78	30.68	−9.90	−4.98	26.47	31.62	−5.15	−2.83

Source: WDI and own calculations

national Pigou tax could be undermined by systemic financial market instabilities if such markets are not adequately regulated so that the side-effects of poor financial market regulation can be much larger than a traditional narrow view would suggest.

9 Modeling Aspects

9.1 Demand Side and Supply Side Interaction

In the typical economic models analyzed, there is one specific link between the demand side and the supply side, namely, the output gap – the difference between current output and the production potential where the latter is derived from a macroeconomic production function or some HP filter technique. To the extent that a Taylor rule for monetary policy is used, the output gap plays a prominent role in monetary policy, but it could also influence wage-setting.

An alternative approach is to directly write the equilibrium condition for the goods market in such a way that it is assumed that aggregate consumption is proportionate to a quasi-permanent income in the sense that aggregate consumption demand is assumed to be proportionate to a linear combination of the current income and the long run equilibrium income Y# as derived from a growth model (Welfens 2011a):

$$\begin{aligned} Y'^{d} &= (1-\lambda)Y + (\lambda/(1+r))Y\# = Y + \lambda((1-r)Y\#-Y) \\ &= Y-\lambda rY\# + \lambda(Y\# - Y) \end{aligned} \tag{11}$$

Division by (1+r) is made here – with r denoting the real interest rate - since it is the discounted future steady state output which matters and, if one assumes for simplicity that Y# is reached after one period, division by (1+r) is adequate. The quasi-permanent income this is the sum of current income Y minus the term λrY# plus a term that is proportionate to the output gap (here defined as Y# - Y). The implication for a

consumption function C =c (1-τ) Y'[d] obviously will be that consumption is a position function of current disposable income (0<c<1), a negative function of the real interest rate and a positive function of output gap.

$$C = (1-\tau)Y - \lambda(1-\tau)rY\# + \lambda(1-\tau)(Y\# - Y) \tag{12}$$

Here τ is the income tax rate and Y# is the steady state output derived from a Solow growth model with the output equation $Y=K^{ß}(AL)^{1-ß}$ where K is capital, A knowledge and L labor (0<ß<1); λ is a weighing factor for the importance of expected future income while 1-λ indicates, of course, the weight of current income.

Investment demand may be assumed to be proportionate to the difference between the net marginal product of capital ßY/K - δ and the real interest rate (where δ is the rate of capital depreciation) so that investment is given by I=η (G'/Y, u') (ßY/K - δ - r) +δK; η (G'/Y) is a parameter function with ∂η/∂G' where G' is public investment; moreover, ∂η/∂u<0 where u' is the expected unemployment rate. Government expenditure is G'+G" (where G' stands for public investment and G" for public consumption).

In a closed economy, the goods market equilibrium thus reads with a linear form of the function for η (with positive parameters η' and η"):

$$\begin{aligned} Y &= c(1-\lambda)(1-\tau)Y + c(\lambda(1-\tau)/(1+r))Y\# \\ &+ (1+\eta'G'/Y - \eta''u')(\beta Y/K - \delta - r) + \delta K \end{aligned} \tag{13}$$

Note that instead of 1/(1+r) one can write (1-r) provided that r is relatively small. The long run equilibrium output in a refined Solow model – with inward foreign direct investment (s' is the reinvestment parameter of foreign capital owners whose share in K is equal to α* and ß is the share of profits in Y) - where savings S= s (1-τ) (1-α*ß) Y + s'α*ß Y is given (assuming a given knowledge A and a given population/labor force L) by the expression:

$$Y\# = AL[(s(1-\tau)(1-\alpha*\beta) + s'\alpha*\beta)/\delta]^{\beta/(1-\beta)} \tag{14}$$

The savings function assumes that in the long run savings is proportionate to disposable GNP – this is the term for domestic savers – and it is also influenced by the reinvested profits of foreign subsidiaries (s'α*ß); obviously if s'>s (1-τ) the level of the growth path in the modified Solow model is higher than in an economy without foreign direct investment. It has been assumed here that profits of foreign subsidiaries are not taxed. It will be assumed that exports are positively influenced by the ratio of A/A* (θ and θ' are positive parameters) since a rise of domestic knowledge A relative to A* is associated with product innovations and thus exports should increase. In the same logic, the ratio A/A* is dampening imports where it is assumed that θ'A/A* is smaller than unity. Exports are assumed to be proportionate to gross national product and the same applies to imports. Moreover, it is assumed that internet density b' in the home country and the foreign country jointly affect imports (b is a positive parameter); this is in line with the augmented trade gravity model of Jungmittag and Welfens (2009) that found for EU countries that international telecommunications volume T_{ij} x T_{ji} (T_{ij} is phone calls between countries i and partner countries j and T_{ji} is for calls between j and i) has a positive significant impact on trade between country i and j. The

squaring of the term b'+b'* indicates international network effects; it is noteworthy that for internet density at home and abroad as well as broadband density at home and abroad, such network effects were found to also be significant in the context of the EU country's respective innovation performance index (Welfens and Irawan, 2014)

For the open economy with foreign direct investment inflows (the share of foreign investors in the capital stock K is expressed by α^* and ß is the share of capital in GDP if competition in goods and factor markets is holding, x and j are positive parameters and the role of a VAT rate has also been taken into account) the equilibrium condition reads with an additional housing investment component V'σY where V' is a positive parameter reflecting general financing conditions for the housing market and σ is the banks' leverage ratio:

$$\begin{aligned} Y &= c(\lambda(1-\tau)(1-r)(1-\tau'))(1-\alpha*\beta)\,AL[(s(1-\tau)(1-\alpha*\beta)+s'\alpha*\beta)/\delta]^{\beta/(1-\beta)} \\ &+ c(1-\lambda)(1-\tau)(1-\alpha*\beta)(1-\tau')Y+(1+\eta'G'/Y-\eta''u)(\beta Y/K-\delta-r)+\delta K \\ &+V'\sigma Y+G'+G''+x\left(1+\theta A/A*\right)\left(1+b*(b'+b'*)^2\right) \\ &(Y*q*+\alpha*\beta Y)-j(1-\theta'A/A*)\left(1+b(b'+b'*)^2\right)Y(1-\alpha*\beta) \end{aligned} \tag{15}$$

It has been assumed that exports have an elasticity with respect to the real exchange rate q*:=eP*/P of unity, while imports have an elasticity of minus 1.

If the supply price level is denoted as P, the net real wage w' is given – with τ' denoting the VAT tax rate - by

$$w' = W(1-\tau)/(P(1+\tau')) \tag{16}$$

Due to profit maximization, we must have that in equilibrium the gross real wage rate is equal to the marginal product of labor (W is the nominal wage rate, P is the price level).

$$W/(P(1+\tau')) = (1-\beta)Y/L \tag{17}$$

The above equation determines the nominal wage rate in full employment equilibrium in which u=0. A key equation for the price level determination can be stated on the basis of an augmented quantity equation (Welfens 2011a) which follows the logic of Field (1984), who has argued that the FED in the run-up to the Great Depression made a serious mistake by not considering that monetary transactions were not only taking place in goods markets but in stock markets as well. The augmented quantity equation in a nutshell reads (with P' denoting the stock market price index, K the number of stocks which is equal to the number of capital units K and ϕ standing for the turnover frequency of the average portfolio, M is the stock of money, V velocity):

$$MV = P(1+\tau')Y + P'K\phi(r) \tag{18}$$

Here ϕ is a negative function of r. If we disregard the latter and simply take ϕ to be an exogenous parameter and consider that due to profit maximization we have ßY/K= r

+δ - where δ is the depreciation rate of capital – we can replace K by the expression ßY/(r+δ). Thus the extended quantity equation is given by

$$MV = [P(1 + \tau') + P'\phi/(r + \delta)]Y \tag{19}$$

Let us denote P'/P as the relative stock price index p' and assume that the VAT rate is close to zero so that after dividing by P (1+τ') we have:

$$MV/(P(1 + \tau')) \approx [1 + p'\phi(1-\tau')/(r + \delta)]Y \tag{20}$$

Hence for the price level we get P =MV (1-τ')/[1 +p'ϕ (1-τ')/(r+δ)] Y. Taking logs we thus obtain under the assumption that p'ϕ (1-τ')/(r+δ) is very small the following approximation:

$$lnM + lnV - \tau' - lnP - lnY \approx p'\phi(1-\tau')/(r + \delta) \tag{21}$$

$$lnP = ln(M/Y) + lnV - \tau' - p'\phi(1-\tau')/(r + \delta) \tag{22}$$

If velocity is specified (with e' denoting the Euler number) as V= $e'^{-\Omega r}$ we can replace lnV by -Ωr; the expected inflation rate has been assumed to be zero, otherwise r would have to be replaced by the nominal interest rate.

$$lnP = ln(M/Y) - \Omega r - \tau' - p'\phi(1-\tau')/(r + \delta) \tag{23}$$

Thus the logarithm of the price level is a positive function of M/Y, a positive function of velocity (here, for the sake of simplicity, not assumed to depend on the nominal interest rate), a negative function of the real stock market price p' and a negative function of the real interest rate. The impact of the VAT rate is at first sight ambiguous – if both p' and the portfolio turnover frequency ϕ are close to unity (which is plausible) it is quite realistic to assume that the impact of the VAT tax rate on the price level is positive and should be rather large; certainly so in a period with a very low real interest rate. In a more refined model one would also explain the stock market price index; in a simplistic approach one could assume that p' is a positive function of the leverage ratio of banks which in turn positively depends on the share of "too big to fail" banks in the number of total banks.

In a nutshell, money market equilibrium is given (with σ denoting a proxy for the leverage rage of banks and M' the exogenous monetary base) by:

$$\sigma M'V = [P(1 + \tau') + P'\phi/(r + \delta)]Y \tag{24}$$

It is assumed that portfolio capital inflows are proportionate to the real interest difference while foreign direct investment inflows are a positive function of the real exchange rate (Froot and Stein, 1991) and the size of the market as proxied by Y; portfolio capital flows also are affected by the leverage ratio (parameter σ'), namely, in the sense that a higher leverage ratio will attract more capital inflows below a critical value of σ, beyond the critical value, the parameter switches into negative values so that capital inflows are reduced and hence the real interest rate will remain higher than otherwise. As a polar case one may consider an output multiplier for σ, namely, one for

σ'>0 and an alternative case of σ'<0. The foreign exchange market equilibrium reads (with positive parameter φ, φ', φ", b', b where b' is internet density):

$$\varphi(r-r*) + \varphi' q* + \varphi'' Y - \sigma'\sigma =$$

$$= j(1-\theta' A/A*)\left(1 + b(b' + b'*)^2\right) Y(1-\alpha*\beta) - x(1+\theta A/A*)\left(1 + b*(b' + b'*)^2\right)(Y*q* + \alpha*\beta Y) \quad (25)$$

In matrix notation we get after differentiation from (15), (24) and (25) with the exogenous variables G', G", M' (monetary base), p', b, b', α*, ß, φ, τ, τ', σ, A, V' a complex equation set. (see Appendix 1)

We can solve for the policy multipliers (considering here that dG' goes along with db'=b"dG' (b">0) since public investment is assumed to raise the broadband density b'). The output multipliers are shown in the Appendix 1.

The endogenous variables are r, Y and e (in a system of flexible exchange rates). We have many more exogenous variables than in a Mundell-Fleming model. The output multipliers for G', G", M', p', α*, ß, φ, τ, τ', σ, A, V' (and b' and some other parameters) can be considered easily as well as the multipliers for r and e (q*)); for the case of dG'>0 it will be assumed that db'>0, that is, public investment means a rise of internet density/broadband density. It is important to note that a rise of b' will not only raise exports of goods and services but imports of goods and services as well. In this demand-determined model, two types of fiscal policy, different types of tax policy, an asset price shock (fall or rise of p'), a technology shock (change of ß), a confidence shock in the international capital market (change of φ), in the presence of multinational companies (change of α*), the size of the leverage ratio (σ: with two cases, namely, σ'>0 and σ'>0) and monetary policy (change of M') can be considered.

10 Conclusions

In the future, macroeconomic forecasts should have a first chapter in which a new standard question is raised: Are there reasons to expect a systematic crisis? Secondly, the time horizon of bankers should be lengthened and more realistic goal-setting be encouraged in the financial sector, namely, by a new tax on the variance of the rate of return on equity. This institutional innovation could be introduced in OECD countries as well as in other countries.

As regards the search for a new paradigm in macroeconomics, it is adequate to emphasize that one cannot easily identify a new paradigm. Rather, the reflections presented have argued that it would be wise to consider several elements for a broader approach to make macroeconomic analysis more realistic and more relevant – this requires taking a broader look at theoretical aspects of an open economy with trade and foreign direct investment as well as portfolio investment. It is not very convincing to assume that financial markets are efficient, rather deviations from market efficiency may be assumed to be part and parcel of reality. To the extent that one wants to seriously raise questions about systemic stability, it will not be adequate to only

consider key macroeconomic figures such as the current account deficit-GDP ratio, the debt ratio or the deficit-GDP ratio. Rather, it seems useful to also take a closer look at adjusted net savings ratios and "double sustainability", respectively. Double sustainability means that not only long-term environmental aspects are considered but prospects for the long-term stability of financial markets as well.

As regards macroeconomic modeling, central banks and many researchers are likely to continue to use some form of New Keynesian Modeling that emphasizes the role of rigidities in goods markets and factor markets. Since the banking crisis, new refinements have been introduced, including the distinction between Ricardian households who can borrow against future income and non-Ricardian households whose spending limit is given by current income.

More insights may be expected from deeper analysis of behavioral finance. To the extent that, for example Dornbusch-type overshooting behavior of exchange rates – depending on critical parameter values of the interest elasticity of the demand for money and in the equation for expectation formation – is combined with herding behavior of investors, considerable temporary economic instability might emerge. Given the fact that the 21st century will greatly shaped by the economic giants of the USA, EU, China and Japan, it will become ever more important to have adequate internationally coordinated macroeconomic policies.

Adequate prudential supervision is a key element of the quality of the economic order of countries. Here the euro area has made some progress in terms of the banking union and the US and the UK also seem to have adopted some improvements. However, it is not clear that a repetition of the banking crisis of 2007–2009 (to mention the core years only) can be avoided in the future.

One may argue that financial market inefficiencies to a considerable extent stem from the fact that financial innovations are largely non-standardized and that there is poor quality control since there is no equivalent to the patent system which forces those who apply for a patent in the manufacturing industry to explain to which existing patents the new patents is inherently linked and what useful additional innovative feature the new product or process represents. Finally, there is the additional psychological aspect that the market for lemons problem in financial markets is worse than in markets for goods – the information asymmetry about quality aspects is partly high in both markets. However, those persons who buy a new car with lemon quality will publicly complain about the problems which undermines the reputation of the respective car producers and indeed professional quality evaluation firms (e.g. JD Powers in the US car market) which have developed a quality rating system that everybody can understand. In contrast to the example of automotive markets, financial products are not shaped much by voice – to use one of the negative feedback options emphasized by Hirschman (1970) in his book on the role of exit and voice: clients of banks that have suffered wealth losses due to poor advice from a bank will often be hesitant to sue the respective bank, simply because one does not like to publicly disclose before a court how naïve a client the respective investor has been. The quality of financial assets has also deteriorated over time since 1998, when the separation between investment banks and standard banks was lifted.

A critical reflection on the incentives to take risks in banks in all major OECD countries plus G20 countries is adequate, and the IMF is one of the institutions that should regularly publish reports on this issue – if the FSAP updates and reports,

respectively, are taken seriously as a task by the IMF, one may expect the IMF to help sorting out the problems. However, as long as there is no inspection panel looking from the outside into the FSAP work of the IMF, thus raising critical questions, for example about the IMF's Ireland Report of 2006, one should not be optimistic that the quality of reports is optimal. The opaque role of the leading rating agencies remains a problem until the incentives are changed, procedures become more standardized and more competition is achieved.

Economic analysis is likely to be flawed if economists do not develop a realistic picture of bankers' behavior under given institutional constraints; bankers in big banks – with complex governance structures – might take a long-term view and strongly consider the interests of their respectively clients, particularly if there is level transparent playing fields in combination with clear-cut standards for financial products and a consistent financial innovation system. A Pigou tax that internalizes negative external effects from overly risky expansion strategies by banks could be useful, some form of taxing the variance of the rate of return on equity could give adequate incentives for a more long-term realistic setting of the goals of banks and top managers, respectively.

10.1 Institutional and Macroeconomic Analysis Combined

In the end there is a need for combining a critical institutional analysis of the current economic system (s) and the macroeconomic analysis which will be short-term (focus on financial markets), medium term (some form of Keynesian analytical framework) and long run (for example a Schumpeterian approach). Inconsistent institutions or the lack of institutional coverage will encourage behavior which reflects a strong emphasis on short-term profit maximization – and thus ignore long run effects; or assume that government will take care of dynamics that go along with large medium term losses and the threat of bankruptcy of big banks. It seems fairly clear that macroeconomic policy should not be a substitute for adequate institutional reforms. Sequencing is a natural element on the check list of policymakers (Fig. 3).

There is, however, an overlap in the political economy of reforms: Often the institutional reforms should be adopted first – hence a political majority for this is necessary – and then fiscal policy and monetary policy can yield optimum impact. Sometimes one might, however, face a situation in which macroeconomic recovery should be achieved first and only on the back of renewed optimism in the economy can politicians obtain a majority for major institutional changes. As regards Europe there is often the problem that different countries face problems of specific respective path dependencies (for example related to formal or informal institutional setups) which block reforms. Here, a multilateral reform initiative could sometimes be quite useful; for example while French trade unions and the employer federation often meet each other in a conflict-prone atmosphere – with both sides effectively waiting for government to take the critical decisions – the cooperation of trade unions and employer federations in Germany allows government to shift part of these responsibilities to such organizations that are indeed willing to find a compromise. While certain reforms in France alone might be quite difficult and not very effective, a joint Franco-German policy initiative might work better since the traditional routine conflict patterns in France would not make sense at an international – or European – level of searching for compromise. Thus, one might find certain areas of new international cooperation within the EU and this could include fields of social security that are of joint interest and carry relevant

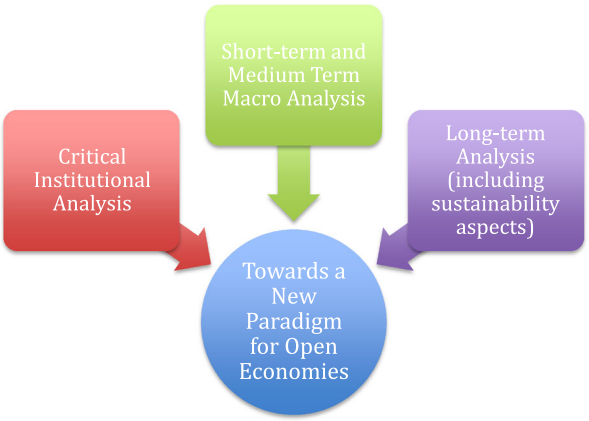

Fig. 3 Towards a New Paradigm in Macroeconomics

international spillover effects. If part of these considerations can be adopted in a joint constitution, this should make cooperation in economic policy reform easier.

The perspectives presented could jump-start a new paradigm that is more complex but also more realistic in a macro analysis that requires a complementary institutional analysis. Here a critical focus should be on incentives for key actors, the quality of market signals – referring to asymmetry of information problems as emphasized by Akerlof (1970) - and the dynamics of competition. The fact that quality problems in ABS markets were not detected early on partly can be explained by the leading rating agencies fictitious work whose role had been reinforced by Basel II rules. A critical institutional quality check could have discovered crucial quality problems in financial markets rather early; and too many financial products accepted by central bank in many OECD countries effectively have no market price. At the bottom line there is a need for a "Schumpeterian Mundell-Fleming-Solow-Akerlof-model" that combines critical Institutional Economics with modern macroeconomics. Asymmetric information problems currently play a growing role in digital networks and new instabilities could emerge in this context.

The vulnerability of digital networks, which increasingly shape financial markets and goods markets, should be an area of future research along with other points emphasized in the analysis above. The more the economy is shaped by digital networks, the more one will raise the question of how an optimal exploitation of network resources can be achieved (here Jeremy Pitt from the Imperial College in London has presented interesting research from computer science where using network resources in an intelligent decentralized way combines principles of allocation emphasized by Elinor Ostrom, plus the principles of fairness developed by the philosopher Nicholas Rescher which include demand and supply aspects; see Menden, 2014).

A special issue to address will refer to the links between globalization dynamics and rising inequality within countries which could undermine economic and political stability in the long run. Stability issues should be defined in a broader perspective so that the stability of regional integration clubs also are included. With China becoming a big actor in the world economy, better policy cooperation between the EU, the US, Japan and China will also be an important issue for achieving global stability.

APPENDIX 1

$$\begin{pmatrix} 1-ck_7+\text{'G'}\dfrac{k_8}{\text{Y}^2}+\dfrac{\beta k_9}{K}-\text{V}'-\text{x}k_4k_5\alpha^*\beta+jk_1k_2k_3 & k_{10}+k_9 & -xk_4k_5Y^* \\ \text{M'VP}(1+\text{'})+\text{P'}\overline{(\text{r}+)} & -\dfrac{P'}{(\text{r}+)^2} & 0 \\ {}''-\text{j}k_1k_2k_3+\text{x}\alpha^*\beta k_4k_5 & & xk_4k_5Y^* \end{pmatrix}\begin{pmatrix} dY \\ dr \\ dq^* \end{pmatrix}=$$

$$\begin{pmatrix} (1+k_0\text{'}/\text{Y}) & 1 & 0 & 0 & -jY\left(\text{b}'+\text{b}'^*\right)^2k_1k_3 & \left(2b'+2b'^*\right)(xk_4k_6b^*-jYk_1k_3b) & k_{11}-k_{12}+\beta Y(k_1k_2+k_4k_5) & k_{13}-k_{14}+\alpha^*Y(k_1k_2+k_4k_5) & 0 \\ 0 & 0 & -\text{V} & \text{Y}/(\text{r}+) & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & jY\left(\text{b}'+\text{b}'^*\right)^2k_1k_3 & \left(2b'+2b'^*\right)(jYk_1k_3b-xk_4k_6b^*) & -\beta Y(k_1k_2+k_4k_5) & -\alpha^*Y(k_1k_2+k_4k_5) & -(r-r^*) \end{pmatrix}$$

$$\text{k}_1=1-\theta\text{'A}/\text{A}*>0$$

$$\text{k}_2=1+\text{b}(\text{b}\text{`}+\text{b}\text{`}*)^2>0$$

$$\text{k}_3=1-\alpha*\beta>0$$

$$\text{k}_4=1-\theta\text{A}/\text{A}*>0$$

$$\text{k}_5=1+\text{b}*(\text{b}\text{`}+\text{b}\text{`}*)^2>0$$

$$\text{k}_6=\text{Y}*\text{q}*+\alpha*\beta\text{Y}>0$$

$$\text{k}_7=(1-\lambda)(1-\tau)(1-\alpha*\beta)(1-\tau\text{'})>0$$

$$\text{k}_8=\beta\text{Y}/\text{K}-\delta-\text{r}$$

$$\text{k}_9=1+\eta\text{'G'}/\text{Y}-\eta\text{"u}$$

$$\text{k}_{10}=\text{c}\lambda(1-\tau)(1-\tau\text{'})(1-\alpha*\beta)\text{AL}[(\text{s}(1-\tau)(1-\alpha*\beta)+\text{s'}\alpha*\beta)/\delta]^{\beta/(1-\beta)}>0$$

$$\text{k}_{11}=\text{c}\beta\lambda(1-\tau)(1-\text{r})(1-\tau\text{'})\text{AL}[(\text{s}(1-\tau)(1-\alpha*\beta)+\text{s'}\alpha*\beta)/\delta]^{\beta/(1-\beta)}$$
$$\left(\beta((\text{s'}\beta-\beta\text{s}(1-\tau))/\delta)[(\text{s}(1-\tau)(1-\alpha*\beta)+\text{s'}\alpha*\beta)/\delta]^{\beta/(1-\beta)-2}/(1-\beta)-1\right)$$

$$k_{12} = -\beta c(1-\lambda)(1-\tau)(1-\tau')Y < 0$$

$$k_{13} = c\alpha * \lambda(1-\tau)(1-r)(1-\tau')AL[(s(1-\tau)(1-\alpha*\beta) + s'\alpha*\beta)/\delta]^{\beta/(1-\beta)} \left(\beta((s'\beta-\beta s(1-\tau))/\delta)[(s(1-\tau)(1-\alpha*\beta) + s'\alpha*\beta)/\delta]^{\beta/(1-\beta)-2}/(1-\beta)-1\right)$$

$$k_{14} = -\alpha * c(1-\lambda)(1-\tau)(1-\tau')Y < 0$$

$$k_{15} = -c(1-\lambda)(1-\alpha*\beta)(1-\tau')Y - c\lambda(1-r)(1-\tau')(1-\alpha*\beta) AL[(s(1-\tau)(1-\alpha*\beta) + s'\alpha*\beta)/\delta]^{\beta/(1-\beta)} \left((1-\tau)s(1-\alpha*\beta)[(s(1-\tau)(1-\alpha*\beta) + s'\alpha*\beta)/\delta]^{\beta/(1-\beta)-2} + 1\right) < 0$$

$$k_{16} = -c(1-\lambda)(1-\tau)(1-\alpha*\beta)Y - c\lambda(1-\tau)(1-r)(1-\alpha*\beta) AL[(s(1-\tau)(1-\alpha*\beta) + s'\alpha*\beta)/\delta]^{\beta/(1-\beta)}$$

$$k_{17} = c(\lambda(1-\tau)(1-r)(1-\tau'))(1-\alpha*\beta)L[(s(1-\tau)(1-\alpha*\beta) + s'\alpha*\beta)/\delta]^{\beta/(1-\beta)} + x\theta/A * k_5k_6 - j\theta'/A * Yk_2k_3 > 0$$

$$U = -\left(\sigma M'V\left[P(1+\tau') + P'\frac{\phi}{(r+\delta)}\right]\right)xk_4k_5Y^*(k_{10}+k_9+\varphi) - \frac{P'\phi xk_4k_5Y^*}{(r+\delta)^2}\left(1 - ck_7 + \eta'G'\frac{k_8}{Y^2} + \frac{\beta k_9}{K} - \sigma V' + \varphi''\right) < 0$$

$$\frac{dY}{dG'} = -\frac{(1+k_0\eta'/Y)P'\phi xk_4k_5Y^*}{U(r+\delta)^2} > 0$$

$$\frac{dY}{dG''} = -\frac{P'\phi xk_4k_5Y^*}{U(r+\delta)^2} > 0$$

$$\frac{dY}{dM'} = \frac{\sigma Vxk_4k_5Y^*(k_{10}+k_9+\varphi)}{U} < 0$$

$$\frac{dY}{dP'} = -\frac{\phi Y/(r+\delta)xk_4k_5Y^*(k_{10}+k_9+\varphi)}{U} > 0$$

$$\frac{dY}{db} = 0$$

$$\frac{dY}{db'} = 0$$

$$\frac{dY}{d\alpha^*} = -\frac{(k_{11}-k_{12})}{U}\frac{P'\phi x k_4 k_5 Y^*}{(\mathrm{r}+\delta)^2}$$

$$\frac{dY}{d\beta} = -\frac{(k_{13}-k_{14})}{U}\frac{P'\phi x k_4 k_5 Y^*}{(\mathrm{r}+\delta)^2}$$

$$\frac{dY}{d\varphi} = \frac{(r-r^*)P'\phi x k_4 k_5 Y^*}{U(\mathrm{r}+\delta)^2}$$

$$\frac{dY}{d\tau} = -\frac{k_{15}P'\phi x k_4 k_5 Y^*}{U(\mathrm{r}+\delta)^2} < 0$$

$$\frac{dY}{d\tau'} = -\frac{\mathrm{PY}x k_4 k_5 Y^*(k_{10}+k_9+\varphi) + \dfrac{P'\phi x k_4 k_5 Y^* k_{16}}{(\mathrm{r}+\delta)^2}}{U} > 0$$

$$\frac{dY}{d\sigma} = \frac{\mathrm{M}'\mathrm{V}x k_4 k_5 Y^*(k_{10}+k_9+\varphi) - \dfrac{P'\phi x k_4 k_5 Y^*\left(V'Y+\sigma\right)}{(\mathrm{r}+\delta)^2}}{U}$$

$$\frac{dY}{dA} = -\frac{P'\phi \mathrm{c}(\lambda(1-\tau)(1-\mathrm{r})(1-\tau'))(1-\alpha^*ß)\mathrm{L}[(\mathrm{s}(1-\tau)(1-\alpha^*ß) + \mathrm{s}'\alpha^*ß)/\delta]^{ß/(1-ß)}x k_4 k_5 Y^*}{U(\mathrm{r}+\delta)^2} > 0$$

$$\frac{dY}{dV'} = -\frac{P'\phi x k_4 k_5 Y^*\sigma \mathrm{Y}}{U(\mathrm{r}+\delta)^2} > 0$$

APPENDIX 2: Time to Fight the Risk of Deflation in the Euro Area

In 2014, it has become obvious that there is a deflation problem in the euro area – with the possible exception of Germany (at least in the short-term). Headline inflation and core inflation have been falling in the euro area since 2011, namely, based on the harmonized consumer price index. There is no doubt that the crisis

countries of Greece, Cyprus and Portugal are facing deflation in 2014, namely, falling consumer prices and declining GDP deflator figures. Ireland's temporary deflation certainly was part of a successful adjustment process, namely, improving the price competitiveness of Ireland's tradable goods sector. Producer prices are falling in several EU countries and prospects for an economic upswing in 2014/2015 could raise producer prices and consumer prices in the medium term, respectively. However, the risk of deflation cannot be assessed without a closer look at expectations (information on expectations in the market can be taken from inflation hedge swaps; looking at index-link bonds might be rather misleading as the Euro crisis implies that such bonds might be less liquid than non-indexed bonds). The ECB's forecast for 2015 – as of September 2014 – is only 1.1%.

Inflation expectations – based on ECB surveys of professional forecasters – have been falling in 2014 and expectations were above the actual inflation rate for several quarters so that one may expect anticipated inflation rates to correct for this transitory bias and to fall further over time. The euro area faces a standard monetary policy problem in the sense that the inflation rate for Germany should be higher than for Greece or Portugal. Both need a fall of the relative national price level to regain competitiveness vis-à-vis Germany and other euro countries (with 18 euro countries altogether). However, a similar argument could be made with respect to the US and the monetary policy of the US Federal Reserve System, which also employs a 'one size fits all' model for as many as 50 states. The ECB has reduced its central bank interest rate from 0.15% to 0.05% on September 4, 2014; at the same time the ECB declared it would buy asset-based securities - typically representing bundles of loans that banks have given to firms – and covered bonds.

Is this adequate to fight deflationary pressure? It will not suffice to quickly fight deflation unless the ECB declares what standard amount it will buy per quarter, as inflation/deflation expectations cannot be influenced in a decisive way if the ECB's policy is vague. Given the rather limited amount of ABS and covered bonds available in the euro area, the ECB should encourage banks to create new ABS that will qualify for the ECB program if the respective bank itself holds at least 50% of the ABS until maturity – no other condition can easily put pressure on banks to do a careful job when allocating loans to firms and then bundling these loans in ABS (thus the type of inadequate ABS creation by banks observed in the US in 1998–2007 could be avoided and thus a strong risk exposure of the ECB is also very unlikely). Regional banks – which play a strong role in Germany, Italy and some other euro countries - should be encouraged to create risk-reducing, adequate cross-regional ABS through joint ABS creation with other regional banks, so that no dangerous regional risk enhancement will be embodied in ABS; this requirement also helps to create a level playing field (read: avoids favoring big national banks) and to develop the euro area's capital markets which are much smaller than those in the US. A second question of the ECB monetary policy is the problem of "one size fits all" - is this an adequate monetary policy for the euro area and its member countries, respectively?

New empirical research from Dominic Quint (2014) has shown that after a difficult starting period of the euro area, the euro member countries did not face more monetary stress – defined by the difference between an optimal national policy and the ECB policy – than states in the US facing a one size fits all policy of the Federal Reserve

Bank. It was only during the euro crisis of 2010–2013 that monetary stress increased again in the euro area but it was still much lower than at the start of the euro area. The basic difference between the US and the euro area lies in the field of fiscal policy: the IMF's analysis has shown that a 1% output shock in the euro area will cause a reduction of the consumption-GDP ratio that is three times as large as in the case of an identical shock in the US; the degree of policy coordination in the euro area is quite weak compared to the US where federal fiscal counter-cyclical policy and automatic stabilizers work better than in the euro area.

A major problem in the euro area is that government expenditures at the supranational level is about 1% of GDP, while in the US the government expenditures of the federal level stand for about 11% of GDP (2012) plus another 9% for social security expenditures at the federal level. In the present setting the supranational policy layer cannot be a strong actor in fiscal policy in the EU.

In a new DSGE modeling paper, researchers from Deutsche Bundesbank – Stähler et al. (2014) – have shown that the fiscal policy multiplier in the euro area is higher for the case of infrastructure expenditure than for the case of government consumption. Thus supply-side fiscal policy can work. Thus there probably is at least one new consensus, namely, that fiscal policy works and that the higher its multiplier is, the stronger the focus of expansionary policy is on public investment. One may find it, however, rather surprising that the authors cannot identify international multiplier effects from public investment. Such multiplier effects may indeed be expected if such investment would mainly focus on investment in highways, railway networks and broadband infrastructure, since in an open economy perspective even infrastructure investment that reduces transportation costs between point A and B within country 1 will automatically reduce transportation costs between point A* and B, so that trade between both countries will be enhanced through such investment. This at least is the logic of the trade gravity equation, and Jungmittag and Welfens (2009) have presented evidence for EU countries that, for example, a rise of international telecommunications volume between countries i and j will raise trade between i and j – more international calls will be made if through more infrastructure investment and more competition, prices of international telecommunications are falling. More trade can bring about specialization gains and impulses for more innovation; innovation dynamics in EU countries in turn benefit from higher internet density and broadband density in these countries and the US (Welfens and Irawan, 2014). More public investment could also make a country more attractive for higher foreign direct investment inflows which normally not only bring a rise of the capital stock and capital intensity, respectively; it should also bring international technology transfer effects so that the marginal product of capital is raised and this in turn will stimulate investment. One should, however, note that empirical evidence from a study looking at EU single market dynamics in the context of time series analysis of innovation dynamics of Germany and the UK has pointed out that technology transfer effects in the UK could not be observed in the case of FDI inflows into the banking sector; only in the case of FDI into the manufacturing sector were such spillovers significant (Barrel and Pain 1997).

The conclusion drawn here is that a distinct euro area fiscal policy should focus mainly on infrastructure expenditures, namely, within a new concept that would allocate new competences to Brussels – the euro area supranational level – and government expenditures that should reach about 6% of GDP: roughly 2% for

infrastructure expenditures, 2% for defense expenditures, 0.5% for supranational R&D project support, about 1% for traditional supranational expenditures plus 0.5% for projects on mobile life-long learning in the euro area (or in the EU if other EU countries also want to participate). Add another 0.5% of GDP for covering the first six month of unemployment insurance in all euro area countries and one has the necessary minimum for an efficient and effective fiscal policy in the euro area. This increasing of fiscal power in Brussels is not necessarily in contradiction with the principle of subsidiarity if the latter is – rightly so – interpreted in a dynamic perspective: With more fiscal power in Brussels and exclusive responsibility for counter-cyclical policy in the long run, the voters in EU countries will understand clearly the particular role and responsibility of the supranational policy layer and this in turn should strongly increase voter turnout at European elections (so far it is quite unclear to voters for which policy fields the EU really stands) at least in the euro area countries; and with a higher voter participation in supranational elections, political competition will be reinforced so that the optimum supranational government size will have increased. National parliaments and government of euro area countries could create the basis for a virtual fiscal union in Brussels until steps towards a political union have been taken; more formal coordination is needed in infrastructure policy where the European Commission so far has put emphasis on transnational networks (i.e. railways, pipelines, highways).

With a supranational counter-cyclical fiscal policy there should be a move towards euro bonds and the option for the supranational policy layer to adopt structural deficits of 0.5% of GDP while a special supranational income tax should generate a revenue of 6% of GDP. National income taxes would reduce correspondingly and if this is an optimum vertical government structure – in line with the theory of fiscal federalism – the net efficiency gain should easily be 0.5-1% of GDP and the aggregate income tax ratio could be reduced by that amount so that there is a win-win situation for all countries in the euro area. The structural deficits of member countries should be limited to 0.25% of GDP, which implies – together with a deficit-GDP ratio of 0.5% at the supranational level - in a context of a trend output growth rate of 1.5% a long run debt-GDP ratio of 0.5%. A debt-GDP ratio of 50% should be low enough to make sure that euro bonds will enjoy AAA rating and this in turn is a basis for the euro to maintain its role as an international reserve currency.

Such a position can only be achieved on the basis of being a big trading partner, having a world class banking system, maintaining a low inflation rate and enjoying a top government bond rating. The economic benefit amounts – as shown by this author – to about 0.5% of GDP if one assumes that the difference between the yield on euro bonds held by foreign central banks is 2–3 percentage points lower than the world yield on capital (say 1% compared to 3.5%); if the ratio of global reserves held in euro to the euro area GDP would be 50%, the euro area could effectively run an eternal current account deficit-GDP of 1.25%, if it is rather 20% (as in 2013) the net import-GDP ratio that is obtained for free by the euro area is 0. 5%.

As regards individual euro countries, fiscal devaluation could play a role for adjustment and higher net exports of goods and services: Such a fiscal devaluation means to reduce social security contributions – mostly on the payments of employers – so that marginal costs and prices will fall and international price competitiveness is improved; at the same time the value-added tax rate should be raised in a way that one has a revenue-neutral arrangement. The rise of the VAT rate will also stimulate exports

and output. A rising output will in the end translate into higher wages which in turn will be a brake for net exports of goods and services. If the euro area enters deflation in 2015, this will contribute to dampening the inflation in other OECD countries as well and it could indeed undermine the economic upswing in some OECD partner countries. This, in turn, would have a negative repercussion effect on the output development of the euro area. One should not underestimate that the euro area is a large economy, roughly four times the size of the German economy. With inflationary expectations strongly decreasing in 2015, nominal interest rates will continue to fall. The ECB will have to adopt broader quantitative easing and it would be adequate to adopt a modeling approach that includes foreign direct investment in the analysis (Welfens 2011b). Deflation as a policy issue in the whole of Europe could become a serious challenge.

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