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## The Crisis and Beyond

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# The Crisis and Beyond

Edited by  
Henning Klodt and Harmen Lehment

November 2009

Kiel Institute for the World Economy

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## PREFACE

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We are looking back to one of the most severe financial crises ever. The subprime crisis, as future generations may call it, was not just a crisis among others, but had a truly global dimension.

There are still doubts whether the flames are really out, but in any case the recent crisis has far-reaching implications for all areas of Weltwirtschaft, including monetary and fiscal policy, the nature of global trade and capital flows, environmental policy, competition for natural resources, economic development, the welfare state, and much more. Many dangers loom, from new forms of protectionism, to threats to the environment and development aid, to new social divides. Even after the crisis, it is very unlikely that we will return to business as usual; the world will presumably move to a new financial architecture, new political and trade relations, new forms of global interconnectedness.

The crisis has been recognized as a major challenge not only for the world economy, but also for economic research and economic policy advice. Over the past months, economists working at or visiting the Kiel Institute have prepared a number of essays on several aspects of the crisis and on its potential long-term consequences. These essays are now collected in this e-book in a condensed and easily accessible manner. The editors and authors hope that the book will initiate a lively debate among researchers and policy makers who share a common interest in preventing another such crisis to occur in the future.

*Henning Klodt  
Harmen Lehment*

# **How to Overcome the Financial and Economic Crisis**

# Do We Face a Credit Crunch?

*Klaus-Jürgen Gern, Nils Jannsen*

## **Abstract**

*The weakness of credit growth in the United States and Europe has given rise to concerns that the financial crisis has led to a credit crunch which has deepened the recession in the real economy and poses a serious threat to the recovery that seems to have started in the most recent months. In this contribution we find that so far the development of credit aggregates and interest rates for loans does not provide strong evidence for a supply restraint that goes beyond what could be expected given the deterioration of the quality of borrowers against the background of the exceptionally severe economic downturn. Still, the behaviour of interest rate spreads in the United States does indicate that the effectiveness of monetary policy is reduced for the time being as a result of distress in the financial sector, and we see some risks that inappropriate bank capitalization may restrain credit growth and threaten the current recovery, especially in Germany where core capital is low by international standards. Policy measures to avoid a credit crunch should focus on preventing undercapitalization of banks from becoming a serious limitation to credit growth.*

Since late summer 2008, when the global financial crisis hit with full force, the credit expansion in both the US and the Euro Area has slowed drastically. The weakness in credit growth has given rise to concerns that the financial crisis has led to a credit crunch which has deepened the recession in the real economy and poses a serious threat to the recovery that seems to have started in the most recent months. In this contribution we discuss the evidence for a credit crunch in the United States, the Euro Area and Germany from different angles, with the approach varying from country to country mainly due to differences in data availability. Our analysis is based on a definition of credit crunch as a substantial reduction of new loans that is driven by credit supply and restricts the access to credit at reasonable conditions even for fundamentally sound borrowers. We conclude that at this point the development of credit aggregates and interest rates for loans does not clearly point to a supply restraint that goes beyond what could be expected given the deterioration of the quality of borrowers against the background of the exceptionally severe economic downturn. That said, the behaviour of interest rate spreads in the United States does indicate that the effectiveness of monetary policy is reduced for the time being as a result of distress in the financial sector, and we see some risks that inappropriate bank capitalization may restrain credit growth and weigh on the recovery going forward, especially in Germany where core (tier 1) capital is low by international standards.

In the next section we briefly discuss issues related to the concept of a credit crunch and lay out different routes of approaching the question of identifying a credit crunch. We then consecutively present evidence for the US, Germany, and the Euro Area, before we conclude and suggest policy implications.

## 1 Economic Concepts and Analytical Issues

The term credit crunch is widely used in the public, although less so in the academic literature.<sup>1</sup> There is, however, no common definition. In many cases shrinking credit growth and tightened credit standards are taken as indication of a credit crunch, or anecdotal evidence of firms having been shut off from new credit is behind the commentator's use of the term. In the current situation there are particularly three elements of data that seem to suggest that there is a credit crunch: (1) survey results according to which the majority of firms is stating that credit is harder to obtain; (2) shrinking bank lending; and (3) the volume of corporate bond issuance is swelling, especially in the US, despite higher risk premia.

However, credit growth and attitudes of banks to lend are usually procyclical. Tighter lending standards are a normal reaction of banks to the reduced quality of their borrowers and the increased risk of loan losses in times of economic slowdown or outright contraction. And slower bank lending is usually going hand in hand with economic downturns as a result of both more cautious behaviour of banks and slowing credit demand of firms and/or households that typically try to reduce their debt burden when revenues are down. A credit crunch, by contrast, is generally defined as a reduction of the supply of credit that goes beyond what is warranted by changes in the economic environment, or as "a significant leftward shift in the supply curve for bank loans, holding constant both the safe real interest rate and the quality of potential borrowers" (Bernanke and Lown 1991: 209).<sup>2</sup>

This definition implies, however, that in a market environment with perfect clearing all would-be borrowers could still obtain credit, albeit at a higher market-clearing interest rate. Such a concept does not fully coincide with the widespread perception that a credit crunch is associated with some kind of credit rationing with the result that even some fundamentally sound borrowers seeking to finance profitable investments find it hard to acquire bank credit at acceptable conditions. In line with this idea the German Council of Economic Advisers (SVR 2002: 109) defined a credit crunch as a situation in which the supply of credit is restricted below the range usually identified with prevailing market interest rates and the profitability of investment projects.

Most prominent theoretical arguments to motivate credit rationing include bank capital reductions due to writedowns on the value of their portfolio of loans and securities, valuation losses on supplementary capital or changes in regulation which lower the capacity of banks to lend (Bernanke and Gertler 1995). Portfolio theory can also explain credit rationing behaviour by banks as a reaction to an unexpected rise in the risk contained in the portfolio. Finally, market forces may induce credit restraint as banks react to the threat of deposit withdrawals and punishment from equity markets.

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<sup>1</sup> A google search for the term yields more than 10 million results, while the electronic catalogue of the German National Library of Economics (ZBW) in Kiel, the world's largest specialist library for economics, finds only 148 titles featuring the term in the title or abstract.

<sup>2</sup> Shrinking bank lending can, thus, only be taken as indication of a credit crunch if it takes place in an environment of low interest rates and an expanding economy, as has been experienced in parts of the United States in the late 1980s (Clair and Tucker 1993).



Summing up, a credit crunch cannot be identified easily on the basis of observable data such as credit volumes and assessments of credit availability because developments can be demand driven rather than supply driven and the economic environment is not stable.

In order to identify a credit crunch two principal approaches can be taken. The first approach involves the comparison of current developments with past episodes of economic contraction and infer from unusual behaviour of relevant variables information on the prevalence of a credit crunch. We follow this route for the United States where sufficiently long time series are readily available. The second approach aims at directly identifying a situation of rationed credit either in a macro approach by estimating credit demand and credit supply functions which allows to calculate a measure of excess demand (or excess supply) in the credit market, or by extracting information from micro data on the firm level. The assessment of the situation on the Euro Area level has to be much less sophisticated due to the short history of available data.

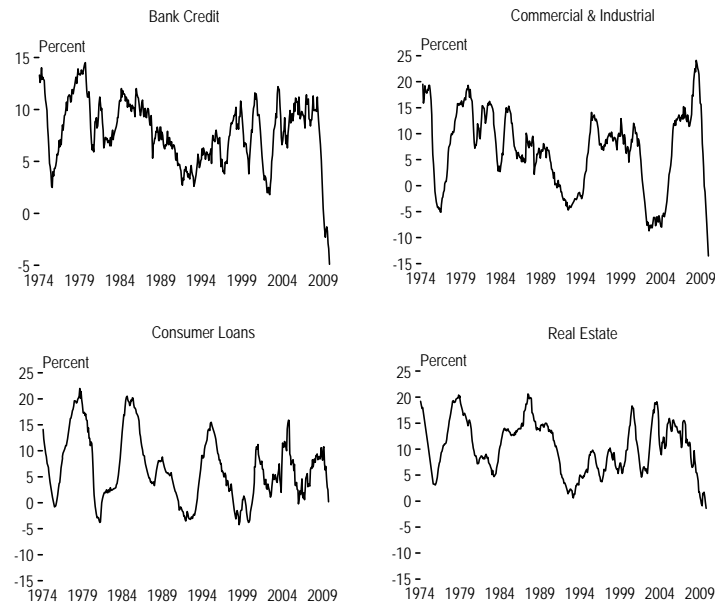
## **2 United States**

There is a broad consensus that the refinancing conditions for firms and private households in the United States have worsened considerably since the beginning of the financial crisis. Nevertheless, there is a more ambiguous picture in the literature when it comes to the question whether we witness an economy-wide credit crunch that dampens economic activity significantly, or just a tightening of credit conditions accompanied by a drop of demand for credit that is in line with the cyclical environment. Starting point of this discussion was a contribution of Chari et al. (2008), who pointed out that aggregate bank lending had developed surprisingly stable during the financial crisis – at least until October 2008 – and showed no sign of a broad deterioration of credit supply. Cohen-Cole et al. (2008) argued that it was necessary to take a much broader view in assessing the situation on the credit market suggesting that the dramatic decline of the issuance of asset-backed securities since the beginning of 2008 had substantially affected mechanisms by which the financial sector supports the real economy. Contessi and Francis (2009) investigate the development of new bank lending on the basis of a disaggregated data set for all commercial banks in the United States until the end of 2008. They find that until the third quarter 2008 also disaggregated data show little sign of distress, while in the fourth quarter a credit contraction started that is comparable to that which occurred during the Savings and Loan Crisis at the end of the 1980s and in 1990–1991, a period which is generally accepted as having been affected by a credit crunch.

### **2.1 Relatively Resilient Credit Growth**

To shed further light on this issue we first analyze recent aggregate data concerning the credit market. Then we provide new evidence by comparing the current situation with historic phases of monetary easing in order to assess whether the evolution of the credit market is

Figure 1: Bank Credit in the United States 1974–2009



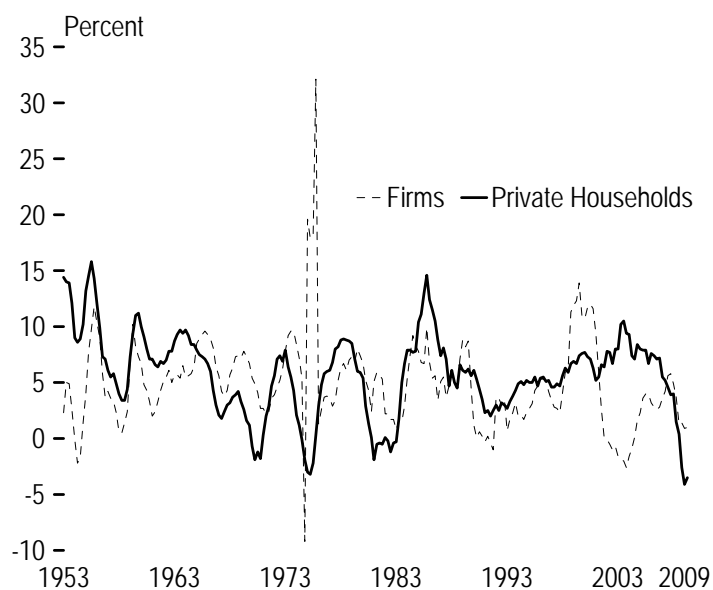
*Notes:* Percentage change, year over year.

*Source:* Federal Reserve Board (2009); own calculations.

untypically weak during the current financial crisis, and whether the Fed recently has lost some of its influence on the credit market.

The expansion of aggregate (commercial) bank credit volume (year over year) has slowed drastically since the end of last year (Figure 1).<sup>3</sup> It started to even decrease in early 2009 – the first time since these data became available in 1973. The credit contraction is mainly driven by real estate and firm credit while consumer credit evolves relatively stable. The fact that consumer loans is the only component which still shows no substantial negative year-on-year growth is somehow surprising given the high level of household debt accumulated in recent years and the fall in the value of collateral seen since 2007. In contrast, the drop in real estate credit volume can be explained straightforward by the unprecedented massive correction experienced in the housing market after a prolonged and pronounced boom. Firm credit growth declined sharply and more pronounced than during former recessions. This could be first evidence in favor of a credit crunch, however, economic activity and therefore presumably demand for credit has fallen steeply in the past quarters as well. For the case of firm credit one should take into account that in the United States, bank credit in recent years accounted only for roughly 20 per cent of the overall refinancing of firms (ECB 2009a). Therefore, major problems in using other refinancing instruments such as asset-backed securities or bonds will have as severe consequences for the real economy as a shortage of bank credit supply. However, despite the collapse in issuance of asset-backed securities, the

<sup>3</sup> The picture gets even worse if one corrects for the effect of takeovers of savings banks through commercial banks that led to an upward bias of the official statistics (Contessi and Francis 2009). Most noticeable the acquisition of Washington Mutual by JP Morgan Chase on September 26, 2008 can explain a jump in the credit volume.

*Figure 2: Real Liabilities of Firms in the United States 1953–2009*

*Notes:* Percentage change, year over year. Liabilities are deflated with GDP Deflator. Firms include nonfarm nonfinancial corporate business.

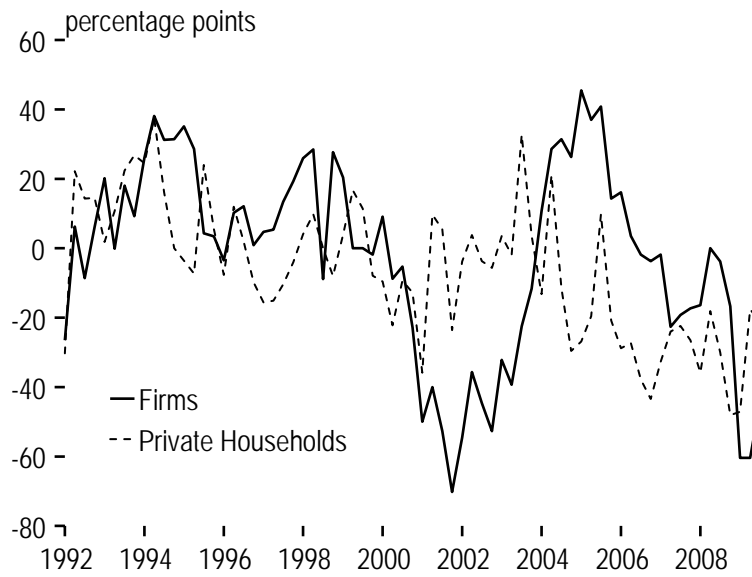
*Source:* Federal Reserve Board (2009); own calculations.

development of overall firm liabilities does not suggest that the financial crisis made it exceptionally difficult for firms to refinance as liabilities in real terms have not shrunk stronger than in previous recessions (Figure 2). By contrast, overall real liabilities of private households have decreased much stronger than in past deleveraging phases.

As noted already in the previous section, the observed credit volume is always the result of both supply and demand for credit and it is very hard to disentangle aggregate credit movements into supply and demand effects. A weakening of the volume of credit may therefore also mirror primarily declining demand for credit. The fact that we are facing the most severe recession since the Great Depression (and that this recession started already at the beginning of 2008) would be consistent with an even larger decline of credit demand than we have observed so far. Furthermore the relatively high level of debt of firms and private households should give them strong incentives to deleverage. A low degree of credit demand is confirmed by survey data from the Senior Loan Officer Opinion Survey on Bank Lending Practice (Figure 3).

The survey data suggest that demand of private households is weaker than in previous periods, while the demand of firms is roughly at the same level as during the last recession in 2001. On the other hand, survey data also suggest the presence of negative supply side effects as indicated by the remarkably strong tightening of credit standards and a historical high fraction of firms reporting that credits are harder to get than before (Figure 4). It is, however, not clear whether the extent of tightening is already evidence for a credit crunch in the strict sense as a strong reaction of bank lending standards would have been expected given the exceptionally deep recession and the deterioration of loan quality associated with this.

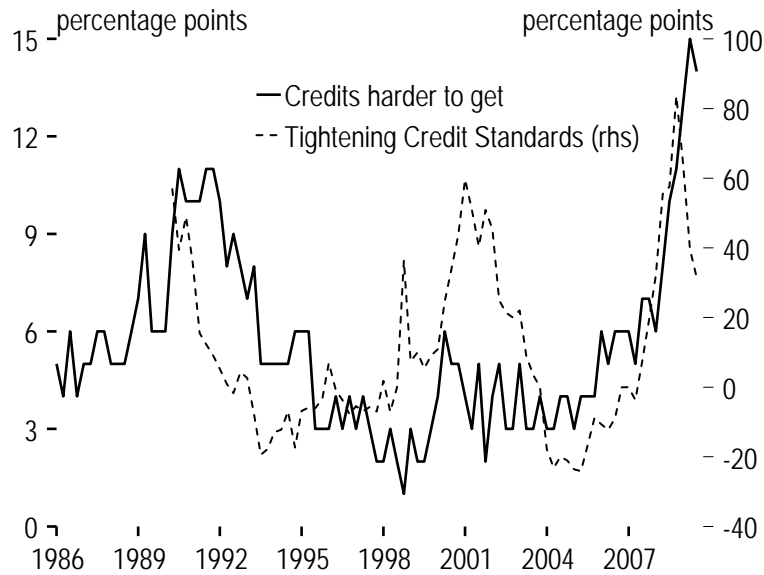
Figure 3: Demand for Credit in the United States 1992–2009



Note: Difference of share of banks that report a stronger demand for credit and banks that report a lower demand. Firms include large and medium-sized firms.

Source: Federal Reserve Board (2009).

Figure 4: Credit Standards and Access to Credits in the United States 1986–2009



Notes: Credits harder to get: Difference of the share of firms that report that credits are harder to get and firms that report that credits are easier to get. Tightening credit standards: Difference of the share of banks that report a tightening of credit standards for large and medium-sized firms and bank that report an easing of credit standards.

Source: Federal Reserve Board (2009); NFIB (2009).

Summing up, there is some evidence that in the course of the financial crisis it has become much harder for firms and private households to get credit. It is very likely that a noticeable number of firms and households have lost access to new credit lines at banks. But this would have been expected given the depth and the length of the ongoing recession and the high uncertainty with respect to the economic outlook. These factors, at the same time, have also suppressed credit demand considerably. Overall aggregate data give no clear evidence that the United States have been facing an economy-wide credit crunch so far. Furthermore, at least for firms aggregate liabilities do not point to a massive problems in refinancing.

## **2.2 Reduced Effectiveness of Fed Policy in Comparison With Earlier Phases of Monetary Easing**

In the current situation it is critical whether the Federal Reserve Board (Fed) is able to influence credit volume, credit conditions and market interest rates as usual, or whether the transmission mechanism of monetary policy through the commercial banking sector is disturbed. To address this question, we compare the development of these variables since autumn 2007 with the development during former phases of monetary easing. The results shed further light on the question, whether the current situation on credit markets is exceptionally bad and should be interpreted as a credit crunch.

For the purpose of comparison we calculate the average development of credit volume, credit standards and interest rates during the previous six phases of monetary easing and compare it with the development during the current phase of monetary easing that has started in September 2007.<sup>4</sup> Since macroeconomic conditions have changed considerably compared to earlier phases, say in the 1970s, we in addition separately compare the current development with the development of the variables in the most recent monetary easing phase, which started in the year 2001 and was not accompanied by exceptional distress in the banking sector.

Aggregate bank credit volume expanded less in the current phase of monetary easing compared with previous phases, particularly in the most recent months (Figure 5). This is mainly due to the exceptionally weak performance of real estate credit, whereas the behavior of both firm credit and consumer credit volumes is not, or not much weaker than in previous periods, especially if we take into account that the current recession is far deeper than the average of the recessions in the sample, or that in 2001.<sup>5</sup>

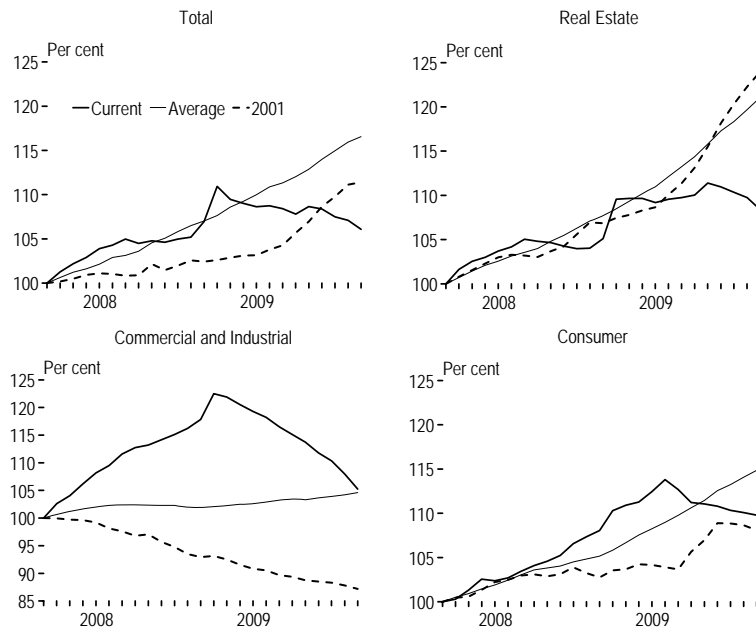
Comparing the costs of credit during this phase of monetary easing with those that prevailed in previous phases can give a strong signal whether there is a lack of credit supply at the heart of current developments. Cost of credit is determined by the price (measured as the spread between corporate bond yields and market interest rates for various types of loans, respectively, and the Federal Funds Rate) and the non-price lending terms (measured by credit standards).

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<sup>4</sup> The six phases of monetary easing we take into consideration started in January 2001, June 1989, September 1984, May 1982, July 1974 and February 1970.

<sup>5</sup> Even if we take into the account that the data are biased upwards (there is no correction of the sectoral data for the effect of bank mergers), it is still hard to make the case that aggregate firm and consumer credit volume evolves exceptional bad.

Figure 5: Bank Credit during Phases of Monetary Easing in the United States



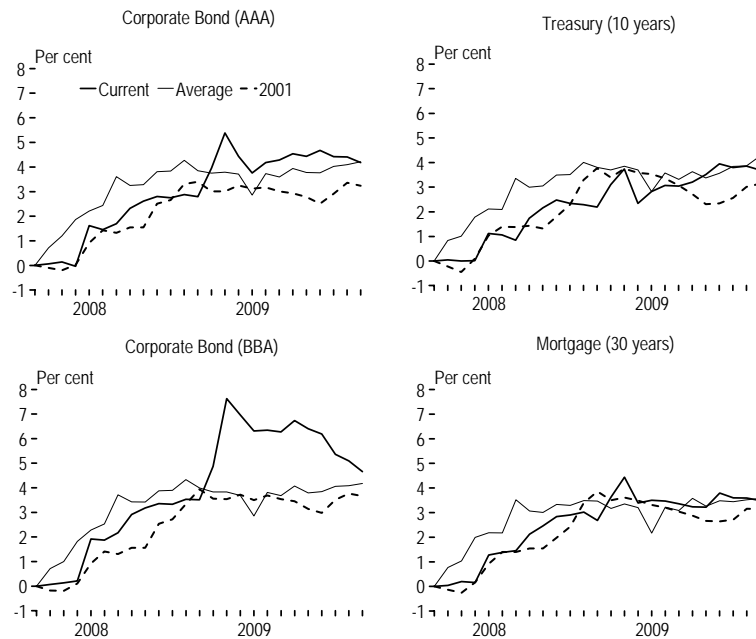
*Notes:* Scaled to 100 for the start of monetary easing phase. Current monetary easing phase compared with the average over the last six phases and the phase beginning in January 2001.

*Source:* Federal Reserve Board (2009); own calculations.

During the first part of the current phase of monetary easing the development of market interest rates did not differ significantly from that in earlier monetary easing phases. More recently, however, some interest rate spreads increased, and they are now higher than in earlier phases. This applies in particular for interest rate spreads for corporate bonds (Figure 6), but also spreads for consumer credits have become higher (Figure 7). Credit standards as a second important component of the overall refinancing conditions for firms and private households have been tightened dramatically stronger during the current phase of monetary easing (Figure 8). While in the case of consumer credits, conditions have more or less stopped being tightened further in recent months, standards for firms are still being tightened considerably stronger than during earlier phases.

Overall the comparison reveals some signs of distress in the banking sector. To be sure, credit volumes – with the exception of real estate credit volume – have developed relatively stable during the ongoing financial crisis. But interest rate spreads are currently generally higher than in past monetary easing phases, although the Fed does not seem to have lost its influence on the credit market totally. One reason for higher spreads could be that the Fed brought down the Federal Funds Rate to zero already in January 2009 and the quantitative monetary easing implemented subsequently needs some time to work through to market interest rates. Furthermore, there is some evidence that credit standards are not very sensitive to monetary policy (Lown and Morgan 2006). Nevertheless the severe tightening of standards and the low willingness to make installment loans suggests that credit supply has declined noticeably for firms and private households.

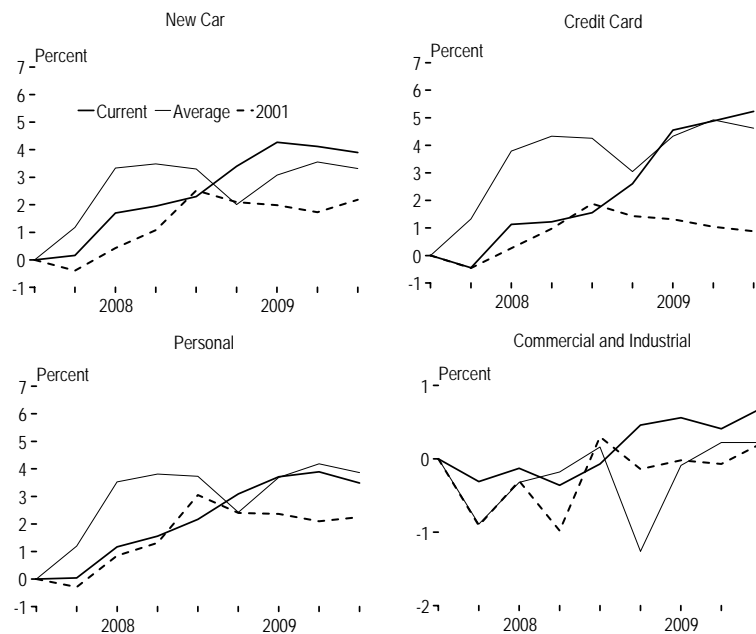
**Figure 6: Interest Rate Spreads during Phases of Monetary Easing in the United States I**



*Notes:* Spread between the respective market interest rate and the Federal Funds Rate. Monthly Data. Scaled to 0 for the start of the monetary easing phase. Current monetary easing phase compared with the average over the last six phases and the phase beginning in January 2001.

*Source:* Federal Reserve Board (2009); own calculations.

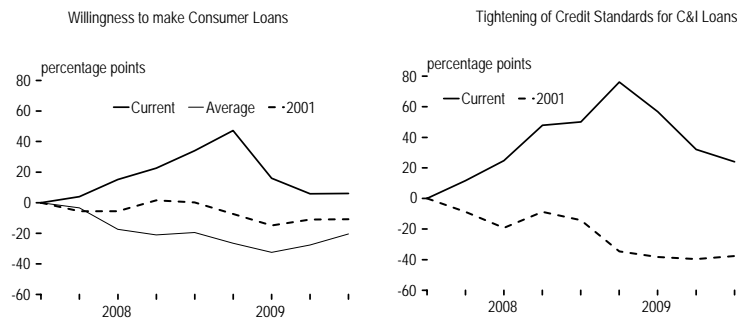
**Figure 7: Interest Rate Spreads during Phases of Monetary Easing in the United States II**



*Notes:* Spread between the respective market interest rate and the Federal Funds Rate. Quarterly Data. Scaled to 0 for the start of the monetary easing phase. Current monetary easing phase compared with the average over the last six phases and the phase beginning in January 2001.

*Source:* Federal Reserve Board (2009); own calculations.

Figure 8: Credit Standards during Phases of Monetary Easing in the United States



Notes: Scaled to zero for the start of the monetary easing phase. Increase indicates less willingness to make consumer instalment loans or a net tightening of credit standards for Commercial and Industrial loans (C&I) for large and medium-sized firms. Data for credit standards are only available since 1992.

Source: Federal Reserve Board (2009); own calculations.

### 3 Germany

Growth in overall bank lending to the private sector in Germany has been also slowing, although relatively modestly. Year-on-year growth has declined from 3.8 per cent to 1.1 per cent between July 2008 and July 2009. The decline in the growth rate is primarily driven by the development of credit to the nonfinancial corporate sector, while credit to corporations in the financial sector (other than banks) continued expanding and growth of credit to private households, although still negative, even improved (Deutsche Bundesbank 2009). The volume of credit to nonfinancial corporations has been slowing since the end 2008 and has been declining significantly in sequential terms in most recent months.

Most analyses so far come to the conclusion that there is no credit crunch in Germany, at least for the time being. Access to credit seems to be even better than in the preceding economic downturn according to surveys, both among firms and among banks, and according to econometric studies. Surveys among nonfinancial firms, e. g. from ifo Institute, German Chamber of Commerce (DIHK) or KfW Bank, generally conclude that lending attitudes of banks are restrictive but to a lesser extent than at the comparable stage of the previous recession.<sup>6</sup>

This assessment is supported by the results of the Bank Lending Survey for Germany. While bank lending standards have been tightened substantially since autumn 2007, the degree of tightening does not seem to be unusually strong, and it has been relatively modest by international comparison. Moreover, the wave of tightening seems to be more or less over; in the October survey only a small number of banks reported having tightened credit standards further. Tighter standards are overwhelmingly justified with the macroeconomic outlook or a negative assessment of individual firm perspectives. Bank-specific issues such as problems with refinancing or balance sheet outlook or inadequate bank capitalization have been important in the immediate aftermath of the Lehman shock in autumn 2008 but have

<sup>6</sup> For details see Projektgruppe Gemeinschaftsdiagnose (2009: 50–51).



lost relevance in the course of this year. This may be taken as indication that a credit crunch in the sense of a supply restraint originating in the banking sector is less likely to be a serious problem for the time being. On the other hand, banks have continued to raise margins significantly in order to prop up profitability which could indicate continued reluctance to lend.

An econometric estimation of an equation for credit growth does not indicate unusual behaviour of credit growth in the current downturn. According to work at the Deutsche Bundesbank (2009: 25), the actual development of credits to nonfinancial corporations until mid-2009 did not significantly deviate from an estimated path where credit volume is determined by real GDP, the share of investment in equipment in GDP and the spread between corporate bond yields and government bond yields as a proxy for macroeconomic risk. If anything, credit growth has been holding up better than suggested by the equation, a result which is confirmed by estimates using a VAR model (Projektgruppe Gemeinschaftsdiagnose 2009: 52). High explanatory power of the econometric equation for credit growth in the current recession does, however, not necessarily mean that in the credit market there is no unusually strong restraint from the supply side because the question of causality is not resolved. It is possible that credit growth is also an important determinant of real economic activity giving rise to the problem of potential reverse causality.

In order to produce more direct evidence of excess demand in the credit market, one possibility is to identify macroeconomic credit supply and credit demand functions. This method has been pioneered in the context of credit crunch in Germany by Nehls and Schmidt (2004) and has been adapted in a recent study from the Kiel Institute (Prognosezentrum 2009). Credit demand is modelled as a function of GDP, unit labor costs and corporate bond yields (as a proxy for interest rates for loans to the nonfinancial corporate sector). Credit supply is assumed to be driven by the difference between corporate bond yields and interest rates on deposits, capacity to give credit as measured by the monetary base, a comprehensive stock market index, and a proxy for the regulatory capital-to-loan ratio which is not readily available. The results suggest that the German credit market was characterized by a situation of deficient supply – a credit crunch – from mid-2000 to 2003 followed by a period of more or less balanced supply and demand (Figure 9).<sup>7</sup>

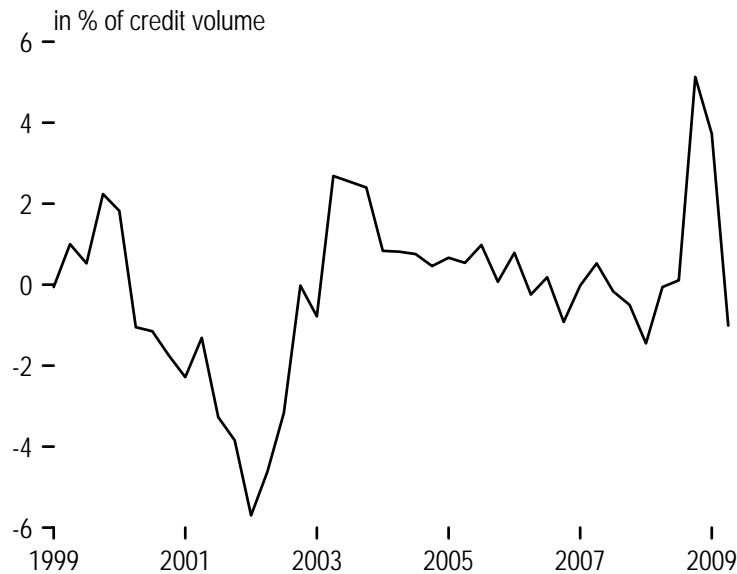
In late 2008, the model suggests a substantial excess supply, reflecting a massive increase in the monetary base and a rise in bank capital due to government support measures for a number of banks. This excess supply has been unwound in the course of this year, and currently the credit market does not seem to be in significant disequilibrium.

In a different approach to get a more direct grip on the question of credit crunch suggested by Wollmershäuser (2009) and presented in Projektgruppe Gemeinschaftsdiagnose (2009: 54–55), a credit crunch indicator is calculated from micro data based on an ifo Institute survey among 2300 firms in the manufacturing sector. The approach matches information from firms on the willingness of banks to lend with information on the current situation and outlook of

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<sup>7</sup> Note that the Bundesbank's econometric equation indicates sluggish actual credit growth relative to the model estimate in the years 2002–2006, i. e., this approach would suggest that the German economy has been experiencing a credit crunch later than according to the model based on separate equations for demand and supply of credit.

Figure 9: Estimated Excess Supply of Bank Loans for Nonfinancial Corporations in Germany<sup>a</sup>



<sup>a</sup>Negative values indicate excess demand.

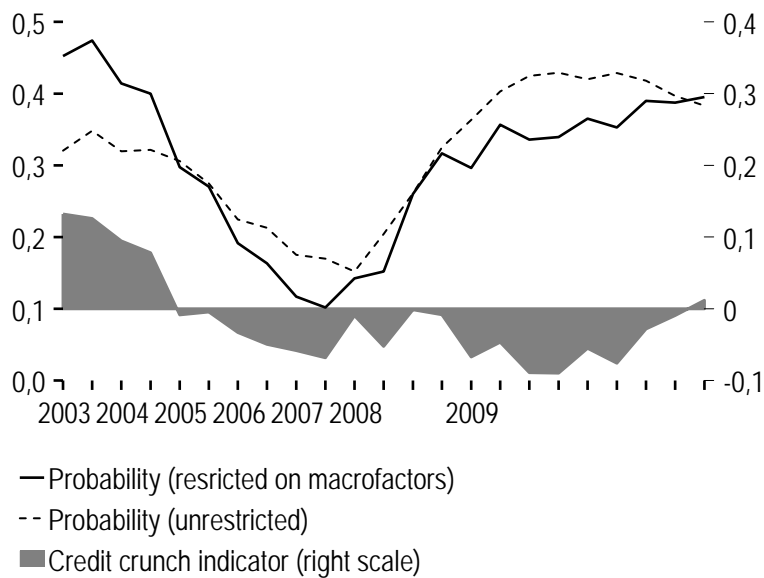
Source: Prognosezentrum (2009); own translation.

their business. In a two-step procedure, probabilities are calculated that a firm with healthy current business and sound outlook will report restrictive lending attitudes by banks, first restricted on a set of macro variables that can be expected to affect lending behaviour, and secondly using a dummy variable for each period that picks up also other influences. If bank lending attitudes in the second (more general) case deviate significantly from those in the first (macro-restricted) case other than traditional macro factors seem to be important. Specifically these would include bank-specific shocks. If the probability that a sound enterprise faces a restrictive lending stance of banks is higher than warranted by the macroeconomic environment this may be regarded as a situation of credit crunch.

The results of this micro-based approach are in line with those of the macro approach described before: The indicator calculated as the difference of the two probabilities signals a credit crunch in Germany in 2003 and into 2004 (Figure 10). From 2005 onwards lending attitudes are easier than expected given the macro environment. Even in the first months of 2009, when the macroeconomic determinants have worsened considerably, the credit crunch indicator remains in negative territory. This gap, however, has closed in recent months, although the indicator still does not signal a credit crunch but rather a balanced situation in the credit market.

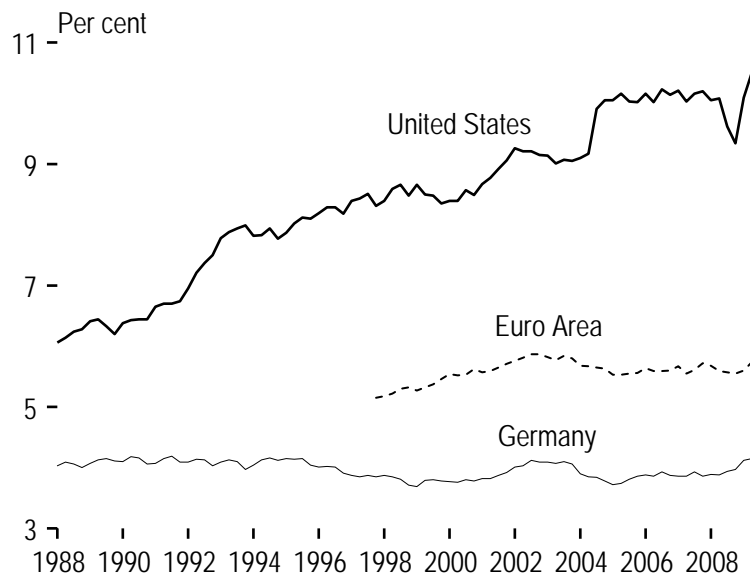
So far, there is no convincing evidence of a credit crunch in Germany. Bank lending has been supported by public capital infusions into the banking sector which ameliorated the balance sheet situation of banks and pushed up tier 1 capital. However, core bank capital in Germany remains low by international standards and the improvement has been modest compared with the United States (Figure 11).

Figure 10: Probability of Restrictive Bank Lending Attitude and Credit Crunch Indicator in Germany 2003–2009



Note: Time scale changes in 2008; until November 2008 semiannual data, afterwards monthly data.  
 Source: Projektgruppe Gemeinschaftsdiagnose (2009); own translation.

Figure 11: Bank Capital-to-Asset Ratios in Germany, the United States and the Euro Area



Source: Federal Reserve Board, ECB, Deutsche Bundesbank, own calculations.

Also guarantees by the Special Fund for Financial Market Stabilization (Soffin) have probably positively affected bank lending. Finally, government owned special banks, such as the KfW, have implemented credit support programmes for the corporate sector, although the effect of this is obviously small so far, judged by the value of approved credits under these programmes. There is, however, the risk that the situation will deteriorate in the next months

as losses on loans to failing businesses can be expected to increase substantially, as bankruptcies are lagging the cycle and are forecast to rise to historically high levels given the severity of the recession. These losses will add to the writeoffs on “toxic” assets that are still on the Banks’ balance sheets and will tend to worsen capital-to-asset ratios.<sup>8</sup> This could limit the supply of credit severely.

#### 4 Euro Area

In the Euro Area the annual growth rate of loans to the private sector declined by more than 10 percentage points within one year to reach only 0.1 per cent in August 2009. The largest contribution to the slowdown in credit growth came from loans to non-financial corporations with year-on-year growth having almost come to a standstill after growth of more than 12 per cent in summer 2008. In contrast to the situation in Germany, the development of household borrowing is contributing to the slowdown in overall credit growth. While loans to private households had been expanding significantly before the financial crisis (by almost 4 per cent in the third quarter of 2008); they fell below their previous year’s level in August 2009. A large part of this slowdown is apparently related to the decline in the housing markets in many countries as lending for real estate purchases has come down, but the deterioration in the growth rate of consumer credit is even slightly more pronounced.

Due to the short history of the Euro Area of only 10 years it is not possible to compare current behavior of credit volume, interest rates and other relevant data with historical experience over a longer term, as has been done for the United States. Available data is also insufficient to perform similar model exercises as in the case of Germany. It is therefore difficult to come to well-founded conclusions concerning the question whether the Euro Area is currently in a situation of a credit crunch or not. In an article in the October monthly Bulletin, the ECB collects available information with respect to the impact of recent developments in the financial sector on credit supply (ECB 2009b). Evidence from the Euro Area bank lending survey suggests that the picture is similar to that in Germany. Since mid-2007, credit standards have been tightened massively, but mainly reflecting an increased perception of risk, be it macroeconomic or firm-specific. Bank balance sheet constraints, however, also have played a role during the financial crisis, and these have been found to significantly affect bank lending. These constraints, according to the Bank Lending Surveys, have been even more pronounced in the Euro Area as a whole than in Germany, although they also have lost significance in the course of 2009. The authors conclude that during the current financial crisis credit supply restrictions “most likely impacted on banks’ credit standards, with adverse implications for the provision of credit and economic activity” (ECB 2009b: 79), although empirical support for this assessment is still scarce as the number of observations for this period is still limited.

While the monetary policy reaction to the crisis has probably helped ease the problems, credit supply constraints are still judged to be prevalent, at least for certain borrower

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<sup>8</sup> The IMF (2009) estimates that writedowns to loans and securities in the euro that are still necessary amount to another 470 bill. US-Dollar.

segments. At the same time, however, the deterioration of overall economic conditions and the economic outlook have seriously dampened the demand for loans. Loan demand is soft especially due to declining investment and M&A activities. Empirical results suggest that most of the current weak performance of overall bank lending can be attributed to lower demand for loans from the real sector, rather than to a credit crunch.

## **5 Summary and Policy Conclusions**

Summing up, it is impossible to identify a credit crunch in real time with precision. Weakness in bank lending can be due to developments both in the supply of and the demand for loans. Furthermore, a credit crunch in the narrow definition only prevails when credit supply tightens beyond what is justified by the change in perceived risk. To this end, evidence is not conclusive. On the one hand there are warning signs including the massive tightening of credit standards and some unusual rise in bank lending margins. On the other hand econometric approaches to identify a credit crunch in the case of Germany currently do not point to a situation of inadequate credit supply given the adverse macroeconomic environment. However, the expected further losses in bank capital due to firm insolvencies and to writedowns of “toxic” assets threaten to worsen the situation in the quarters to come.

When evaluating developments in the credit markets and drawing policy conclusions it has to be recognized that there is a fundamental difference between countries with respect to the macroeconomic background. Some countries are adjusting to a preceding rapid credit expansion, while others are not. Especially in the United States, but also in a number of Euro Area countries, the years between 2003 and 2007 were characterized by extremely easy credit conditions, often associated with a boom in the housing market, which have led to a massive rise in private sector debt both of firms and households. By contrast, in other countries, of which Germany is an extreme case, private sector debt accumulation was low. While in the latter countries there is a clear case for trying to counter a severe contraction of credit, in the countries belonging to the former type it is less clear. In economies where growth in the past boom had been excessively credit driven, it could be a welcome adjustment from a normative point of view to see credit availability reduced and credit volumes shrink.

Policy measures to address the problem of a (potential) credit crunch include bank recapitalization programs. Due to signaling problems it would probably be necessary to make it obligatory for banks with dangerously low capital ratios to accept government funds if they are not able to acquire capital in the market.<sup>9</sup> Stress-testing in combination with publishing the results (as has been done in the US earlier this year) could be helpful for banks with relatively sound positions. Another option to provide leeway for banks that struggle with capital adequacy ratios could be a temporary reduction of regulatory capital requirements and the introduction of anti-cyclical capital adequacy rules for the future. The problem is that most analysts agree that in order to reduce the likelihood of future banking crises of comparable dimensions emerging capital requirements for banks should be increased – at

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<sup>9</sup> A suggestion as to how this could be implemented in Germany can be found in Projektgruppe Gemeinschaftsdiagnose (2009: 60).

least over the cycle – rather than lowered. As a stop-gap measure in the case of evident problems with credit supply credit to the private sector could be provided through publicly owned (special) banks. To achieve a timely and swift implementation of credit programmes governments should prepare for the eventual case by building appropriate capacities in the administration of the relevant institutions in advance. Last not least monetary policy should be careful not to abandon too early unconventional policy measures that have been effective in improving the financial environment the economy is facing.

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# Redistribution Through the Geithner Plan

*Dennis Snower*

## Abstract

*Appropriate policies to address the problem of toxic assets should act as automatic stabilizers, so that institutions whose toxic assets turn out to be worthless receive more public support than institutions whose toxic assets have value. Furthermore, such policies should be frugal in their demands on the taxpayer. In the context of a simple illustrative toxic asset, the paper shows that the Geithner Plan fulfills neither of these desiderata. The plan is extremely wasteful when banks need only modest bailouts; when they need large bailouts, the plan is ineffective.*

Under the threat of the present economic crisis, U.S. financial institutions have received huge bailouts and guarantees. This support is leading to large increases in the national debt, which will need to be financed through taxes in the future. In the process, a massive redistribution of income is under way (Sachs 2009).

The public is vaguely aware of this redistribution and is angry about it. Why, people are asking, are we giving such generous payouts to the financiers who got us into this mess? How large might this redistribution turn out to be? Is this redistribution necessary to restore the financial industry to health?

These questions are tough to answer since the banks' toxic assets, along with the resulting bailouts and guarantees, are fiendishly complicated and intransparent. Not surprisingly, strategies that are complicated and misguided receive far less public scrutiny than those that are uncomplicated and misguided. This is one reason why the financial crisis was permitted to occur: the financial instruments were too complicated for their buyers and sellers, or regulators, to understand what was being bought or sold. By the same token, the complexity of Geithner Plan also contributes greatly to its chances of political success, for now most voters don't understand the terms of the bailout. (This, I will argue, is the strongest point in its favor.)

To grasp what is going on, let's start with a simple question: What sort of policy do we need when the underlying problem is bailing out financial institutions with toxic assets? The distinguishing feature of toxic assets is that we don't know how to value them. This lack of knowledge is what makes them "toxic." This means that we don't know in advance how large a bailout the institutions with toxic assets will need to enable them to survive.

To deal with this sort of a problem, needless to say, we need a policy that acts as an "automatic stabilizer:" institutions whose toxic assets turn out to be worthless will need larger bailouts than institutions whose toxic assets turn out to be valuable. Take an analogy. We don't know the external temperature will be when we install a heating system in our house. And we don't need to know, provided that we have a thermostat, so that the internal temperature adjusts automatically to whatever the external temperature happens to be.



Along the same lines, we now need a financial rescue package that automatically adjusts to the problem at hand.

The Geithner Plan pretends to be an automatic stabilizer. The official line, after all, is that the plan permits the free market system to price the toxic assets, and thereby enables the government to provide the appropriate amount of bailout. As we will see in a moment, the truth looks different. The Geithner Plan is more like a thermostat that is stuck at one temperature, so that we might freeze in the winter, but boil in the summer. Specifically, I will show that the plan can be fabulously wasteful when the banks need only modest bailouts. Then far too much money may be redistributed from the taxpayer to the financial sector. And when the banks need big bailouts, the plan may turn out to be completely ineffective. In short, this is precisely the sort of policy we want to avoid when we are faced with toxic assets.

## **A Frightening Scenario**

To see why this is so, let's take a simple example (for more, see Krugman 2009, Stiglitz 2009, and Young 2009). Consider an asset that has a 50 per cent chance of being worth \$ 100 and a 50 per cent chance of being worthless. So the asset's value is \$ 50, the average of \$ 100 and \$ 0. (I leave you to add enough zeros to each dollar figure so that the example looks realistic to you.) Suppose that the asset is toxic, which means that we don't yet know how to value it, since we aren't yet aware that the asset has a 50–50 chance of yielding \$ 100 or \$ 0.

Now let's work out how U.S. Treasury Secretary Geithner's plan would deal with this asset, and how much income would be redistributed in the process. Although arithmetic is boring, I assure you that the outcome of our calculations won't be. Because they will show that there is something fundamentally wrong with the Geithner Plan: It generates a potentially gigantic amount of redistribution and, furthermore, the redistribution is completely unnecessary, since it is completely irrelevant to the job of bailing out the banks.

To keep my explanation simple, I will assume, in agreement with the Geithner Plan, that the right way to deal with the financial institutions that are too large to fail is to bail them out with taxpayers' money. Then all I will ask with whether the plan gives them the bailouts they need. (As a matter of fact, however, I think this assumption is wrong. In my opinion, (i) the burden of bailout out these institutions should be shared among the taxpayer, the bondholders and the stockholders of these institutions and (ii) the appropriate instrument to bring such sharing about are debt-for-equity swaps. They, incidentally, could be made to work as an automatic stabilizer, but that is a different story.)

Since the asset is toxic, its current valuation is inevitably somewhat arbitrary. So suppose that the bank currently values the asset at \$ 55 – which is \$ 5 more than the asset is actually worth – and if the bank were to receive \$ 55, it would return to financial health. Moreover, suppose that a private-sector bidder indeed offers \$ 55.

Under the Geithner plan, the government finances 92 per cent of the asset, the private bidder finances the remaining 8 per cent, and the private bidder and government each receive the same amount of equity. If the asset costs \$ 55, then the private bidder contributes

\$ 4.4 in equity (8 per cent of \$ 55). The government also contributes \$ 4.4 in equity. So the government loan is \$ 46.2 (which is \$ 55 minus the \$ 4.4 private equity, minus the \$ 4.4 government equity).

Recall that the asset has a 50 per cent chance of being worth \$ 100. If that happens, then the government loan can be repaid. The remaining profit is \$ 53.8 (which is \$ 100 minus the loan of \$ 46.2). Since the private bidder and government have the same amount of equity, this profit gets shared equally between them. So each gets \$ 26.9 (half of \$ 53.8). The private bidder's yield is \$ 22.5 (which is \$ 26.9 minus the \$ 4.4 that the private bidder paid for the asset).

The asset also has a 50 per cent chance of being worth \$ 0, and if that happens, then the government loan can't be repaid. So the private sector loses \$ 4.4 (its equity stake) and government loses \$ 50.6 (its loan of \$ 46.2 plus its equity stake of \$ 4.4).

Let's take stock. On average, the private sector's gain is \$ 9.05 (which is the average of its \$ 22.5 gain in good times and the \$ 4.4 loss in bad times). So the private bidder winds up with the fabulous rate of return of 205.68 per cent (namely, its \$ 22.5 average gain relative to its initial investment of \$ 4.4)!

But the government, on average, makes a loss of \$ 14.05 (which is its \$ 22.5 gain in good times and its \$ 50.6 loss in bad times). This means that the government is left with a horrifying rate of return of -319.32 per cent (namely, its average loss of \$ 14.05 relative to its initial investment of \$ 4.4)!

Observe that the government's average loss (\$ 14.05) is higher than the private sector's average gain (\$ 9.05): the government and private sector together make a loss of \$ 5. This is the amount they overpaid for the asset.

It's now easy to see what redistribution has taken place:

- \$ 5 gets redistributed from the private bidder to the bank (since the bidder paid \$ 55 for an asset worth \$ 50) and
- \$ 9.05 gets redistributed from the taxpayer to the private bidder.

The really sad thing is that only the first payment is necessary if we wish to return the bank to health through a bailout. But under the Geithner plan, the taxpayer winds up paying \$ 14.05. That is 181 per cent more than was needed to save the bank!

But that, unfortunately, is not the end of the story. Since the private-sector bidder made a rate of return of 205.68 per cent on his equity investment, the other bidders may be expected to bid up the price of the asset. The following table shows what will happen:

Price Offer	Average Private-Sector Gain	Average Government Gain	Private Rate of Return (per cent)	Government Rate of Return (per cent)	Excess Redistribution (per cent)
55	9.05	-14.05	205.68	-319.32	181
60	7.6	-17.6	158.33	-366.67	252
65	6.15	-21.15	118.27	-406.74	323
70	4.7	-24.7	83.93	-441.07	394
75	3.25	-28.25	54.17	-470.83	465
80	1.8	-31.8	28.13	-496.88	536
85	0.35	-35.35	5.15	-519.85	607

As the price of the asset is bid up (from \$ 55 to \$ 60 to \$ 70), the private-sector rate of return gradually falls (from \$ 205.68 to \$ 158.33 to \$ 118.27 ...). Eventually, once the offer price has reached \$ 85, this rate of return has declined to 5.15 per cent. At this point, there is little to be gained from bidding the price up further and so the price of the asset may be expected stabilize at around \$ 85.

At this price, as you can see, the government's rate of return is an eye-popping  $-519.85$  per cent. Now the redistribution scheme is this:

- \$ 35 gets redistributed from the taxpayer to the bankers (since \$ 85 was paid for an asset worth \$ 50) and
- \$ 0.35 gets redistributed from the taxpayer to the private-sector bidder.

But since the bank just needed \$ 5 to be restored to health, the taxpayer is paying in excess of 600 per cent more than is required.

### Other Frightening Scenarios

The exercise above is just one of many possible frightening possibilities. So far our calculations were based on the premise that only \$ 5 – the equivalent of 10 per cent of the true value of the bank's toxic assets – is required to save the bank. But suppose that more money were required, say 20 per cent or more of the value of the toxic assets. How would the Geithner Plan perform then?

The next table shows the amounts of excess redistribution corresponding to different amounts of bailout.

		Excess Redistribution for Different Bailouts						
		5	10	15	20	25	30	35
55	181							
60	252	76.00						
65	323	111.50	41.00					
70	394	147.00	64.67	23.50				
75	465	182.50	88.33	41.25	13.00			
80	536	218.00	112.00	59.00	27.20	6.00		
85	607	253.50	135.67	76.75	41.40	17.83	1.00	

The numbers in the first row are the size of the bailout. So if a bailout of \$ 10 is required (which is 20 per cent of the true value of the toxic asset), then the bank will accept at least \$ 60 for the asset and thus the excess redistribution is 76 per cent. But, as we saw in the previous table, the private rate of return is high and so the price of the asset will get bid up to \$ 85, corresponding to excess redistribution of about 135 per cent.

In this way, the table shows clearly that as the size of the required bailout rises, so the amount of excess redistribution falls. If it should turn out – by coincidence – that the required size of the bailout (\$ 35) is about equal to the amount by which the Geithner Plan induces the private bidders to overpay for the asset ( $\$ 85 - \$ 50 = \$ 35$ ), then there will be virtually no excess redistribution. But this, as noted, could only happen by accident.

But what happens if even an overpayment of \$ 35 – corresponding to 70 per cent of the true value of the toxic asset – is insufficient to return the bank to health? Specifically, suppose that \$ 40 (amounting to 80 per cent of the value of the toxic asset) is required. What then? The first table gives the answer. At \$ 40 overpayment, the asset must be valued at \$ 90, and then the private rate of return would be about –15 per cent, that is, the private bidders would be making a loss. So clearly no private bidders would be willing to offer \$ 90. This means that the Geithner Plan would not work, since the banks would require an overpayment in excess of what the bidders would be willing to offer. There would be no takers, and the government's offered loan would remain unused. Then, in the absence of any further rescue package, the bank would have to default.

What is the upshot of this woeful portfolio of frightening scenarios? Which one is likely to apply? The answer is as simple as it is important: *We don't know*. It's the essence of a toxic asset that we don't know. If we knew what the asset was worth, it wouldn't be toxic. If we knew how large a bailout each financial institutions needs, the policy response would hardly be a challenge.

It is for this reason that we need a rescue plan that acts as an automatic stabilizer, providing large bailouts to those institutions toxic assets turn out to be worth little and smaller bailouts to those whose toxic assets are worth more. But that is precisely what the Geithner Plan doesn't do. As the exercise above show, far too much money is transferred from the taxpayer to the banks when these banks need only modest bailouts, whereas none might be transferred when they need large bailouts. Only through a massive coincidence could it happen that the plan transfers the right amount of equity to the banks.

In short, this is a hopeless plan. Of course, it's true that some of the redistributed money will probably make its way back to the taxpayer through pension funds, mutual funds, and other institutions that invest in the financial sector. But is this redistribution sensible? Do we want to take potentially huge amounts of money from the taxpayer and give them to the financiers, just as the economy slides deeper and deeper into recession? Do we want to rely on a policy that we know will become ineffective as soon as the banks are in really big trouble?

I find it hard to believe that the American public would have accepted the Geithner plan, if these possibilities had been presented to them. No, I think that the main appeal of the plan lies in its complexity, enabling voters to retain the hope – for the time being – that the banks will get the funds they need through the capitalist system, free of government control.

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# The German Bad Bank Scheme

*Harmen Lehment*

## Abstract

*The German scheme of creating national SPV-loopholes for structured assets is a relatively expensive way to “buy time” for troubled banks and runs counter to the task of a more uniform and transparent international regulatory framework. It also does not provide a major incentive for a recapitalisation of banks, as the expected advantage of the envisaged new class of preferential shares over existing regular shares tends to be at best small.*

## Elements of the Scheme

In July 2009, the German parliament passed a law for establishing so-called “Bad Banks” (Deutscher Bundestag 2009). The law has the following core elements :

1. Banks (or financial holdings or their subsidiaries) may establish a special purpose vehicle (SPV) to which they can transfer structured assets – such as asset backed securities (ABS), collateral debt obligations (CDO) or collateralized loan obligations (CLO). These assets must have been acquired before Jan.1, 2009.<sup>1</sup>
2. In exchange, the transferring bank (from now on just “bank”) receives securities of the SPV which are guaranteed by the German state through the Financial Market Stabilisation Fund (“SoFFin”). The bank pays a guarantee fee to SoFFin.
3. As a rule, the transfer of assets is made on the basis of 90 per cent of the book value in the bank’s balance sheet.
4. The bank has to supply information on the current time value of the asset, which has to be confirmed by an independent expert and by the banking supervisory authority. On the basis of this information and additional risk considerations, SoFFin determines a fundamental value for the asset.
5. If the transfer value of an asset is higher than its fundamental value, the bank pays an annual compensation amount to the SPV which is calculated as the difference of the two values, divided by the number of years of the guarantee. The amount has to be at least 5 per cent of the difference.<sup>2</sup>

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<sup>1</sup> As an alternative to the establishment of a special purpose vehicle, banks may establish a so-called “Abwicklungsanstalt” to which they can transfer not only structured assets, but also other risk positions and activities (see SoFFin 2009 for details ).

<sup>2</sup> The annual compensation, however, may not exceed the amount which is available for dividend payments. If a payment of the full compensation amount is not possible due to this constraint, it has to be made up for in the subsequent years.

6. When the SPV is dissolved, a remaining surplus goes to the shareholders of the bank. In case of a loss, SoFFin is compensated by the shareholders: SoFFin has a claim to future dividend payments, or can be compensated by receiving new shares.<sup>3</sup>

## Differences Compared to Geithner Plan

The German scheme differs substantially from the Geithner plan for the US. The Geithner plan seeks to help banks getting rid of their troubled assets in order to improve their chances to attract fresh private capital; it involves, however, large risks for the taxpayers (Sachs 2009b, 2009c; Stiglitz 2009; Snower 2009a). The German scheme, in contrast, seeks to avoid benefitting shareholders at the expense of taxpayers. It contains core elements of the bad bank proposal that has been made by Jeffrey Sachs (2009a): bank shareholders have to stand in fully for eventual losses resulting from the holdings of troubled assets; the extent of the losses depends on the final disbursement value of the assets; and by replacing prime assets for troubled assets in the bank's balance sheet, large short-run losses resulting from a to strict application of the "mark-to-market" rule are avoided.

## Coverage of Losses

The procedure for the coverage of losses under the German scheme deserves some closer consideration. There are two elements. First, the transferred assets enter the balance sheet of the SPV at only 90 per cent of their previous book value in the bank's balance sheet. The idea behind this rule (the inclusion of which was demanded by the EU-commission) is that, in general, book values in German banks' balance sheets are considerably higher than their fair value.<sup>4</sup> An upfront depreciation of structured assets in case of a transfer to the SPV, however, tends to conflict with the aim of stretching the recovery of losses over a longer period. An initial 10 per cent balance sheet loss on transferred assets could imply a substantial worsening of the bank's capital position. The law considers this problem insofar as it rules that the 10 per cent depreciation does not apply if this would reduce the bank's core capital ratio below 7 per cent. But the incentive for a bank with a core capital ratio well above 7 per cent to set up its own SPV may be substantially lowered by the entailed initial depreciation.<sup>5</sup>

The second loss-recovery element consists of the bank's annual compensation payment to the SPV on the basis of the difference between the value at which the asset entered the

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<sup>3</sup> Several details of the scheme are left open, e.g. the determination of the interest rates on the guaranteed securities, and the payment of interest on potential deficits of the SPV which are financed by SoFFin (van Suntum 2009).

<sup>4</sup> The law allows for exemptions from the rule in case that the time value of an asset is above 90 per cent of the book value; in this case the transfer to the SPV occurs on the basis of the time value.

<sup>5</sup> Moreover, according to the law, banks can transfer assets at more than 90 per cent of the book value on March 31, 2009, if book values have been adjusted downward by the banks during the period July 2008 – March 2009 (see SoFFin 2009 for details).

books of the SPV, and its fundamental value. The main problem here concerns the determination of the fundamental value. First, there may be substantial administrative problems. There are four institutions involved: the bank, the independent expert, the banking supervisors and SoFFin. To determine, first, the time value and, subsequently, the fundamental value of hundreds of different structured assets may be a cumbersome process. As banks have only six months to transfer assets to an SPV after the passing of the law, it may be that fundamental values will not be available in time for all of the assets that banks wish to transfer.

In addition, the scheme includes a substantial discretionary element. Experts and banking supervisors are likely to revise a bank's estimate of the time value downward in order to avoid later accusations that they have been too lenient. SoFFin, in addition, is likely to set the fundamental value at a relatively large discount to the time value, in order to reduce the probability that the SPV will suffer a loss and SoFFin will have to honour its guarantee. Thus, while the scheme makes it possible to distribute losses over time, it tends to have the property of charging exaggerated loss provisions and thereby weaken the capital position of a bank that uses the scheme.

In this case there could also be major side-effects for banks that do not participate in the transfer of structured assets to an SPV. If the banking supervisors apply the values for structured assets which have been determined in the evaluation process (and which tend to be distorted downward) to other banks which also hold these assets, this may lead to substantial asset depreciations by the other banks and a worsening of their capital position.

### **“Buying Time” at Substantial Cost**

The scheme which is described here, allows a bank to “buy time” by transferring troubled assets to an SPV.<sup>6</sup> “Buying time” under the German bad bank scheme involves the payment of a guarantee fee to SoFFin which the bank could avoid by keeping the assets in its own books.<sup>7</sup> This reduces the incentive of banks to use the scheme. It is important to recall that banks already have the opportunity to “buy time” at no cost by using the regulatory flexibility that has been created in autumn 2008 and which allows banks to deviate from the “mark-to-market” principle in case of structured assets with longer holding horizons. This may explain why several German banks have already signalled that they do not plan to participate in the bad bank scheme.

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<sup>6</sup> “Buying time” through the transfer of assets to an SPV does, however, not necessarily mean that insolvency is prevented (Snower 2009b). “Buying time” only prevents insolvency, when the bank would become insolvent on the basis of current mark-to-market values, and when asset prices recover sufficiently over time (or when the assets generate a sufficiently high net income stream) to restore solvency.

<sup>7</sup> In the standard case the guarantee fee amounts to an annual 7 per cent rate on the difference between the transfer value and the fundamental value (SoFFin 2009).

## Loophole to Escape Basle Rules

In this context it is remarkable that the head of the German banking supervisory institution (BaFin) encouraged banks to use the scheme and transfer their structured assets to an SPV (Handelsblatt, May 20, 2009). His main argument is that in this way banks can avoid the additional short-run capital requirements which would be associated with the ongoing downgrading of structured assets by the rating agencies. In fact, while the regulatory flexibility that was created last year exempts banks from the mark-to-market principle it does not exempt them from the capital requirements of Basle I and Basle II.

Changes in the ratings may have a very substantial impact on minimum capital requirements. With a total amount of about 200 bill euro that has been mentioned as the potential volume of structured assets in Germany (FAZ 2009), required capital could rise by several billion Euro. By transferring structured assets to a SPV – which is not subject to the Basle rules – banks could escape the additional capital requirement that is associated with a downgrading of present ratings.<sup>8</sup>

Establishing SPVs to circumvent the Basle rules is, however, a dubious procedure. There are two major reasons. First: there is widespread agreement that the Basle rules have to be changed in order to remove their current pro-cyclical effects. Rising minimum capital requirements in recession times as a result of lower ratings need to be prevented. This should, however, be achieved through a global regulatory reform, not through creating national loopholes. In case of urgency, preliminary exceptions from the Basle rules could be agreed upon at the international level (or EU level) to prevent destabilizing effect of lower ratings on the financial system. Second: whereas the specific property of structured assets, in particular the difficulty to establish market prices, could justify an exception from the mark-to-market principle, there is no obvious reason for a preferential protection of structured assets from changes in the rating classification. The creation of an SPV-loophole to avoid the additional capital requirements of a lower rating immediately raises the question, why the loophole should be available only for structured assets and not for other assets, like corporate bonds, which are also affected by changes in rating classification.

## Weak Incentives for Recapitalisation

A main task of bad bank schemes is to support the recapitalisation of banks. In contrast to the Geithner plan which amounts to strengthening bank shareholders at the expense of high risks for the taxpayer, the German scheme with its relatively high taxpayer protection does not leave much room for increasing the attractiveness of bank shares. Bank shareholders have to stand in fully for eventual losses resulting from the troubled assets which are held by the SPV, so there is no reduction of shareholder risk in comparison with keeping the assets

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<sup>8</sup> In fact, banks do not only avoid the additional capital requirement, but reduce the capital requirement for the transferred assets to zero (as there is no capital requirement for the government guaranteed assets which the bank receives in exchange). This is clearly inappropriate since the bank is fully liable for eventual losses on the transferred assets and should have a capital backing for this – potentially very risky – asset position.



on the bank's own books. To support recapitalisation, the German scheme entails an additional provision that allows exempting new shareholders from part of the risk that other shareholders carry. The provision looks as follows: The bank can issue new preferred shares up to 50 per cent of its initial capital. These shares may have voting rights. They are not subject to cuts in dividend payments in case that the SPV makes a loss; on the other hand, they also do not participate in eventual surpluses of the SPV.

Holders of preferred shares are not exempted from the burden of the guarantee payments to SoFFin and the compensation payments to the SPV. Their only advantage against the other shareholders is that they do not suffer losses in case that the final disbursement value of the transferred assets falls below their initially-set fundamental value. If the fundamental value were set at a relatively low level (as one may expect) the probability of such losses would be rather low and not provide a strong incentive for private investors to provide fresh capital in form of preferred shares rather than regular shares. This consideration is reinforced by the fact that preferred shares do not participate in an eventual surplus of the SPV while regular shares do.<sup>9</sup>

## Conclusion

The German scheme of creating national SPV-loopholes for structured assets is a relatively expensive way to "buy time" for troubled banks and runs counter to the task of a more uniform and transparent international regulatory framework. It also does not provide a major incentive for a recapitalisation of banks, as the expected advantage of the envisaged new class of preferential shares over existing regular shares tends to be at best small.

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<sup>9</sup> To illustrate this, consider the following extreme example. Suppose the fundamental value of all transferred assets were set to be zero. In this case the SPV cannot make a loss but only a gain, so that holders of regular shares would be obviously better off than holders of the new preferred shares.

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# Preventing Deflation Through Fiscal Policy

*Christopher Reicher*

## **Abstract**

*With interest rates in most developed countries close to zero, it is not possible for monetary policymakers to stimulate the economy by reducing interest rates. As a result the economy is unusually sensitive to the possibility of deflation, and thoughts turn to fiscal policy in order to stabilize output and prices. This paper summarizes the current academic debate on the role of fiscal policy under current conditions. In particular, this paper argues that policymakers need to be explicit about their objectives concerning spending, debt, and inflation, to avoid expectations-driven fluctuations in output and inflation.*

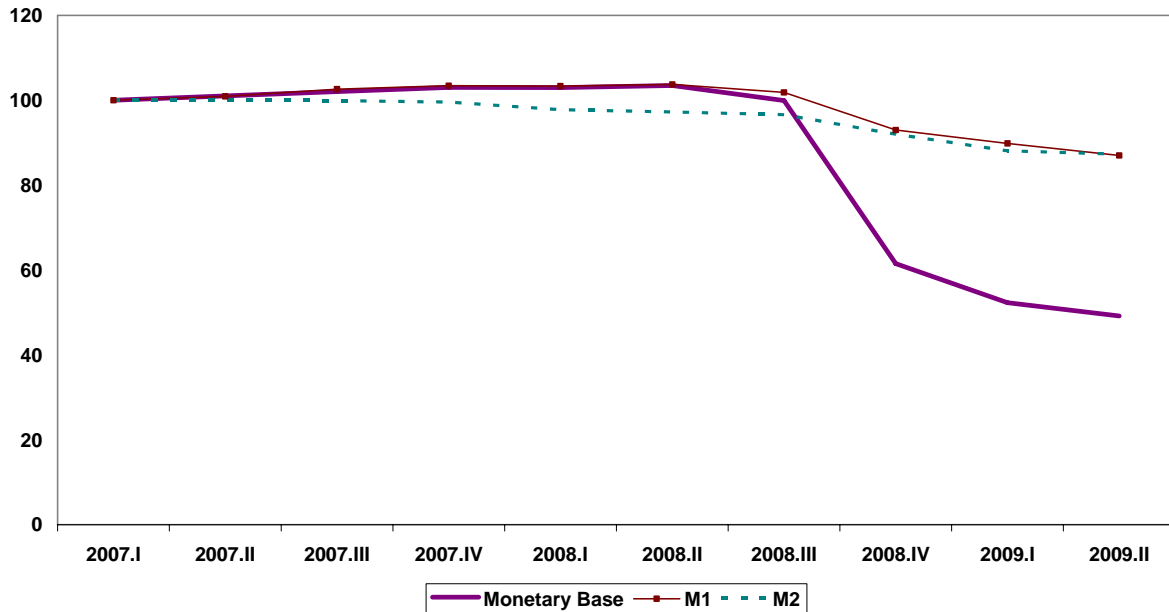
## **1 The Problem: Macroeconomic Stabilization Policy in a Low Interest Rate Environment**

In modern times, monetary policy has worked through adjustments in interest rates. The Fed and the ECB manage interest rates on a daily basis by buying government debt and issuing money, or by doing the reverse. This money then flows throughout the economy, where it affects prices, lending, and the level of spending. Based on movements in interest rates, consumers decide when to buy a new house or a car, and businesses decide when to invest in equipment or to hire new workers. Woodford (2003) provides a good description of the current academic consensus on this subject. By raising interest rates in inflationary periods and lowering them in deflationary periods, central banks can stabilize expectations of output and prices, and this is an important tool for stabilizing the economy in response to shocks. A cut in interest rates encourages people to spend more today rather than tomorrow, while a rise in interest rates encourages the reverse.

The Taylor Rule is a useful guide as to how the Fed sets policy in normal times. It states that the Fed should cut interest rates dramatically during periods of deflationary pressure or during recessions. The Fed and ECB have both in fact responded to the recent crisis by cutting their policy interest rates to zero and one percent, respectively. However, the Taylor Rule suggests that in the current situation, both central banks should set their main interest rates well below zero. (For a good discussion of the Fed's problem, see Krugman (2009)). Since people always have the option of holding currency, it is impossible for interest rates to actually fall below zero. Central banks cannot cut rates anymore, even though they wish they could.

As a result, central banks and fiscal authorities must find other ways to try to stimulate the economy. Some have suggested that central banks concentrate on maintaining a high rate of money growth in order to raise spending. There is a problem with this, though. With short term interest rates effectively at zero, money and safe bonds (particularly short term government debt) become perfect substitutes. As a result, the money supply need not be related to the level of overall spending, as it would if interest rates were significantly positive. Figure 1

Figure 1: Velocity of Monetary Aggregates, United States (2007.I = 100)



Source: St. Louis Fed FRED, and Bureau of Economic Analysis.

shows why this is a problem. It depicts the velocity of money in the US since the beginning of 2007 (normalized to 100). (Velocity is defined as the value of nominal GDP divided by the money supply.)

In order for the money supply to reliably influence spending, velocity has to remain relatively stable (or at least predictable), so that increases in the money supply reliably pass through into increases in spending. Velocity has clearly dropped dramatically, particularly the velocity of the monetary base. As the Fed has increased the monetary base, and as the broader supply of money has increased somewhat, this has not translated into higher spending. Instead, consumers and in particular financial institutions have held onto this newly created money. The dollar value of spending has fallen somewhat, as people have become more pessimistic about the future. This is the classic 'liquidity trap' that Keynes (1936) discussed, in which expectations about the future, rather than the money supply, are what drives current spending.

## 2 What's Wrong With Deflation in This Environment?

In a low interest rate environment where central banks cannot reliably influence spending, a self-fulfilling deflation becomes a major threat. Since central banks cannot cut interest rates in response to deflation, *any* expected future path of prices is consistent with rational behavior, so long as the central bank cannot commit credibly to a future price level. But this means that expected changes in prices can have a large effect on real demand. If people have to pay back their loans in more expensive dollars in the future, this increases the cost of whatever the loan is used for, be it consumption or investment in housing or equipment. People

become unemployed and incomes fall. Interest-rate sensitive sectors of the economy, such as construction and autos, are those hurt the most by deflation.

This effect is particularly strong when markets are not perfect. Since prices and wages can take some time to adjust to the new reality, changes in prices can possibly have large effects, even when future deflation is not anticipated. Gertler and Trigari (2009) show how the price level feeds through into labor market outcomes in an economy with unemployment. Basically, if prices fall faster than wages (because wages are only negotiated infrequently), then it becomes less profitable for firms to hire workers. Firms in fact hire fewer workers, and unemployment rises. Since it takes time for unemployed workers to then find new jobs, unemployment remains high for some time even after the deflation has ended. Reicher (2009) claims that expectations of future price movements played an important role in the Depression, and Eggertsson (2008) claims that fiscal policy had a role to play in forming these expectations.

In short, expectations about future prices are crucial. Since central banks might not be able to manage these expectations directly (though they may; see Bernanke, Reinhart, and Sack (2004) for a more positive assessment), it is up to fiscal authorities to look for ways to keep deflation from happening. Stable prices in a liquidity trap are not just a function of monetary policy; they depend crucially on what private agents think fiscal and monetary authorities will do once the liquidity trap is over. If monetary policy were enough to ensure stable prices in a liquidity trap, there would be no need to look at fiscal policy.

### **3 Can Fiscal Policy Manage Inflation Expectations?**

Thoughts naturally turn to fiscal policy as a tool with which to stimulate the economy. Considerable disagreements exist about the size and magnitude of fiscal multipliers in this type of situation. Romer and Bernstein (2009) claim a very large multiplier for government spending, while Cogan, Cwik, Taylor, and Wieland (2009) claim smaller multipliers. The ways in which fiscal policy is supposed to stimulate the economy vary. Higher government spending itself can have an effect since it increases the demand for resources. More debatably, higher deficits can possibly increase consumption, and lower taxes might provide more incentives to produce output.

One of the channels through which fiscal policy might work is through its indirect effect on the price level. Economists have long recognized that fiscal policy can affect the price level, and long-run fiscal stability and monetary stability are related. Cochrane (2009) and Davig and Leeper (2009) discuss this problem in the current context. Basically, things all boil down to the government's budget identity. The real value of the government debt must equal the real present value of expected surpluses, or else people will not hold government debt. If the government issues debt and does not intend to raise taxes in order to pay it back, this would result in a rise in the price level. This is known as the Fiscal Theory of the Price Level. Basically, in this theory, the price level is determined by the supply of paper assets in the economy. In this situation, a way to keep deflationary expectations from happening is to permanently issue large amounts of government debt during deflationary scares. By issuing large

amounts of these paper assets, people feel wealthier and begin spending. It is important to note that this can only work if the government does not raise taxes in the future to cover this stimulus. If people expect their own taxes to go up to make up for this, then the rational thing for consumers to do is to pocket the money and use it to pay their future taxes.

This is a controversial theory. It all depends on the government's unwillingness to raise taxes to control the public debt, and it rules out default in extreme states. If there is a fear that the government can default or if it will ultimately raise taxes to cover its current deficits, then this theory is not a theory of price level determination. Another closely related idea is the idea of Eggertsson (2006). In this case, a high value of government debt *encourages* future monetary authorities to inflate it away. This gets around the problem of what determines the future price level, and this might even be a good model for the United States (as Eggertsson (2008) claims for the Depression period). However it is not obvious that the ECB will willingly inflate away the debt of individual member nations, so this idea might not apply to Europe. If this were to work in Europe, it would require a degree of coordination between the ECB and national governments which has so far been lacking. It is also important to spell out clearly what will happen in the event that more traditional monetary policy instruments are pursued in the future, since the problem here is essentially one of *expectations* of future monetary policy.

Yet other approaches to using fiscal policy to control inflation rely on consumer irrationality or illiquidity. The idea here is to give impatient or irrational consumers money, which they spend in a large proportion. Galí, López-Salido, and Vallés (2007) suggest that giving tax cuts or transfer payments to poorer individuals who do not participate in credit markets, may increase spending in a downturn. This is the classic Keynesian "pump priming" argument in a modern context. The way that this would work, is that the government gives money to consumers, some of whom are either irrational or credit-constrained, and then they would spend it no matter what. This would influence the level of nominal spending even if fiscal policy is responsible in the long run. For the credit constraint story to work, this requires that fiscal stimulus be reliably targeted toward less-responsible or more credit-constrained consumers. Another version of this argument involves encouraging consumers to borrow from their children. Bénassy (2007) discusses a situation where having the government borrow from future generations can increase consumption now, since the people who have to pay back the debt are not the current generations. This is exactly how Social Security spending works, and this plan crucially depends on a suitably large rate of population growth.

#### **4 Can Government Spending at Least Help Things?**

In the event that none of these things work and the long run price level remains uncertain, then governments might have to turn to creating demand themselves, through public works projects or buying output and then destroying it. These things come with their own sets of issues, and governments have to be careful about a number of issues. Badly implemented government spending programs can crowd out private consumption and investment, or they can come too late to do much good. Christiano, Eichenbaum, and Rebelo (2009) and others discuss how government spending can affect real aggregates in this type of situation.

The easiest form of fiscal policy is for the government to do nothing when a recession hits, just to spend the amount that it had been spending before. This keeps government services flowing at the same rate as before, but at a cost of higher long-run tax rates. As it turns out, there is a danger of government spending crowding out consumption, though output is in fact stabilized to a modest degree. The merits of this type of fiscal policy ultimately depend on the value of government spending to private individuals. If it makes sense to keep education spending, public services, and construction budgets high during a recession, then people may be made better off by stabilizing government spending. On the other hand, if resources used up by a stimulus go toward wasteful projects, then the negative effects on consumption outweigh the benefits. In the case of a federal country like the US or Germany, this course of action requires close coordination between state and federal governments to ensure that the states have access to funds during the downturn, without giving an incentive to overspend in the long run.

Interestingly, if people are rational savers and consumers, then simulation results suggest that the exact timing of the response of government spending to changes in expected inflation does not matter. So long as the economy is still slack in one or two years and interest rates are stuck at the zero bound, demand is driven mostly by *expectations* about the medium-run. It is still important that fiscal stimulus occur during the period of slack demand; it would be difficult to justify a longer-term construction project like an airport as fiscal stimulus. Such a project would have to stand on its own merits. Ramey (2008) uses war dates in order to estimate the effects of government spending during normal times, and she finds that higher government spending can often mean reduced consumption. It is important to make sure that the stimulus is not timed to come after the economy has recovered to a more normal growth path, or else monetary policymakers will have to act in order to dampen a run-away expansion and to anchor inflation expectations.

In the current environment, by contrast, government spending can even have positive second-round multiplier effects. If government spending increases demand in the short run, then it has a positive effect on the price level. It becomes more profitable for firms to hire workers, and as inflationary expectations set in, it becomes more profitable to consume. Christiano, Eichenbaum, and Rebelo's simulations suggest that this is very different from a 'normal' situation where monetary policy sets the price level, and this is why they estimate a larger fiscal multiplier than Cogan, Cwik, Taylor, and Wieland. Basically, if the monetary authority keeps interest rates low, this amplifies the usual effect that a demand stimulus will have. The size of this channel is a bit uncertain, and the experience of Japan in the 1990's shows that fiscal stimulus is not guaranteed to restore the economy to good health.

## **5 Conclusion**

The academic consensus regarding the ability of monetary and fiscal policy to anchor inflation expectations in a low-inflation environment is not settled. There are possible ways in which fiscal policy may influence inflationary expectations. One way is through increasing the balance sheets of consumers, with the provision that taxes not be raised in order to cover the

debt incurred by current deficits. Another way is to run large enough deficits that it is in the government's interest to inflate in the future, though this is more likely to work in the United States than in the Euro area. Another way is to rely upon consumer irrationality or to run a pyramid scheme with future generations. Failing this, there is the old standby government spending, which seems to be more potent than usual in this type of situation. Since few countries have had experiences with extended liquidity trap-type environments, the size of these effects can be a bit uncertain, so caution is called for.

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# Fiscal Responses to the Financial Crisis

Steffen Ahrens

## Abstract

*In response to the worldwide financial crisis, many countries have put together fiscal stimulus packages of substantial size comprising increases in public spending, tax cuts, and transfers to the private sector. These packages vary considerably in respect to size, composition, and timing. Particularly large packages have been adopted by the United States and China, but also by Germany which took the leading role in European fiscal expansion. There are also marked differences in the structure of the stimulation packages. While developing countries provide fiscal stimulus almost exclusively via increases in spending, one-third of the packages in industrialized countries takes the form of tax cuts. Concerning the time pattern, most packages envisage the measures to focus on 2009 and 2010. In some countries, such as the United States and China, the fiscal stimulus is planned to reach its peak only in 2010.*

## 1 Introduction

The severity of the financial and economic crisis has called for unconventional policy reactions. With monetary policy being constrained by the zero bound limit in late 2008, many industrialized countries have responded to the crisis by launching fiscal stimulus packages of unseen dimensions. Several emerging economies have also implemented packages of substantial size to support the demand side of the domestic and global economy.

Even though there is no clear consensus on whether fiscal stimulus is helpful or harmful and how it should be designed, we observe a huge appetite for governmental intervention.

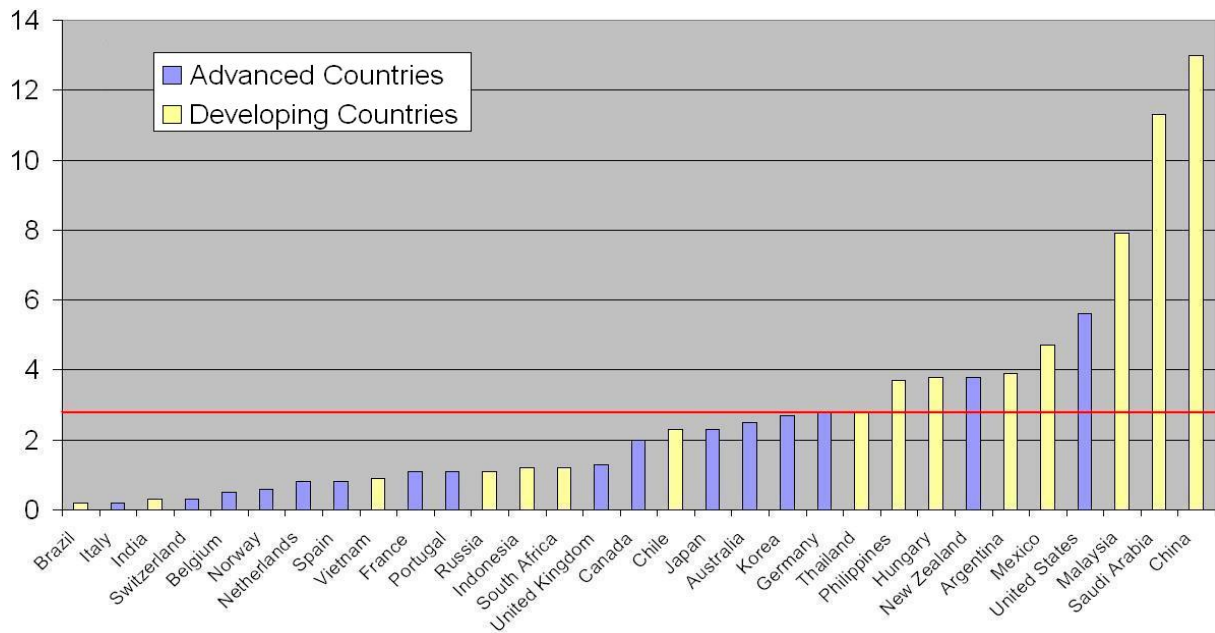
This paper intends to analyze the scope, composition, and timing of fiscal actions taken by over 30 economies worldwide.

## 2 The Scope of Stimulus Packages

In a recent study, the International Labor Organization ILO (2009) has collected international evidence for fiscal stimulus packages undertaken by 32 national governments. Figure 1 summarizes the ILO's findings and shows a wide heterogeneity in the size of national fiscal stimulus packages. The front runner in relative terms is China, whose \$ 586 billion stimulus accounts for about 13 per cent of Chinese GDP followed by Saudi Arabia, Malaysia, and the United States, whose "American Recovery and Reinvestment Act of 2009" is the largest package in absolute terms (\$ 787 billion).

Most European countries have been reluctant in comparison, with package sizes between 0.3 per cent in Italy and 1.3 per cent in the United Kingdom, which are substantially lower than the sample average of 2.8 per cent. The exception is Germany, whose two fiscal packages sum up to approximately \$ 110 billion or equivalently 2.8 per cent of German GDP.

Figure 1: Scope of the National Stimulus Packages



The thick line denotes the sample average of 2.8 per cent. The values represent the volume to GDP (2008) ratio.

Source: Data from ILO (2009).

Combining all national efforts, the world fiscal stimulus, according to the ILO (2009), amounts to approximately \$ 2 trillion or equivalently 1.4 per cent of world GDP, which is still below the IMF's recommendation of 2 per cent of world GDP (Blanchard (2008)).

Where do the significant differences in spending come from? In general, two factors determine the size of the fiscal stimulus; differences in the necessity for stimulus and the fiscal ability.

According to Horton and Ivanova (2009), the necessity for stimulus crucially depends on the size of the automatic stabilizers and the output gap. The authors argue that countries with larger automatic stabilizers are less in need of discretionary fiscal intervention and show that, indeed, government size – as proxy for the impact of automatic stabilizers – is negatively related to the amount of fiscal expansion. Furthermore, they find a strong positive relation of supportive fiscal spending and the extent of the output gap.

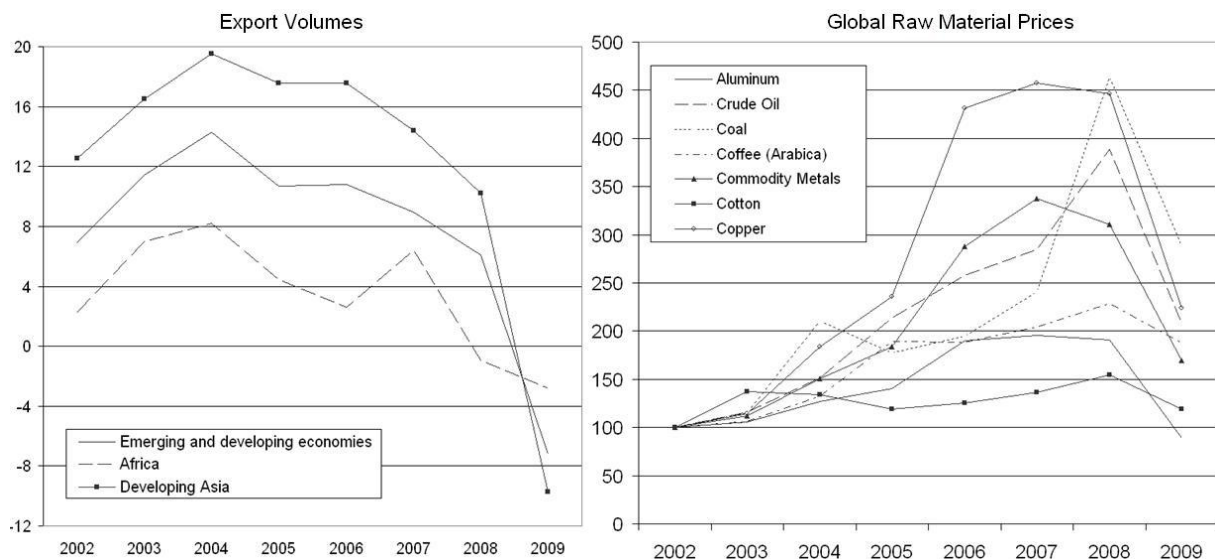
Secondly, the available fiscal space explains much of the variation in stimulus size. Horton and Ivanova (2009) emphasize that governments like the US, China, and Germany are in a much better fiscal position, facing lower public debt, contingent liabilities, and interest rates than other countries. This leaves more fiscal space and, hence, increases the ability to provide a strong stimulus. India, Italy, and Japan on the other hand, face more severe restrictions including higher debt levels and real interest rates, which reduce fiscal space to a minimum. Horton and Ivanova (2009) statistically confirm this intuitive result by finding a negative correlation of fiscal stimulus and public debt. This argument might also explain why some countries do not conduct fiscal stimulus at all, which is the subject of the following subsection.

## 2.1 Developed versus Developing Economies

The ILO study reveals that most of the countries issuing fiscal stimulus are either developed countries or larger emerging economies.

As shown by Arbache (2009), many developing economies on the Asian, African, and Latin American continents are simply not in the economic position to impose large fiscal packages to encounter the decrease in demand. According to Figure 2, these countries not only face a negative demand shock to their export sector (left panel) – like most of Export Sector in Developing Economies the developed world – but they have also been confronted with heavily falling prices of natural resources such as crude oil, copper, aluminum, cotton, and coffee (right panel), harshly hitting the supply side of their economies. Since government revenues of developing countries often depend crucially on export earnings, fiscal budgets are under particular pressure, making it even harder to finance fiscal effort. Therefore, most small developing countries require external funding to set up fiscal stabilization packages, since many of them have already reached the limit of domestic debt financing. Reinhart et al. (2003) argue that, historically, many defaults of emerging markets took place at debt to GDP ratios sometimes as low as 15 per cent and mostly well below the Maastricht criteria of 60 per cent for the European Monetary Union. On this matter, World Bank President Robert B. Zoellick called for a “vulnerability fund” aimed to support the poorest of the poorest. Zoellick appealed to the developed world to donate a fraction of 0.7 per cent of their fiscal stimulus packages to such a fund. Yet, no such fund has occurred and fiscal stimulus in the developing world – with few exceptions – remains low.

*Figure 2: Developing Countries' Exports and Raw Material Prices*



Source: Data from IMF.

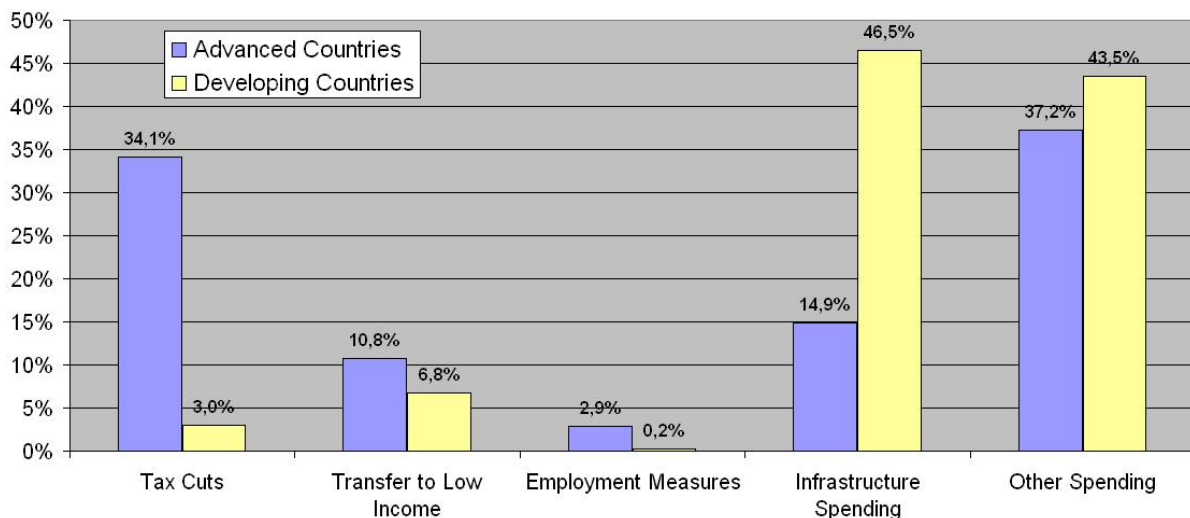
### 3 The Composition of Stimulus Packages

The mere size of the stimulus does not guarantee success of the fiscal measures. Perhaps even more important is the composition of the packages, i.e. the choice of the specific actions taken. In general, we can categorize governmental effort into three branches: direct government spending, tax cuts, and transfers to households.

Along these lines, Khatiwada (2009) analyzes 22 stimulus packages from the ILO (2009) report. The results are summarized in Figure 3. The author shows that packages vary significantly with respect to the shares of tax cuts and government spending. Government spending accounts – on average – for approximately 90 per cent in developing economy stimulus plans, but only for about 50 per cent in advanced country stimulus plans.

Most of this difference can be explained by the presence of tax cuts, which take a fraction of roughly one third in advanced countries, while they are negligible in the developing world.<sup>1</sup> Evidence from recent polls by Rasmussen Reports (2009) in the US reveal a clear preference for tax cuts over direct spending measures, since the majority of US citizens think that taxpayers are the best judges for spending. In smaller developing economies, however, economists see no effective scope for tax cuts. Arbache (2009) argues for the example of Africa that the income tax base is fairly low. Furthermore, due to the extremely high propensity to import, also a VAT cut would be without significant effect to the domestic economy. Devarajan (2009) also holds the view that lowering taxes in Africa will not be suitable to stimulate growth. He argues that many tariffs and taxes have already been reduced due to economic events that were unrelated to the financial crisis,<sup>2</sup> thus reducing the scope for further reduction.

Figure 3: Composition of Stimulus Packages



Examples for “Other Spending” are direct and indirect transfers to businesses, indirect transfers to consumers, and additional funding for education and health.

Source: Data taken from Khatiwada (2009).

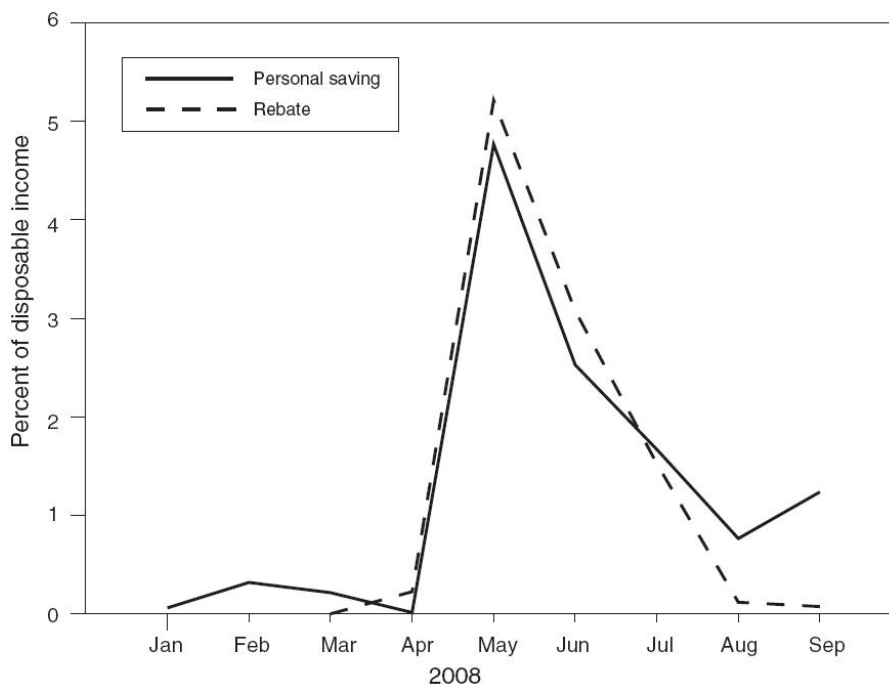
<sup>1</sup> The only exceptions to this are Russia and Brazil, where packages focus almost entirely on tax cuts. A look at Figure 1, however, reveals that both packages are relatively small.

<sup>2</sup> Such events are e.g., the severe food price increase in the mid 2000s.

Decomposing multiple-wave stimulus packages, Prasad and Sorkin (2009) show that the share of tax cuts has declined significantly from the first wave to the second for many advanced economies. They report that countries like the US, Germany, Australia and Spain clearly favored tax cuts over direct spending in their 2008 packages, but turned to more expenditure loaded plans in 2009. Why is that so?

The past might yield an answer. Looking at the performance of American Recovery Act of 2008, economists widely agree that the Bush administration's 2008 tax rebate failed its goal to stimulate demand. Moreover, in a telephone survey presented by Shapiro and Slemrod (2009), approximately half the respondents claimed that the additional tax money was mostly used to pay off debt. Another thirty percent indicated that they saved the largest part of it, whereas only twenty percent of the respondents actually spent a major part of the cash transfer. Further evidence is given by Figure 4. During the month of implication (April to August) the fraction of the tax rebate relative to disposable income moved almost one to one with the fraction of personal saving. These results match exactly the experiences from the Bush administration's 2001 tax cut bill, when also four fifth of the rebate drained through the leakages of saving and debt repayment. The evidence strengthens the assertion of tax policy to be mostly ineffective and consequently, calls for alternative measures.<sup>3</sup>

*Figure 4: Tax Rebates and Personal Saving*



Source: Shapiro and Slemrod (2009).

<sup>3</sup> Barry Schwartz (2009) argues that the Bush administration's \$ 500 tax rebate was erroneously designed to actually stimulate private consumption. Emphasizing the role of "mental accounts," he claims that it is "the packaging [that] counts," i.e. that peoples' consciousness towards the additional money matters. For instance, to many people a fairly large one time tax reimbursement of \$ 500 generates the incentive to carefully think about the use of the additional cash, which often results in increasing savings or repaying debt. However, remitting \$ 10 or \$ 15 of people's payroll taxes and leaving it on their weekly pay check is hardly noticeable and hence, the additional money is easily absorbed into the weekly spendable budget.

## 4 The Timing of Stimulus Packages

The OECD (2009) provides additional information about the timing of the implementation for the OECD countries. This information is summarized in Table 1. According to Table 1, only one third of all countries analyzed by the OECD implemented measures that had taken effect already in 2008, accounting for approximately 15 per cent of overall fiscal stimulus. The remaining 85 per cent are allocated over the years 2009 and 2010 with 48 per cent and 37 per cent, respectively. The Asian and Oceanic OECD countries focus their fiscal expansions on 2009, whereas on the northern American continent most of the fiscal impulses will only become effective in 2010. The European countries are highly heterogeneous, showing no clear preference for early or late stimuli. Prasad and Sorkin (2009) report that China and Saudi Arabia, which both are not listed in Table 1, also plan their major stimulus to be provided 2010. According to Khatiwada (2009), Malaysia, having the third largest fiscal package to GDP ratio, plans to equally split expenses over both years.

*Table 1: Timing of Stimulus Packages*

Country	2008	2009	2010	Country	2008	2009	2010
Australia	13	54	33	Korea	17	62	21
Austria	0	79	21	Luxembourg	0	65	35
Belgium	0	51	49	Mexico	0	41	59
Canada	12	41	47	Netherlands	0	49	51
Czech Republic	0	56	44	New Zealand	6	54	40
Denmark	0	33	67	Poland	0	70	30
Finland	0	47	53	Portugal	0	100	0
France	0	68	32	Slovak Republic	0	41	59
Germany	0	48	52	Spain	32	44	24
Hungary	0	51	49	Sweden	0	43	57
Iceland	0	28	72	Switzerland	0	68	32
Ireland	6	39	55	Turkey	17	46	37
Italy	0	15	85	United Kingdom	11	85	4
Japan	2	74	24	United States	21	37	42
Average (unweighed):					5	53	42
Average (weighed)*:					15	48	37

\*Mexico added by author to the OECD (2009) sample. Thus, weighed average excludes Mexico.

*Source:* Data taken from OECD Economic Outlook 2009.

## 5 Conclusion

In response to the worldwide financial crisis, many countries have put together fiscal stimulus packages of substantial size comprising increases in public spending, tax cuts, and transfers to the private sector. These packages vary considerably in respect to size, composition, and timing. Particularly large packages have been adopted by the United States and China, but also by Germany which took the leading role in European fiscal expansion. Other countries, in particular those that were severely restricted by already high deficits, or developing countries with a weak fiscal system provided only little or no fiscal incentives.

There are also marked differences in the structure of the stimulation packages. While developing countries provide fiscal stimulus almost exclusively via increases in spending, one-third of the packages in industrialized countries takes the form of tax cuts. It is, however, remarkable that the share of tax cuts in these countries has decreased substantially in the 2009 packages, as compared to the packages which were decided in 2008. This may to some extent be explained by the low effect which the Bush administration's tax rebate in 2008 had on aggregate demand.

Concerning the time pattern, most packages envisage the measures to focus on 2009 and 2010. In some countries, such as the United States and China, the fiscal stimulus is planned to reach its peak only in 2010. To which extent the stimulus packages will actually be realized, however, is yet uncertain. As the many economies have stabilized surprisingly fast in the second and third quarter of 2009, there are already some observers who suggest to cut back on fiscal stimulus plans, and start fiscal consolidation earlier.

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# Estimating the Impact of Fiscal Stimulus Packages

*Björn van Roye, Dennis Wesselbaum*

## **Abstract**

*Assessing the quantitative impact of the fiscal packages which have been adopted in the current financial crisis is extremely difficult. The studies which are presented in this paper show wide differences, both for short-term and for medium-term multipliers. Moreover, multipliers which are derived from past experience may not apply in the current financial crisis. There are three main reasons: the zero-bound for monetary policy which played almost no role in the past has become binding in many countries; the standard procedure of calculating multipliers on the assumption of being in an initial equilibrium position is hardly appropriate in the current deep recession; and the standard procedure of linearizing models is questionable as currently there is a substantial deviation from the equilibrium.*

The effects and transmission mechanisms of fiscal policy are a highly controversial issue in recent macroeconomic research. There is in particular little consensus among researchers when it comes to the quantitative impact of fiscal stimulus packages in the current economic crisis.

Most macroeconomists agree that monetary policy is usually sufficient to deal with the negative effects of a recession (Eser et al. 2009). There is a wide range of arguments against discretionary fiscal policy interventions to stabilize the business cycle, e.g. time lags, distortionary effects of government interventions, reductions of potential GDP growth, crowding out effects, and concerns about the long-run sustainability of public finances (Scheide 2008).

In the current crisis, however, these arguments seem to have less weight in the political decision process. This is mainly due to the extreme economic downturn which became visible in autumn 2008. Many countries approved fiscal stimulus packages to keep their economies from a further decline (Ahrens 2009). The main argument used by policymakers in favour of fiscal stimulus measures was that the efficiency of monetary policy transmission channel had been reduced due to frictions in the credit market. Many central banks could not cut interest rates further as the “zero bound” for interest rates had been reached, and it was uncertain whether the quantitative measures which they adopted would suffice to counter the slump in economic activity. Fiscal policy was, therefore, regarded as a supplement to dampen the downturn.

In these circumstances, a proper estimation of the fiscal multiplier is a crucial input for the policy making process in order to determine the appropriate size and timing of fiscal interventions. However, a determination of the fiscal multiplier is not a straightforward exercise due to various difficulties. In this contribution we will address and explain some of the major problems and consider their implications for economic policy.

## Multiplier Effects: Keynesian versus New Keynesian Models

The fiscal multiplier describes the effects of changes in fiscal instruments on real GDP. Typically, it is defined as the ratio of a change in output to an exogenous change in the fiscal deficit with respect to their respective baselines. The idea of the government spending multiplier goes back to Keynes. According to his seminal contribution, an increase of government spending leads to a multiplier process which results in a more than proportionate increase of national income. A major critique regarding traditional Keynesian models with respect to the estimation of fiscal multipliers is that these models lack an explicit micro-economic foundation and exclude forward-looking behaviour.

In contrast, modern macroeconomic models such as New Keynesian (NK) models, Real Business Cycle models and Neoclassical Growth models use the assumption of rational and forward-looking expectations. Standard NK models, being the workhorse model of current macroeconomic research, are characterized by a utility maximizing, forward looking representative agent and profit maximizing firms acting rationally. NK models preserve a Keynesian element in so far as prices are rigid, as firms are not able to instantaneously reset their prices due to adjustment costs. Within these kinds of models, the multiplier effect of an increase in government spending depends heavily on the incorporated frictions and the calibration of the model.

In contrast to traditional Keynesian models, NK models consider various crowding-out effects which may offset or reduce the effect of the initial fiscal stimulus. One channel for such crowding-out effects are interest rates: additional credit demand by the government tends to raise interest rates and thereby reduce investment and consumption. A second channel are expectation effects: fiscal packages that increase government debt tend to lead to expectations of future tax increases which have a negative effect on current consumption. A third channel works via supply constraints: government spending uses production factors, which then cannot be used in the production process of the private sector. The interest-induced crowding-out effect of a fiscal expansion depends on the response of the central bank. If fiscal expansion raises output and inflation, this tends to lead to a rise in central bank interest rates which dampens the initial stimulus. Thus, the interaction of monetary and fiscal policy plays a crucial role in NK models.

## Recent Empirical Multiplier Estimates

A first assessment of the multiplier effects of the fiscal package which was adopted by the United States in response to the crisis (the American Recovery and Reinvestment Act ARRA) was provided by Bernstein and Romer (2009). They use a traditional Keynesian model and assume that the central bank keeps its interest rate at a level of zero until 2012. They find government spending multipliers of around 1.0 for the first quarter and of around 1.6 by mid 2012 (Table A1); effects for cuts in taxes are smaller due to time lags and leakage effects. Concerning the entire U.S. stimulus package in the context of ARRA they find that it will result in a 3.6 percent increase of GDP by the fourth quarter of 2010.

Cogan et al. (2009) challenge these results. They employ the widely used standard New Keynesian model of Smets and Wouters (2003) and find a government spending multiplier of approximately 1.0 for the first quarter and 0.4 at the end of 2012 (Table A1). The smaller multipliers in comparison with the Bernstein and Romer study result from expectations that the Fed will raise interest rates in the future to prevent inflation from getting out of control, and that the government will raise future taxes in order to reduce the initial budget deficit; both of these expectation factors dampen private spending. Cogan et al. also consider the effects of the ARRA package and find that it results in a 0.65 percent increase of GDP by the fourth quarter of 2010 and, hence, much less than in the Bernstein and Romer estimates.

Along this line of research, Cwik and Wieland (2009) provide estimates of the fiscal stimulus packages in the Euro Area, using five different dynamic macroeconomic models.<sup>1</sup> They find that four of them imply a strong crowding out of private consumption and yield multipliers of less than one. A further insight drawn from this paper is the fact that the impact multiplier might even be negative, if an implementation lag is present.

The NK models that are used by Cogan et al. and by Cwik and Wieland have two potential weaknesses. First, most of them are based on the assumption of unconditional Ricardian equivalence. In this case, an increase in government debt leads to the expectation of a future tax rise, with the result that individuals expand their savings in line with the increase in debt in order to pay for the tax rise when it occurs. This is a very strong assumption which is likely to underestimate the actual multiplier effect of fiscal measures. Van Roye and Wesselbaum (2009) use an Overlapping Generation NK model (OLG) which allows to deviate from the assumption of unconditional Ricardian equivalence.<sup>2</sup> They find an impact multiplier of 1.5 for the Euro Area (Table A1) which is substantially higher than the multipliers which Cwik and Wieland obtain on the basis of their NK-based model simulations.

A second weakness of the NK models mentioned above is that they assume a non-binding zero bound on interest rates. Christiano et al. (2009) analyse to which extent the existence of a binding zero-bound for central bank interest rates changes the short-run multiplier effects of an increase in government spending. They find that the difference is very large: while the short-run government spending multiplier for the U.S. in the non-binding case is 0.9 (similar to the one obtained by Cogan et al. (2009)) it increases to 3.9 for the case when the zero bound is binding (Table A1).

Apart from the problems which have just been mentioned, the derivation of the fiscal multiplier based on modern macro-model simulations is subject to further fundamental problems. All models which have been discussed so far assume that the economy is in a stable and determined equilibrium (the so called steady-state) when the simulation of the fiscal packages is implemented. However, usually fiscal stimulus packages are implemented during recessions – a situation when the economy is not in its equilibrium state.

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<sup>1</sup> They use the ECB Area Wide model, the Taylor (1993) model, the so called small IMF model, a model developed by the European Commission (EU-QUEST) and the Smets and Wouters (2003) model.

<sup>2</sup> In OLG models the present generation accumulates debt and leaves future taxes for the repayment of the debt to the next generation. In contrast to unconditional Ricardian equivalence, the issue of government bonds increases net wealth of the present generation and hence consumption.

Related to this is the problem that NK models are mostly solved by linearizing the equation system around their deterministic steady state. This causes difficulties whenever the model is non-linear because in that case even small changes result in large deviations from the steady state which the linearized model is not able to replicate. The higher the non-linearity, the more misleading are the results obtained by the linearized model. The linearized model's performance worsens with increasing distance from the steady-state. Usually this problem is rather small at least when it comes to temporary shocks. However, in the current situation, in which the output losses are extremely large and persistent, the usefulness of this approach has to be disputed.

## Conclusion

Assessing the quantitative impact of the fiscal packages which have been adopted in the current financial crisis is extremely difficult. The studies which have been presented above already show wide differences, both for short-term and for medium-term multipliers. This impression is strengthened if one considers further studies in the field which also reveal highly diverging values for multipliers. This holds for studies that are based on NK models (e.g. Eggertson 2006, Davig and Leeper 2009, IMF 2009), on Neoclassical Growth models (e.g. Leeper, Walker and Yang 2009, Uhlig 2009), or on VAR models (e.g. Blanchard and Perotti 2002, Perotti 2005, Perotti 2006, Pappa 2009, Ramey 2008).

Apart from this uncertainty, an important point to be made is that multipliers which are derived from past experience may not apply in the current financial crisis. There are three main reasons: the zero-bound for monetary policy which played almost no role in the past has become binding in many countries; the standard procedure of calculating multipliers on the assumption of being in an initial equilibrium position is hardly appropriate in the current deep recession; and the standard procedure of linearizing models is questionable as currently there is a substantial deviation from the equilibrium.

Moreover, the models which have been used to empirically assess multiplier effects are usually only able to consider very broad categories of fiscal policy, like a change in overall government spending or a change in broad taxes. An analysis of very specific measures which were part of the stimulus packages, such as the VAT reduction in the UK or the car-scrappping premium in Germany is not possible in these models.

Therefore, empirical estimates of fiscal multiplier effects of stimulus packages in the current situation could be misleading and should be considered with substantial caution in the political decision process.

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Table A1: Multiplier Effects of Fiscal Expansion

Source	Methodology	Country	Fiscal Shock	Impact multiplier	Three-year multiplier
Bernstein and Romer (2009)	"Traditional" Keynesian Model (no forward looking behaviour); interest rate fixed at zero	United States	G	1.05	1.57
			T	0	0.99
Christiano, Eichenbaum and Rebelo (2009)	New-Keynesian simulation with capital accumulation and multiple shocks	United States	G	0.9 (non-binding zero bound) 3.9 (binding zero bound)	n.a.
Cogan, Cwik, Taylor and Wieland (2009)	New Keynesian simulation exercise, based on the model in Smets and Wouter (2007). Interest rate held constant in first year	United States	G	0.96	0.41
van Roye and Wesselbaum (2009)	Embedded OLG model in NK model	Euro Area	G	1.52	0.6

G: increase in government spending; T: reduction of taxes

# Looking Forward: Exiting Unconventional Monetary Policy

*Mewael Tesfaselassie*

## **Abstract**

*It is neither likely nor desirable for central banks to exit from unconventional monetary policies in the near future. However, it is important that central banks develop an exit strategy, evaluate the merits of new and old monetary policy tools and communicate with the public so as to maintain financial stability, support economic growth and minimize future inflationary risks. Central bank communication policy will turn out to be crucial and more challenging than it was before the crisis.*

## **I Introduction**

The near collapse of the world financial system triggered by the current financial crisis has led to unprecedented intervention by major central banks, including conventional and unconventional means.<sup>1</sup> Thanks to this massive intervention, accompanied by huge fiscal stimulus packages, including government bailouts, the worst of the crisis has been averted. Most recent data show some signs of stabilization.

As the financial crisis ends, the recession bottoms out, and recovery begins around the world, central banks are under pressure to work out their exit strategy from various forms of unconventional monetary policy, including quantitative easing, credit easing, and in the case of the ECB, enhanced credit support programs. For instance, recently the OECD said: "There needs to be a clear and credible plan and timeline for phasing out the emergency measures as the recovery takes hold. It is critical to consider these exit strategies now in order to prevent new risks in the years ahead." The reason for such remarks could be the fear of higher inflation. Central banks can not ignore this concern because they can be imbedded into inflation expectations.

In this paper, we discuss issues related to exit strategies by central banks. What considerations receive importance when contemplating an exit strategy? What tools are available when the time comes for tightening monetary policy? Do central banks need new tools to implement monetary policy? The message is that, for an exit strategy to work it is not necessary for central banks to sell private sector securities. They can absorb liquidity by selling government securities, as they have done in the past, or paying higher interest rates on reserves. And if a time comes for these assets to be sold, market conditions must return to normal and liquidity restored. Otherwise, the sell off can trigger disruptions in the financial markets.

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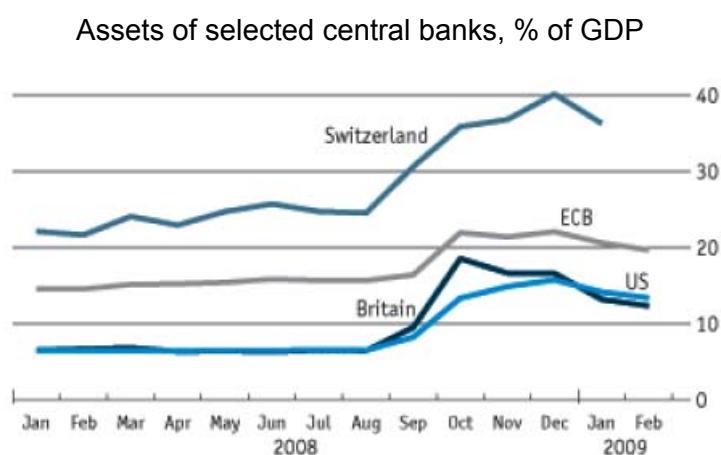
<sup>1</sup> See Tesfaselassie (2009).

## II The Financial Crisis and Unconventional Monetary Policy

Under normal circumstances, conventional monetary policy is characterized by the setting of official interest rates. To achieve a certain target for the official rate, open market operations are conducted using government bonds, the most liquid assets in an economy. And when it comes to ensuring financial stability, policy involves no more than liquidity provision to banks, at a given official rate and provided the borrowing banks are solvent. There is no or little coordination with fiscal policy, with monetary policy chosen as the main stabilization tool.

Conventional monetary policy has worked pretty well in the past, and at the start of the current global financial crisis, when central banks around the world intervened to prop up the liquidity position of financial institutions, it was hoped that it would work this time as well. However, as financial conditions deteriorated further and the prospects for a long and deep global recession became apparent central banks were forced to slash their target rates in aggressive moves over the past year. Currently, the US Fed's target hovers between zero and 0.25 per cent, down from 5.25 at the beginning of the crisis, and the Bank of England's target is at 0.5 per cent, the lowest since it was founded in 1694. The ECB and other central banks have also followed suit.

A major turning point for the conduct of monetary policy occurred when financial markets around the world seized up following the collapse of Lehman Brothers, an investment bank, in September 2008. Faced with the zero lower bound for the official interest rate, central banks resorted to unconventional monetary policy that led to expansion in their balance sheets (see chart). The Fed adopted what its chairman, Ben Bernanke, called **credit easing program**, which involves buying \$ 300 billion of Treasuries, \$ 200 billion in bonds issued by Fannie Mae and Freddie Mac, as well as \$ 1.25 trillion of their mortgage-backed securities. These purchases were meant to drive down long-term interest rates, including mortgage rates. Likewise the Bank of England introduced a **quantitative easing** program of buying up to £ 175 billion of gilts (government bonds) and corporate bonds to boost the money supply.



Source: The Economist.

The ECB has focused on helping banks. The **enhances credit support** program involved (i) extending the maturity of loan facilities from 6 months to 12 months and (ii) buying € 60



billion of private sector debt, in particular covered bonds (which are backed by mortgages and other loans). The ECB also relaxed collateral requirements by accepting less liquid assets as collateral in its lending programs. The Bank of Japan went even further, implementing programs to support stock market prices.

### **III Uncertainty about Economic Outlook and Cautious Approach to Policy Tightening**

According to some recent data, the worst of the financial and economic crisis might be over. Consequently some international bodies have revised their short term and medium term forecasts for the world economy. For instance, in its latest Economic Outlook, the OECD has revised up its projections for the OECD area economies. It said, "The slowdown in OECD economies is reaching bottom following the deepest decline for more than 60 years."<sup>2</sup> The good news is that this is the first in two years that OECD projections for growth for the area as a whole have been revised upwards. At the same time, the latest IMF report for the world economy, says that "economic growth during 2009–10 is now projected to be about half a percentage point higher than forecast by the IMF in April, reaching 2.5 per cent in 2010."<sup>3</sup> In addition, market sentiments about future economic prospects are up. For instance, according to Germany's Ifo economic institute, the "Business Climate Index for industry and trade in Germany rose again in July. They are again less skeptical regarding business developments in the coming half year. It seems that the economy is gaining traction."

However, it is too early for central banks to contemplate an exit strategy because the recovery may turn out to be fragile. Despite revising its projections, the OECD warns that "recovery is likely to be weak and fragile, and the economic and social damage caused by the crisis will be long-lasting." In fact, while the situation in most emerging markets and the US are improving, "the prospects for the euro area this year have worsened and Japan's have changed little since the OECD's previous projections were published in March."

While the recession is ebbing, labor markets are still weak. For instance, the unemployment rate almost has doubled in the US and some European economies. Moreover, the financial crisis has inflicted huge damage on banks' balance sheets. Their continued deleveraging is accompanied by restrictions on new lending, and thus slowing the pace of business recovery. It will take a while before unemployment rate declines to pre-crisis level, financial markets function properly and banks are well capitalized for them to resume lending to support economic growth. As a reflection of these developments, there will be continued downward pressure on inflation over the medium term. Under this sort of circumstance, no central bank would want to exit from its unconventional interventions.

It is also worth mentioning that central banks are still in a vigilant mood because of heightened uncertainty about the future. For instance, as reported by *The Independent* newspaper recently, the Bank of England governor Mervyn King said he was "more uncertain now than ever" over the path of the recovery in the UK. The big question is whether financial

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<sup>2</sup> OECD Economic Outlook No. 85, June 2009.

<sup>3</sup> World Economic Outlook Update, July 8, 2009.

market activities are back to normal; that is, to pre-crisis conditions. This is very important as far as the timing of exit is concerned because financial markets are very crucial for the transmission of monetary policy. Finally, there is uncertainty whether potential output has been affected by the financial crisis. This is a challenge even for hard nosed central banks, which focus on price stability. As is well known, what matters for inflation is the level of output relative to potential.

Under these circumstances, it is very unlikely for central banks to start tightening monetary policy and reversing their unconventional interventions in financial markets. At best, it will take several years before the size and composition of central bank balance sheets return to pre-crisis levels.

#### **IV The Need for an Exit Strategy**

Recently, some central banks, including the Fed and the ECB, have been communicating about the exit strategies from their unconventional programs. It is clear that the articulation of an exit strategy have been forced up on central banks by market participants. The reason is uncertainty regarding the effects of unconventional policy on the economy. Faced with uncertainty, market participants naturally look for guidance about the future path of monetary policy. The concern is driven mainly by uncertainty about future inflation. Such a concern is not unreasonable, given the massive interventions by monetary authorities that led to a sharp rise in their balance sheets. Consider for example the excess reserves of about \$ 800 billion that banks have with the Fed, compared with the typical pre-crisis level of only \$ 10 billion. Whether the inflationary consequences of excess reserves is real or perceived, it should be a matter of great concern to central banks, as inflation expectations could be embedded in long run inflation, making it harder for monetary policy to achieve price stability. Rising inflation expectations are the last thing a credible central banker would like to see.

Thus, even if central banks do not have to start exiting from their unconventional interventions soon, it is important to respond to public concerns by coming up with a credible exit strategy. Exit strategy must be understood as stipulating a roadmap for a tightening of monetary policy when the time is right; in other words, it is about being clear about the end game once the economic environment returns to normal. One must see the strategy as specifying the tools that central banks may use when it is time to tighten monetary policy.

#### **V Monetary Policy Tools**

To foster a common understanding about their exit strategies, central banks need to explain what available tools they have – both conventional as well as unconventional – and how they intend to use them. First and foremost, it should be made clear that when the recovery is solid, financial markets are back to normal and credit risk spreads narrow to a comfortable level and the risk to inflation over the medium term rises, then central banks will start tightening monetary policy. In this case there are no economic constraints in adopting the main tool of conventional monetary policy – open market operations – to push the official

target for interest rates (and thus borrowing costs) up. Central banks can engage in outright sales of (or reverse repurchase agreements on) government bonds, the most liquid and safe financial assets.

Open market operations can be augmented by a new tool – raising the interest rate on banks' reserves at the central bank. The benefit of this action would be to make sure that any excess liquidity in the banking system is stashed back at the central bank, thereby preventing excess credit creation and ultimately inflation. In any case, rising interest rates (official and market rates) will be part of any balance sheet reduction by central banks and raising the reserve rate will have effects beyond banks reserves.<sup>4</sup>

Of course, due to uncertain time lags in the effects of monetary policy, the timing of an intervention is very crucial but hard to know in advance because the intervention will represent a turning point in the monetary policy stance. Any signal given by central banks about the timing of an exit strategy would increase yields on long-term bonds via the term structure. The fear is such a preannouncement could drive up interest rates prematurely, derailing the already fragile recovery.

A thornier issue is the unwinding of the asset purchase programs targeted at the private sector. One can not expect the central banks to start selling these assets before the respective financial markets return to normality. Of course, whether central banks will make a profit or suffer a loss when selling private sector assets is unclear. The reason is that, during the crisis, asset prices tumbled partly due to excesses that priced these same assets above their fundamental values and partly due to market panic accompanied by a flight to quality, especially after the collapse of Lehman Brothers in September 2008. If central banks are patient enough to wait until markets return to normality, supporting higher asset prices, they could make profits out of their asset sales. However, the ultimate goal of any intervention should be to support growth and maintain price stability.

In some sense, calls for an exit strategy are reminiscent of the debate on whether central banks should announce projections of future interest rate.<sup>5</sup> Under normal conditions, central bank decisions are based on output gap and inflation projections. Policy stance is captured by the so-called Taylor rule, which proposes how interest rates should respond to inflation and output gap.

The main objection against publishing interest rate projections of central banks comes from the complexity of decision making by committees. Almost all central banks have committees that make monetary policy decisions. Naturally, there is more disagreement among members regarding the future state of inflation and output gap than the current levels. It is not difficult to imagine that the current extraordinary conditions imposed by the financial crisis mean that besides output gap and inflation, assessing normality of financial markets in the future will also play a key role in monetary policy. This creates more challenges for central bank committee members to agree on the future state of the economy and the appropriate course of action. It could, therefore, be counterproductive to dwell into specifics of the exit strategy, in particular the timing of future interventions to be taken by central banks

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<sup>4</sup> This point seems to be ignored in some policy discussions; see for e.g., Hall and Woodward (2009).

<sup>5</sup> See for e.g., Goodhart (2009).

regarding their unconventional policy. The focus should be on remaining alert to the risks posed by inflation and taking appropriate actions when necessary, including rolling back part of the various support programs.

## VI Coordination with Fiscal Policy

It is important that there is scope for coordination of monetary policy with fiscal policy. For one thing, any increase in interest rates means a higher debt servicing burden for the fiscal authorities. Likewise, if central banks start raising the interest rates they pay on banks' reserves, then reserves will compete with government bonds as investment vehicles. This could drive up government borrowing costs and create tensions with fiscal policy. A possible resolution is to have clearly defined path for fiscal sustainability and let monetary policy focus on fighting inflationary pressures in the economy. This can happen with the full support of governments. They need to understand that the massive fiscal stimulus packages and private sector bailouts can not continue indefinitely. Fiscal authorities should devise their own exit strategies in a way that contributes to the effectiveness of monetary policy in supporting sustainable growth and price stability.

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# **Reforming the International Financial Architecture and Risk Management**

# Lessons from the Global Financial Crisis for Regulators and Supervisors

*Willem H. Buiter*

## Abstract

*This lecture is a tour d’horizon of the financial crisis aimed at extracting lessons for future financial regulation. It combines normative recommendations based on conventional welfare economics with positive assessments of the kind of measures likely to be adopted based on political economy considerations.*

## Introduction

*“Never waste a crisis. It can be turned to joyful transformation”.* This statement is attributed to Rahm Emanuel, US President Barack Obama’s White House Chief of Staff. Other versions are in circulation also, including *“Never waste a good crisis”*, attributed to US Secretary of State Hillary Clinton. The statement actually goes back at least to that fount of cynical wisdom, fifteenth century Florentine writer and statesman Niccolo Machiavelli *“Never waste the opportunities offered by a good crisis.”* Crises offer unrivalled opportunities for accelerated learning.

I believe that the current crisis teaches us two key lessons. The first concerns the role of the state in the financial intermediation process and in the maintenance of financial stability. The second concerns the role of private and public sector incentives in the design of regulation. Unless these lessons are learnt, not only will the current crisis last longer than necessary, but the next big crisis, following the current spectacular example of market failure, will be a crisis of state ‘overreach’ and of government failure. Central planning failed and collapsed spectacularly in Central and Eastern Europe and the former Soviet Union. Stultifying state capitalism, initiative-numbing over-regulation and overambitious social engineering may well be the defining features of the next socio-economic system to fail after the collapse of the Thatcher-Reagan model currently under way – the chimera of self-regulating market capitalism with finance in the driver’s seat – finance as the master of the real economy rather than its servant.

## I The Essence of the Current Crisis

This lecture focuses on the lessons for financial regulators and supervisors of the financial crisis that started around the middle of 2007 and the global contraction in economic activity that resulted from it. It does not address the macroeconomic imbalances and anomalies that were important contributors to both financial crisis and economic slump. The five most important of these will be referenced briefly.

1. The ex-ante global saving glut that resulted from the emergence of the BRICs and the redistribution of global wealth and income towards the Gulf states caused by the rise in oil and gas prices. This depressed long-term global real interest rates to unprecedentedly low levels (see Bernanke (2005)).
2. The extraordinary preference among the nouveaux-riches countries (BRICS and GCC countries) for building up huge foreign exchange reserves (overwhelmingly in US dollars) and for allocating their financial portfolios overwhelmingly towards the safest financial securities, especially US Treasury bonds. This increase in the demand for high-grade, safe financial assets was not met by a matching increase in the supply of safe financial assets. This further depressed long-term risk-free interest rates (see Caballero (2006)). Western banks and investors of all kinds who had target or hurdle rates of return that were no longer achievable by investing in conventional safe instruments, began to scout around for alternative, higher-yielding financial investment opportunities – the search for yield or for ‘pure alpha’, which, as everyone knows, is doomed to failure in the aggregate.
3. Following the entry of China, India, Vietnam and other labour-rich but capital-scarce countries into the global economy, the return to physical capital formation everywhere was lifted significantly. The share of profits rose almost everywhere (see Broadbent and Daly (2009)).
4. Following the collapse of the tech bubble in late 2000 – early 2001, monetary policy in the US and, to a lesser extent also in the Euro Area, was too expansionary for too long starting around 2003, flooding the world with excess liquidity. For reasons not yet well understood, this excess liquidity went primarily into credit growth and asset price booms and bubbles, rather than into consumer price inflation.
5. The unsustainable current account deficit of the US was made to appear sustainable through the willingness of China and many other emerging markets to accumulate large stocks of US dollars, both as official foreign exchange reserves – it helps to be the issuer of the dominant global reserve currency – and for portfolio investment purposes. A fair number of countries that continued to peg to the US dollar (or to shadow the US dollar) experienced excessive domestic liquidity and credit creation, contributing to asset booms and bubbles. China and the GCC countries are notable examples of this dysfunctional new ‘Bretton Woods’ (see Dooley, Folkerts-Landau and Garber (2004)).

These five developments, plus the many regulatory and supervisory failures outlined below, created the Great Moderation, Great Stability or Mervyn King’s ‘Nice Decade’: high and reasonably stable growth, low and reasonably stable inflation, high profits, steadily rising prices of ‘outside’ assets and extraordinarily low risk spreads of all kinds (see Buiter (2007, 2009), King (2004), Bernanke (2004), Lomax (2007)). This Great Stability carried the seeds of its own destruction: as analysed and predicted by Hyman Minsky, stability bred complacency, excessive risk taking and, ultimately, instability (Minsky (1986, 2008)).

The current financial crisis and the economic slump it caused arrived on the European continent about a year after it hit the US and half a year after it impacted the UK. It is the once-in-a-lifetime event that even the younger members of the audience will be boring their grandchildren with in the future. *“You may think the financial turmoil and recession of 2034 is*

*bad, but I can assure you that it is nothing like what we went through in the final years of the first decade of this century: the Great De-financialisation Crisis or the Great Deleveraging.*" It started as a crisis *in* the financial system, became a crisis *of* the financial system and has now reached the point at which most of the western crossborder financial system of the past 30 years has effectively been destroyed and the remnants socialised or put in a state of subsidized limbo.

It is correct but unhelpful to characterise the crisis as the result of greed and excess or as a crisis of capitalism. Greed has always been with us and always will be. Greed can be constrained and need not lead to excess. Excess is just another word for greed combined with wrong incentives and defective regulation and supervision.

The current crisis is not a crisis of 'capitalism', defined as an economic system characterised by private ownership of most of the means of production, distribution and exchange, reliance on the profit motive and self-enrichment (i.e. greed) as the main incentive in economic decisions, and reliance on markets as the main co-ordination mechanism. Capitalism has not always been with us, but is infinitely adaptable and will be with us for a long time to come.

The crisis is a crisis of a specific manifestation of financial capitalism – a largely self-regulating version of the transactions-oriented model of financial intermediation (TOM) over the relationships-oriented model of financial intermediation (ROM). Every real-world financial system is a convex combination of the TOM and the ROM. In the north-Atlantic region, and especially in the USA and the UK, the TOM model became too dominant. This error will be corrected and the world will move towards a greater emphasis on ROM. But financial capitalism will be with us in a new phenotype, for a long time yet.

## **I.1 A De-Financialisation Crisis**

The financial sector is a critical component of a decentralised market economy. It permits the saving decisions of individuals, institutions and other economic entities to be decoupled from their investment decisions. When it performs well, it transfers resources efficiently from financial surplus units to financial deficit units. It facilitates the efficient allocation of the existing stock of financial wealth among competing financial instruments. And it permits risk trading in all its many manifestations. Without the specialised financial intermediaries – banks, pension funds, insurance companies, investment funds, pawn brokers, loan sharks, hedge funds, venture capital funds etc. – and without the steadily expanding range of financial instruments and organised financial markets, our intertemporal allocation of resources and our allocation of resources across states of nature (risk sharing through risk trading) would be much less efficient. Society as a whole and most of its individual citizens and households would be worse off.

But, starting in the 1980s, the financial sector began to proliferate and expand in a way that defied common sense and logic. It boosted its share in employment, value added and corporate profits in most industrial countries. The range and number of financial intermediaries grew rapidly. Financial instruments, products and services multiplied. The remuneration levels in the sector rose to staggering levels. The best brains, from fields like mathematics,



statistics, physics, computer science, engineering, operations research and economics entered the financial sector in growing numbers, sometimes as 'quants', designing new structured products or deriving and programming new asset pricing equations or trading algorithms, sometimes as traders, risk managers or in other pursuits.

As the years passed, financial relationships – even long-term financial relationships like residential mortgages – became increasingly commoditised and were thus made tradable. The traditional bank loan, secured or unsecured, had a borrower and a bank entering into a long-term relationship, in which the lender invested time and resources in acquiring information about the creditworthiness of the borrower and in monitoring the borrower's evolving creditworthiness over the life of the contract. The loan was typically held to maturity by the bank. It was illiquid and non-tradable. This 'originate-and-hold' model was good for gathering information and locating it with the party that needed it – the originator of the loan – which was also the party that held the loan throughout the life of the loan. It was bad for risk-trading and diversifying risk. It also tended to discourage new entrants and innovation. It was a system made for insiders and vulnerable to cronyism.

Then came securitisation – the commoditisation of long-term relationships. Long-term relationships became assets that could be traded. Uncertain future cash flows from mortgages or from business loans were pooled, securities were issued against the pool, the securities were tranching, sliced and diced, enhanced in various ways with guarantees and other insurance features. The resulting asset-backed securities were sometimes used themselves as assets for backing further rounds of securitisation. Banks sold their previously illiquid loans and used the proceeds to make new loans. A 'money machine' had been invented.

What was not well recognised was that securitisation, by breaking the link between, on the one hand, the originator of the loan and the party responsible for monitoring the loan over its life-time, and, on the other hand, the principal in the investing relationship – the owner of the securitised loan – weakens the incentives for collecting information and misplaces whatever information is collected: the information is not bundled with the loans when they are sold for securitisation by the originator. By the time a residential mortgage-backed security (RMBS) backed by US subprime loans was sold by a French hedge fund to a structured investment vehicle (SIV) owned by a medium-sized German industrial bank, neither the buyer nor the seller of the security had any idea as to the quality of the assets backing the security.

There is a simple way to mitigate this particular problem. It is summarised as Recommendation 1. It works by forcing the originator of the loan to hang on to a sizable part of the highest-risk tranche of the securitised assets or cash flows. This keeps alive the incentives to collect information about the creditworthiness of the borrower and to continue to monitor the relationship. The European Commission is proposing a wimpy version of this.<sup>1</sup>

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<sup>1</sup> In May 2009, the European Parliament voted an amendment to the Capital Requirements Directive requiring banks to retain a 5 per cent exposure to securitisations they originate. The European Commission will make a recommendation as to whether this retention level should be increased at the end of the year. This retention requirement is a big step down from the originally suggested 15 per cent. In addition, rather than concentrating the retention requirement on the most junior tranches, the new law includes a range of options, including retaining a portion of each securitised tranche. The retained exposure may not be hedged or sold.

**Recommendation 1.**

*Require the originator of any securitised assets or cash flows to retain a sizeable fraction of the equity tranche or first-loss tranche of the securitised instrument.*

For a while, the rating agencies were viewed as the answer to the uninformed maiden's prayer. They would mitigate or even resolve the asymmetric information problem between the originator and the subsequent investors in the securitised assets. Agencies that hitherto had rated sovereign debt instruments and the debt of large corporates now found themselves in the much more lucrative business of rating complex structured products. This created many problems.

The rating process became deeply conflicted. The rating agencies marketed a range of financial products and services to the same parties they were rating or whose products they were rating. They were paid by the more informed party (the issuer of the securities). A rating agency could even provide advice on how to structure financial products so as to obtain the best rating to the very parties whose products would be rated by that same rating agency. 'Chinese Walls' meant to overcome or at least mitigate these potential conflicts of interest were as effective as the historical Great Wall of China, which neither kept the barbarians out nor the Han Chinese in. They are a fig leaf that simply does not work.

Even if some way had existed to correct or mitigate these conflicts of interest, the even more fundamental problem would remain that the rating agencies knew little or nothing about the underlying assets backing the securitised structures they were rating. They were not merely conflicted – they were completely out of their depth.

Fortunately, there is a rather simple solution to this problem:

**Recommendation 2a.**

*Take the rating agencies out of the regulatory process by eliminating the role of external ratings in the Basel II capital risk-weightings.*

This means no role for the rating agencies in the risk-weightings for bank assets in Pillar I of Basel II, and more generally, no standing in courts of law or in arbitration and conflict resolution disputes for ratings provided by rating agencies. This should not be a surprising recommendation. The public provision of private goods and services is not a good idea. The private provision of public goods and services is likely to be just as bad an idea.

Even if they have no formal quasi-regulatory role, the public goods aspect of the rating process means that the conflict of interest must be minimised. Two proposals come to mind.

**Recommendation 2b.**

*Restrict firms providing ratings to engage in no other commercial activities.*

**Recommendation 2c.**

*Establish a global regulator (or a uniform standard for national regulators) for eligible rating agencies. Require that parties requiring ratings for their securities pay the regulator. The regulator then assigns the rating decision to one of the eligible rating agencies, using a competitive process.*

And finally, to better incentivise rating agencies:

**Recommendation 2d.**

*Pay rating agencies at least in part in the securities they are rating. Require these securities to be retained for some minimal period (say 5 years) and do not allow the exposure to be hedged.*

New securitisations have virtually dried up since the crisis started. This may be an understandable response to the debacle we have experienced, especially in the subprime corner of the US residential mortgage-backed markets, but it is important not to throw the baby out with the bath water. Reasonably homogeneous and simple assets and cash flows can be pooled and securitised in ways that generate both positive private and social returns. To encourage continued sensible securitisation, once the fear factor in the markets abates, I propose that the financial regulator, together with the central bank, generate a positive list of asset-backed securities (ABS), that are acceptable as collateral in central bank repos and at the discount window. Any ABS not on the list is not eligible collateral.

**Recommendation 3.**

*Establish a positive list of Gold-Standard ABS that are acceptable as collateral at the discount window of the central bank and in repos.*

**I.2 How to Deal with Financial Innovation**

The developments in securitisation, other structured products and the proliferation of new financial institutions and instruments accelerated after the tech bubble that burst at the end of 2000. Those who were alarmed at the pace and scope of these changes and wondered how risk could apparently not just be traded but traded out of existence, were dismissed as out-of-touch fuddy-duddies who did not understand the finer points of finance. New instruments and new classes of investors in risky instruments allowed all diversifiable risk to be diversified and all non-diversifiable risk to end up with those both most willing and most able to bear it. If that process resulted in zero risk premia just about everywhere, then so be it.

The enormous rewards earned by individuals and institutions engaged in these activities appeared to confirm the views of the new masters of the universe. Who wants to argue with people who make billions for their firms and take home tens of millions in bonuses? The financial sector instead of being the hand-maiden of the real economy, had become its master. The tail was wagging the dog.

During the years that led up to this crisis, a new complex financial instrument could be cobbled together in the morning by a few quants in London, wrapped in a legal contractual structure during the afternoon in New York City and sold to unsuspecting but greedy investors from small towns just inside the polar circle in Norway the next day.

Is this unbridled and unchecked pace of financial innovation sensible? In the field of pharmacology and medical research, before a new drug can be marketed it is tested for years, first in vitro, then on guinea pigs, then perhaps on a small number of patients with not much to lose, and ultimately on a wider range of human volunteers. Only after many years of testing, vetting and probing does a medical drugs regulator, like the FDA in the US, allow a new drug to be sold to the public, and then often only with a prescription from a licensed physician. This is because drugs as well as potentially beneficial, are also potentially harmful.

The asymmetry of information between the makers and sellers of the drugs, those who purchase them and those who use them is often vast, despite the information explosion on the internet.

I consider new financial products and instruments to be potentially useful but also potentially dangerous, at the micro level or at the macro level. I therefore propose that regulators establish a positive list of permitted financial instruments and products. Anything not on the list is prohibited. New products and instruments must be tested extensively and to the regulator's satisfaction. Universities, independent researchers, consulting companies and others can do the testing. There may be pilot programs testing the products or instruments on real-world players. If and when a new product or instrument is approved, it can go on the approved list. Even then, some instruments can only be sold with the financial equivalent of a prescription from a licensed physician.

**Recommendation 4.**

*The introduction and marketing of new financial products and instruments should be regulated and be subject to testing in ways similar to those used for the regulation and testing of new medical and pharmacological drugs.*

I accept that this will slow down the pace of financial innovation. So be it. It does not stop financial innovation. It makes it more costly and less remunerative. Against that, it reduces the risk of new toxic instruments being distributed, mis-used and abused widely.

### **I.3 Self-Regulation is an Oxymoron**

Regulation is a response to market failure. How anyone could ever conceive of the notion that self-regulation, that is, market discipline and spontaneous collective action by (some of) the market participants, could correct this market failure is a mystery. It is asking the market to correct market failure (see Persaud (2000)). That is an invisible hand too far. If invisible hand failure can be corrected at all, it can be corrected only by the visible fist of the state. Where self-regulation appears to work, as in some professions (lawyers and doctors are examples), it either establishes a monopoly (a super trade union for professionals, whose main purpose is to restrict entry into the profession, to maximise rents for the incumbents) or it is backed up by the credible threat of external regulation by a third party.

In the financial sector and elsewhere, self-regulation stands in relation to regulation the way self-importance stands in relation to importance and self-righteousness to righteousness. It just isn't the same thing at all. The recent revelation of the utter failure of self-regulation in the UK's Houses of Parliament demonstrate that the tendency for self-regulation to lead to graft, corruption and self-dealing is not restricted to the financial sector, or even to the economic sphere in general. Widespread abuse of the expenses claims system and second home allowance in the House of Commons, and Peers for hire in the House of Lords have caused serious damage to parliamentary democracy in the UK. Such perversion of the declared purpose of an institution or agency is especially likely when self-regulation is combined with a lack of transparency. Secrecy and opaqueness prevent civil society, including the media, from obtaining the information required to hold those suspected of abuses to account.

The ideology of self-regulation is a powerful one. Alan Greenspan was an influential proponent. Mr. Greenspan, much to his credit, has the intellectual honesty to admit that he was wrong in his belief that financial institutions and markets could largely be left to regulate themselves. *“I made a mistake in presuming that the self-interest of organisations, specifically banks and others, was such that they were best capable of protecting their own shareholders,”* Greenspan told a Congressional hearing on Thursday, October 23<sup>rd</sup>, 2008. He also admitted to having been wrong in opposing regulating credit default swaps. His testimony also contains the remarkable statement that *“This modern risk management paradigm held sway for decades. The whole intellectual edifice, however, collapsed in the summer of last year because the data inputted into the risk management models generally covered only the past two decades, a period of euphoria.”*

#### **I.4 Human Psychology and Market Psychosis**

Regulation must respect the robust empirical regularity that market participants are prone to bouts of euphoria and irrational exuberance followed by episodes of depression and irrational despondency, Keynes’s ‘animal spirits’ (see Akerlof and Shiller (2009)).<sup>2</sup> So the regulator has to ensure that the system can survive even though market participants will be afflicted at irregular but frequent intervals, by bipolar mood swings. Unless your key markets and systemically important financial institutions are robust to periodic euphoric and suicidal mob behaviour by the key players, your financial system will be vulnerable. The assumption of rationality at the level of the individual, the financial institution or the market is not warranted, indeed dangerous.

#### **I.5 A Crisis of Regulation and Supervision**

Regulation is key to the proper functioning of financial markets. Left to their own devices, with the state present only to enforce contracts and defend property rights, financial markets and institutions are inherently unstable. The reason is that virtually all finance is trade in promises expressed in units of abstract purchasing power – money. Such activities can be scaled, both up and down, far too easily.

If Boeing or Airbus wish to double their productive capacity, it will take them 4 or 5 years to prepare new production sites, create new assembly lines, train new workers etc. If a financial institution wishes to increase the scale of its operations tenfold, it simply shifts the decimal point on place to the right. All that is required are confidence, self-confidence, trust and optimism. Euphoria, mania and herd behaviour are the ultimate accelerators. The process also works in reverse – and in practice even faster. Lack of confidence, mistrust,

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<sup>2</sup> The original quote from Keynes’s *General Theory* is: *“Even apart from the instability due to speculation, there is the instability due to the characteristic of human nature that a large proportion of our positive activities depend on spontaneous optimism rather than mathematical expectations, whether moral or hedonistic or economic. Most, probably, of our decisions to do something positive, the full consequences of which will be drawn out over many days to come, can only be taken as the result of animal spirits – a spontaneous urge to action rather than inaction, and not as the outcome of a weighted average of quantitative benefits multiplied by quantitative probabilities.”* (Keynes (1936), pp. 161–162).

pessimism, fear, panic and herding behaviour can cause the scale of balance sheets to contract spectacularly and transactions volumes to collapse.

The process of scaling up and scaling down, or of leveraging up and deleveraging is not symmetric. Although most of it is a game of redistribution (except for the revaluations of 'outside assets' that are an asset of some economic entity but not a liability of another), the redistribution is not neutral. First, losers and winners generically do not act symmetrically. Second, while there is no such thing as being too solvent for the winners, there is such a thing as being insufficiently solvent, i.e. insolvent, for the losers. Insolvency, default, bankruptcy, liquidation are not just a reshuffling of ownership titles. They can have huge negative real effects. They paralyse production, distribution and exchange. They freeze assets in temporary idleness or unproductive uses. They lead to confusion and uncertainty, and they use up large amounts of real resources in the legal processes associated with it. It has been estimated for the US by Freddie Mac, that in 2007, the repossession of a residential home by the bank following a failure of the home owner to service his mortgage costs on average around \$60,000.00

So finance is important, essential even, but it is dangerous. For some reason this was forgotten during the past three decades, and especially in the last 5 years before the crisis erupted in August 2007.

Regulation should target excessive risk, not institutions, products, services or activities. I accept (up to a point) the principle that people and institutions should be able to gamble freely with their own money, but that regulation may be required to constrain how one gambles with other people's money. That is the application to finance of the Principal-Agent conundrum. Even when just your own money is at stake, the scale of the gamble may be so vast that it has unacceptable external effects. I will deal with the scale problem (too fat to fail) later. The principle that you regulate risk taken with other people's money means that you regulate leverage, which I will define as total (on- and off-book or balance sheet assets and other expected exposure, relative to tangible common equity (capital) or (waving both hands in the air) as the ratio of debt to shareholder equity.

The economic definition of leverage is rather more complex. In the words of the Counterparty Risk Management Group II (2005), *"...leverage exists whenever an entity is exposed to changes in the value of an asset over time without having first disbursed cash equal to the value of that asset at the beginning of the period."* and: *"...the impact of leverage can only be understood by relating the underlying risk in a portfolio to the economic and funding structure of the portfolio as a whole."*

Traditional sources of leverage in this broader sense include borrowing, initial margin (some money up front – used in futures contracts) and no initial margin (no money up front – when exposure is achieved through derivatives).

Except for exposure achieved through derivatives that are traded or can be priced using models, regulators have no hope in heaven or hell of ever establishing the leverage (in the broad sense of exposure to the risk of changes in asset values without having first disbursed money of your own equal to the value of that asset) achieved through any method other than

borrowing. So the regulatory metric will have to be based on the simple total assets to-equity measure – narrow leverage.

I don't think that is a huge loss. The reason people borrow is to take on more risk than equity suppliers are willing and able to fund. Returning to an equity-only funding rule for companies – financial and non-financial – with banks permitted, exceptionally, to issue deposits as well, would be an extreme version of regulating on the basis of narrow leverage – it would be a zero narrow leverage constraint. With limited liability and a massive information advantage of managers over shareholders and shareholders over creditors, any degree of narrow leverage represents an incentive to engage in excessive risk taking (in addition to the incentives for excessive risk taking created by limited liability itself).

Since narrow leverage is the key to excessive risk taking by corporations, regulation on the basis of narrow leverage (Basel I – style) is desirable.

#### **Recommendation 5.**

*Any incorporated entity above a certain threshold size (de minimis non curat lex) and with narrow leverage in excess of X (15, say) will be subject to the same capital requirements regime, liquidity requirements regime, reporting regime and governance regime.*

It does not matter whether the corporate entity is called a commercial bank, universal bank, investment bank, hedge fund, private equity fund, insurance company, pension fund, G-Mac, GE or bicycle shop. The application is universal and uniform across all existing institutions and institutions that may be created in the future. This would do away with regulatory arbitrage as a motive for creating off-balance sheet vehicles.

### **I.6 A Crisis of Globalisation**

Finance is global, banks are global (or about 50 of them are) but regulation is national. Whenever the span of the market and the domain of mobility of financial institutions exceed the span of control of the regulator, you will, sooner or later, have a mess.

Every country wants to have an internationally active financial sector in its jurisdiction. The financial sector is clean, green, employs women as well as men, produces jobs, profits and taxes, gives good parties and is an effective lobbyist with deep pockets that can be used to make political donations. National regulatory standards have been used as an instrument to compete for financial sector business – to attract it from abroad and/or to stop it from leaving for foreign pastures new. Regulatory arbitrage is a game the financial market players know as well as tax arbitrage. The result has been a regulatory race to the bottom – soft-touch regulation rather than light-touch regulation.

The world needs to get serious about regulation. If we continue to let the private financial actors play off one regulator against another, we risk an early repeat of the current crisis. Global regulation would be best, but we will not get it for obvious political reasons. But we can have a single European regulator for crossborder financial institutions.

**Recommendation 6.**

- *Establish a single EU-wide regulator for crossborder banks.*
- *Establish a single EU-wide regulator for other systemically important crossborder financial activities or institutions.*

The national or supranational regulators that remain must work together closely to avoid being arbitrated and played off against each other by the private financial players. The Colleges of national regulators/supervisors that exist for the EU and whose strengthening has been recommended in the de Larosière Report (de Larosière (2009)) will, however, be completely ineffective if they are based on the principle that the home-country regulator (the regulator of the country where the parent bank is registered) takes the lead and is the dominant player in the College for any given crossborder bank.

Home country dominance in the Colleges is a political non-starter. The pain of financial screw-ups is felt primarily in the host country, where the branch or the subsidiary operates. Control has to be located where the pain is felt. Politics demands it.

Much of the current crossborder banking system ought not to survive and will not survive in its current form. Foreign branches will disappear. So will the kinds of foreign subsidiaries we have now: completely controlled by the parent and with little if any ring-fenced capital resources in the jurisdiction of the host-country regulator, with liquidity pooled across the group etc..

We will continue to have foreign subsidiaries of banks, but they will be independently capitalised in the host country, with ring-fenced assets and liquidity and subject to regulation and supervision by the host country regulator.

**Recommendation 7.**

*Where a multinational College of regulators/supervisors is necessary, the host country regulator/supervisor should have the final say.*

Another striking international dimension of the crisis has been the failure of cooperation between national fiscal authorities in recapitalising crossborder banks (Fortis and Dexia come to mind) and the importance of fiscal backup for the central bank. In this second area, the ECB and the Eurosystem appear vulnerable. If the ECB/Eurosystem were to suffer a serious financial loss in its monetary and liquidity operations (as well it may, because it accepts large amounts of risky private securities as collateral in repos and at its various lending facilities), its ability to perform effectively in the pursuit of its price stability mandate and as a source of essential liquidity for the Euro Area banking system would be impaired.

Ultimately, some or all of the shareholders of the ECB/Eurosystem (the national central banks of the 27 EU member states) would have to go to their fiscal authorities (the national Treasuries of the 15 Euro Area member states, or perhaps the national fiscal authorities of all 27 EU member states?) to get the resources for a non-inflationary recapitalisation of the ECB. I consider it essential that there be a clearly worked-out fiscal burden-sharing agreement for recapitalising the ECB/Eurosystem that can be invoked with little or no delay. We are likely to need it before this crisis is over.

I believe that only a supranational European fiscal authority with independent revenue-raising powers and associated borrowing powers can do the job of providing an effective and efficient fiscal back-up for the ECB/Eurosystem. The next-best alternative would be the



creation of an EU fund (containing, say € 3.0 trillion) from which the ECB/Eurosystem could be recapitalised at short notice. If even this is beyond the reach of the EU member states, there should be binding ex-ante agreements on fiscal burden sharing among the 16 or 27 fiscal authorities of the Euro Area or the EU, respectively.

Ex-post agreements on fiscal burden sharing, after a systemically important crossborder bank has reached the point of no return is unlikely to work, if the examples of Fortis (involving Belgium, the Netherlands and Luxembourg) and Dexia (involving Belgium France and Luxembourg) are anything to go by.

#### **Recommendation 8.**

- *A supranational EU fiscal authority is required to provide proper fiscal backup for the ECB/Eurosystem and for recapitalising systemically important crossborder financial institutions.*
- *Failing that, an EU fund from which the ECB/Eurosystem and systemically important crossborder financial institutions can be recapitalised should be created.*
- *Failing that, an ex-ante binding agreement on fiscal burden sharing for the cost of recapitalising the ECB/Eurosystem and systemically important crossborder financial institutions should be agreed.*

### **I.7 A Governance Crisis**

There has been a major failure of corporate governance in the banking and financial sectors. Chief executives have not discharged their fiduciary duties to their companies and their stakeholders. Boards of directors have failed miserably in their fiduciary duties to the shareholders.

The shareholders themselves deserve a fair amount of blame. They got caught up in the euphoria and irrational exuberance of the years 2003–2007. Chuck Prince, the former CEO of Citigroup told the Financial Times on 10 July 2007 (explaining why his company was still making leveraged loans to private equity groups), “*As long as the music is playing, you’ve got to get up and dance,*” ..“*We’re still dancing.*” If he had not agreed to ‘dance’, his board would have fired him. If his board had not done so, there would have been a shareholders’ revolt, and some activist shareholder(s) or private equity fund would have tried to arrange an ABN-AMRO event for his bank.

Why did the CEOs and the boards decide to take the risks they took? One explanation is that they did not understand these risks because they did not understand the instruments they were issuing and trading in, both on their own account and for clients. I suspect this is part of the truth. The issue of regulating financial innovation was addressed in Section I.2 I would just make the following recommendation to further mitigate this problem.

#### **Recommendation 9.**

*All new board members should take a written test, set by the regulator and marked by independent experts, on the products, services and instruments traded and managed by their financial institutions. Existing board members should be tested every other year. Unless a passing grade is achieved, the would-be board member cannot serve. The graded test will be in the public domain.*

Anne Sibert (2009) has expressed the view that an overdose of testosterone may have contributed in a significant way to the excessive risk taking we saw during the boom period in the banking system. There certainly is a lot of circumstantial evidence to suggest that a better gender balance at the top of major financial institutions, and on the trading floors, could act as an automatic financial stabiliser.

## I.8 Financial Sector Remuneration, Bonuses and Golden Parachutes

Another reason banks took excessive risks is that the pay-off function for the CEOs and the other risk-takers are very asymmetric and unrepresentative of social risk. If the gamble pays off, the CEO wins. If it does not, he loses his job in the worst case. When the golden parachute is worth \$100bn, even the pain of losing one's job must be mitigated somewhat. For many of the traders, the reward function is terribly myopic, with bonuses (often most of the total remuneration) based on annual performance rather than on this year's contribution to current *and* long-term future profits.

Some of the asymmetry in the pay-off function and some of this myopia in the remuneration structure cannot be corrected, except through inconceivable measures. Limited liability is one cause of the asymmetric payoff function. Even more important, is the fact that labour (including star traders and executives) cannot commit themselves credibly to stay with their current employer for any extended period of time. This is a reflection of 'free labour', that is, the abolition of slavery and of indentured labour. I don't believe many observers would want to re-introduce these institutions to improve risk-taking in the financial sector.

Because labour is footloose, it is always at risk of being poached by a competitor. This allows those considered to be 'stars' to extract massive rents from the other less mobile stakeholders in the firm – mainly from the shareholders. The problem is especially acute because the market for talent in the financial sector is truly global.

From a financial stability perspective, it is irrelevant whether remuneration in the financial sector is *excessive*. That is a political and social issue. What matters for financial stability is whether the remuneration structure provides the correct incentives and signals for risk taking. It did not. What can be done? Knee-jerk proposals like banning bonuses or limiting them to a given share of the total compensation package make no sense. Bonuses are performance-related pay. Performance-related pay will in general be a necessary component of an efficient employment contract. The problem has been that bonuses were related to the wrong performance indicators.

Responsibility for addressing this lies first and foremost with the shareholders and the board of directors. This is primarily a governance problem. They should try to find ways to link remuneration to longer-term profitability. There are many proposals for improving financial sector performance-related employment contracts.<sup>3</sup>

Addressing the incentive structure of banks and other financial institutions is also a job for the regulator, because the internal incentive structure of a bank is as much a driver of the operational risk, market risk, credit risk and reputational risk of the bank as its asset

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<sup>3</sup> An example is the 'bonus-malus' system introduced this year by UBS.

allocation or its funding and liquidity strategies. The problem is that understanding the effect of a heterogeneous collection of individual employment contracts on the risk-return performance of the whole bank is a complex task that may well be beyond the ability of the regulator. How much detailed information, modelling of interactions, real option pricing and micro-management will the regulator have to engage in for him to be able to figure out the optimal incremental capital requirement penalty that properly reflects the contribution to risk of the remuneration structure of the bank's senior executives, board members and key personnel?

Capping remuneration or punitive taxation should not be done on a sector-specific basis. Even if such measures are applied on an economy-wide basis, they are likely do more to feed the thirst for blood of populist media than to improve the future risk management of banks.

The only straightforward measure to limit the ability of board and CEOs to collude in extracting excessive remuneration from the firm is by requiring the shareholders to have binding votes on the remuneration packages of top managers and top earners.

**Recommendation 10.**

*Shareholders should have annual binding and separate votes on each of the individual total compensation packages of the five top managers of the company and of the five top earners. When a remuneration package is rejected the shareholders, the default remuneration package cannot exceed that of the head of government.*

## **I.9 A Balance Sheet Crisis**

To a financial macroeconomist like myself, the crisis is first and foremost a balance sheet crisis. Financial sector balance sheets throughout the north Atlantic region got out of control earlier in the decade. The *size* of the balance sheet (measured for instance as the ratio of assets to annual value added) of the financial sector exploded. Leverage (as measured by the ratio of assets to shareholder equity) also exploded. *Public information* about assets and liabilities held on these balance sheets and about other forms of off-balance sheet exposure became increasingly incomplete and inadequate. A proliferation of complex, opaque and often incomprehensible instruments, frequently held by non-transparent, unregulated financial institutions (hedge funds, SIVs, Conduits and a wide range of other off-balance-sheet vehicles) created a situation in which no-one – not the designers of the instruments, not the banks and other institutions marketing them, not the regulators and supervisors, not the investors in these complex structured instruments – understood the true nature of their exposure and of the risk they were taking.

## **I.10 Transparency and Mark-to-Market**

An important contribution to controlling excesses, including managerial dissimulation and deception about the value of opaque assets, has been the drive by the International Accounting Standards Board (IASB) toward the global adoption of fair value accounting. In practice this means using the market price where something resembling a liquid market price is available.

The IASB made a huge mistake when it caved in to political pressure and allowed fair value principles to be significantly undermined by accepting a ‘clarification’ of US fair value standards (set by the US Financial Accounting Standards Board, a body overseen by that incubus of moral hazard, the SEC), that allow assets to be reclassified, supposedly under rare circumstances (as when asset markets are illiquid), so they escape fair value principles.

The current rules have three categories of assets. Assets held for ‘trading’ are valued at market prices and these valuations are reflected through the profit and loss account. Assets ‘available for sale’ are still valued at market prices, but these valuations are reflected only in the balance sheet, not through the profit and loss account. Moving assets from the first to the second category allowed Deutsche Bank to turn what would have been a reported loss into a reported profit. Schroders performed similar accounting miracles. The third category, ‘held for investment’ escapes fair value altogether. The new IASB rules allow securities (but not derivatives like CDS) to be reclassified into the ‘held for investment’ category under certain circumstances.

I think this is a dreadful decision. The ‘held for investment’ category should be just that. A security should be designated as ‘held for investment’ (which should be renamed ‘held to maturity’, realising that maturity can be at infinity) at the moment it is acquired. It should not be possible to move a security into this category after it has been acquired or out of this category before it matures. The ‘held for trading’ and ‘available for sale’ categories should be merged. I don’t really care whether the valuations go into the profit and loss account or not, but there should be no capacity to shift between the two.

The only reason to have three categories rather than just the two I propose, and the only reason for creating a mechanism that permits the reclassification of assets, is the wish to engage in manipulation and deception. The weakening of mark-to-market accounting and reporting is a huge step backwards and a serious threat to long-term financial stability, because financial institutions will once again be given more scope for hiding disasters on their balance sheets.

### **I.11 Mark-to-Market and Procyclicality**

Mark-to-market valuation, reporting and accounting is pro-cyclical even when markets are liquid. When asset markets are illiquid, it can be severely pro-cyclical and even contribute to a perverse positive feedback loop – falling funding liquidity leads to fire-sale asset liquidations in depressed and illiquid markets, which leads to mark-to-market losses for other holders of similar assets, which leads to margin calls or to the need to post additional collateral, which lead to further asset liquidations and further declines in funding liquidity.

The solution is not to suspend market valuation and to substitute managerial discretion for it. The solution is to stick to fair value accounting but to use regulatory forbearance as regards the actions required to restore regulatory capital ratios, leverage ratios or liquidity ratios that may be distorted by distressed asset fire sales in illiquid markets.

#### **Recommendation 11.**

*Stick to (or return to) strict fair value accounting, including mark-to-market whenever possible. Do not permit reclassification of assets between liquidity categories. Use regulatory*

*forbearance as regards capital ratios, leverage ratios or liquidity ratios to address the undesirable pro-cyclical side effects of mark-to-market through poorly designed regulatory requirements.*

## **I.12 Procyclicality of Micro-Prudential Regulation**

One of the key lessons of the crisis thus far concerns unintended consequences for systemic financial stability and macroeconomic stability of micro-prudential measures that seem to make perfect sense at the level of individual economic entities. The pro-cyclical effect of mark-to-market accounting and reporting have already been referred to. Rating agency ratings are procyclical and, both through their effect on regulatory capital requirements and through the market's own response to changes in ratings, have procyclical effects on bank lending. The reliance of the Basel II risk-weightings on internal models of the banks is also procyclical. In addition, the use of these models is not *de facto* verifiable by the regulator. Model-based risk weightings are therefore effectively private information of the banks, and can be manipulated to serve the private interests of those who control the bank. Constant regulatory capital ratios also have pro-cyclical effects, as declining asset valuations depress the actual capital ratios and force defensive measures on the banks.

These undesirable macro-prudential consequences of micro-prudential regulations can be mitigated but not eliminated.

### **Recommendation 12.**

- *Mitigate the pro-cyclical effect of external credit ratings in Basel II by eliminating the role of the rating agencies in Basel II.*
- *Mitigate the pro-cyclical of internal risk models in Basel II by precluding the use of information based on internal bank models or on any other private information when calculating regulatory capital requirements.*
- *Mitigate the pro-cyclical effect in Basel II of constant regulatory capital ratios by having counter-cyclical regulatory capital requirements.*

The last of these can be implemented either at the discretion of the macro-prudential regulator (the central bank) or in a decentralised manner in the way proposed by e.g. Charles Goodhart and Avinash Persaud (2008), who propose adding to the normal Basel II ratio a supplement that increases with the average growth rate of the balance sheet of the bank over the past three years.

## **II Banking and Finance for the Rest of this Century**

It is clearly essential that the authorities be able to insulate the systemically important parts of the financial system from the rest. What is systemically important? The list of systemically important arrangements and institutions includes the retail payment system, the retail clearing and settlement system and deposit banking. The wholesale payment, clearing and settlement system is part of it. So are the securities clearing and settlement system and the provision of custodial services intimately connected with the securities clearing and settle-

ment process. This list will change in the future, as the financial system innovates and evolves.

## **II.1 Public Utility Banking**

'Public utility banking' with just deposits on the liability side and with reserves, sovereign debt instruments and bank loans (secured and unsecured) on the asset side would take care of the retail payment, clearing and settlement system and deposit banking. Such narrow banking would represent an extreme version of Glass-Steagall approach. There would be deposit insurance and, should that fail, a lender of last resort and market maker of last resort. These tightly regulated institutions would not be able to engage in other banking and financial activities, and other financial institutions would not be able to take deposits.

These public utility banks could be publicly owned or privately owned, or could be managed through mutual arrangements (like the UK building societies or the Dutch Rabo Bank) or through cooperatives. Where the public utility bank is publicly owned, I would hope its management would be contracted out to a properly incentivised private concessionaire. Civil servants make lousy loan officers.

From the horror stories that have come out of at least five of the seven German Landesbanken, it is clear that public ownership and control is no guarantee for sound banking. They were brought down by two developments. The old and familiar problem was that they were pushed by cash-strapped Länder governments to engage in politically popular but financially non-viable regional projects. The second problem was that, far from remaining narrow banks, these Landesbanken engaged, sometimes through off-balance sheet vehicles, in increasingly reckless investment bank behaviour, including investing in financial instruments they did not understand.

## **II.2 Centralised Wholesale and Securities Payment, Clearing and Settlement Platforms**

We cannot have essential financial infrastructure services provided by unregulated profit-seeking private enterprises that may be engaged in a variety of other financial activities as well. The entities that provide these services have to be treated and regulated as public utilities. This includes the wholesale (interbank) payments, clearing and settlement systems (TARGET, in the Euro Area). It also includes the securities clearing and settlement systems and the custodial services essential to their performance (TARGET2 Securities in the Euro Area).

If these services are privately provided, the firms engaged in their provision should be strictly regulated and restricted to perform just the regulated tasks. There should be also redundancy: for operational security reasons, there should be at least two physically, administratively and legally separate and independent providers of the entire suite of systemically essential services. There is no reason why the central bank would provide any of these services, although it could. Whatever entity provides these services should have open-ended and uncapped access to central bank liquidity, guaranteed by the Treasury.

What constitutes essential financial infrastructure services will change over time. In view of the problems created by the opaque over-the-counter markets in certain kinds of derivatives (e.g. credit default swaps (CDS)), centralized trading platforms, perhaps with a market maker of last resort, and with transparent clearing, settlement and custodial services-providing rules and arrangements will have to be created for many of these derivatives. These platforms should be viewed and regulated as public utilities.

### **II.3 Investment Banking**

All other activities currently undertaken by the banking sector and the shadow banking sector will be called investment banking activities. It might seem that, since the products, services and instruments created exclusively by the investment banking sector are not systemically important, these investment banks could be left to play by the normal rules of the market game, with little if any regulation. This is not the case because of a well-known problem: the 'too large to fail', 'too interconnected to fail', 'too complex to fail' and 'too international' to fail problem.

#### **Too big, to interconnected, to complex and to international to fail**

The real issue is size. Even if a financial business is highly interconnected, that is, if its total exposure to the rest of the world and the exposure of the rest of the world to it, are complex and far-reaching – the crossborder financial Leontief matrix is full and non-decomposable – it can still be allowed to fail if the total amounts involved are small. A complex but small business is no threat to systemic stability; neither is a highly international but small business. Size is the core of the problem; the other dimensions (interconnectedness, complexity and international linkages) only matter (and indeed worsen the instability problem) if the institution in question is big. So how do we prevent businesses from becoming too large to fail?

Strict competition policy is one way. It is therefore most regrettable that in the UK, competition among banks in the high street is going to be materially diminished by the acquisition of HBOS by Lloyds-TSB (see Vickers (2008)). Generally, the immediate conquest of the crisis on the banking sector is to increase concentration: there will be fewer and larger banks.

The other way to limit size is to tax size. This can be done through capital requirements that are progressive in the size of the business (as measured by value added, the size of the balance sheet or some other metric). Such measures for preventing the New Darwinism of the survival of the fittest and the best connected should be distinguished from regulatory interventions based on the narrow leverage ratio aimed at regulating risk (regardless of size, except for a *de minimis* lower limit).

What would be the private and social costs of taxing size in banking and other financial businesses? Why do banks and other financial enterprises become too big to fail? I believe there are four reasons

- (1) The exploitation of monopoly power (market power).
- (2) The exploitation of 'economies of conflict of interest'.

- (3) The exploitation of economies of scale and economies of scope.
- (4) The pursuit of the benefits of subsidized liquidity and solvency support from the state: being too big, too interconnected, too complex and too international to fail is a major business asset, especially if you can ‘capture’ the supervisors and regulators who are meant to look after the public interest in return for providing you with this financial safety net.

I hold the view that the universal banks that dominate the European banking scene and are now also dominant in the USA, exist for three of the four reasons outlined above – all but the third. First, the exploitation of market power (monopoly). Second, because it is privately rational to hang as many financial activities as possible on the government-guaranteed narrow-banking Christmas tree. Economies of scale and scope have long been exhausted and diseconomies of span of control compete with lack of focus as the main drivers of organisational inefficiency. But by bundling the systemically important activities with the not systemically important activities, the entire organisation falls under the government’s bail-out umbrella. It is time to see a lot more and a lot smaller banks.

For the time being, banks that are too big, too interconnected, too complex or too international to fail are bound to be with us. For those I would support a proposal made by Raghuram Rajan and by Richard Herring, that such institutions be required to develop a bankruptcy contingency plan that would lay out how they would resolve themselves quickly and efficiently. Such a “shelf bankruptcy” plan would require banks to track and document their exposures much more carefully than they do now and in a timely manner. An insolvency plan is just as vital as a business plan for a financial institution in the too big to fail category.

#### **Recommendation 13.**

- *Legally and institutionally, unbundle narrow banking and investment banking (Glass Steagall-on-steroids).*
- *Legally and institutionally prevent both narrow banks and investment banks from engaging in activities that present manifest potential conflicts of interest. This means no more universal banks and similar financial supermarkets.*
- *Limit the size of all banks by making regulatory capital ratios an increasing function of bank size.*
- *Enforce competition policy aggressively in the banking sector.*
- *Require any remaining systemically important banks to produce a detailed annual bankruptcy contingency plan.*

### **III The Role of Government in the Financial Sector**

Market failure or distributional concerns are necessary but not sufficient or indeed necessary conditions for government involvement or intervention in the economy. There also has to be reason to believe that government involvement will make things better rather than worse. From a normative point of view, at least one of the following three necessary conditions for successful government intervention must be satisfied. (1) The government can do things the private sector cannot do (different opportunity sets); (2) the government has information that



the private sector does not have (different information sets); (3) the government has different objectives from the private sector (different motivation).

I will rule out better information as an argument for government intervention. I have never seen evidence of this in the field of financial economics (or elsewhere). One reason governments can have different objectives and motivations from those of private market participants ('greed' and 'fear') is 'osmosis' or socialisation: being part of the government changes people's motivations or causes them to adopt 'external objectives' like the general interest, as their own. It can also have different objectives because of the *selection* mechanisms used to fill political and other government positions (elections, coups, appointments), which do not select people randomly.

I believe both 'osmosis' and 'selection' can account for government behaviour that is different from what would be expected from a regular private market participant entrusted with the levers of power. This is, however, a two-edged sword. At times governments and government bureaucracies may act like the benevolent and competent social welfare maximisers of normative public finance theory. Rather more often they act like the self-interested, myopic vote maximisers or rent extractors of positive public choice theory.

My own fundamental views on both normative and positive social science are rooted in the 'Weltanschauung' and ethics I inherited from my parents, which was a convex combination of social democracy and protestant Christianity. After 34 years as a social scientist, I have concluded that social democrats have a lot to learn from Calvinists as regards understanding how the world works.

Perhaps the greatest weakness of social democracy, indeed of most varieties of socialism, is its naive faith in the benevolence and competence of the government and of the state bureaucracies. As a positive theory of how governments actually behave, it contradicts much of what we know, whether through careful study or through casual observation, about human motivation, small group behaviour and political selection. To be an optimist is wonderful. To be naive is dangerous. The Heidelberg Catechism's view of human nature as "... *wholly incapable of doing any good, and inclined to all wickedness ...*" is a useful antidote to excessive faith in the '*maakbaarheid*' or 'makeability' of society.

The government can, however, do things private entities cannot do. The government runs or manages the state, and the state has the monopoly of the legitimate use of coercion or force. It can mandate and compel, prescribe and proscribe behaviour. Specifically, it has the power to tax (including the power to declare some of its liabilities to be legal tender) and it has the power to regulate and to provide binding mandates. So you need the government when unusually deep pockets are needed (which require the power to tax and/or to issue legal tender) or when mandating or compulsion are required: certain forms of private sector behaviour that would normally (voluntarily) occur must be proscribed (an example is dividend payments by banks that are in receipt of government financial support), or certain kinds of behaviour private agents would not voluntarily engage in must be mandated (an example is lending by banks to SMEs in the current credit crunch).

Governments have no comparative advantage taking part in activities that are best organised through markets under normal circumstances. Governments make dreadful bankers,

as the history of central and eastern Europe and the current performance of the German Landesbanken demonstrates. If they have to get involved because of threatening disaster and extraordinary circumstances, they should plan their exit the day they go in.

So where should we expect to see the government act more forcefully in the future?

### **III.1 An SRR with PCA and SEI**

Every systemically important bank or other financial institution should be subject to a special resolution regime (SRR) with structured early intervention (SEI) and if that fails to resolve the problems, prompt corrective action (PCA). An SRR is a preventive or anticipatory insolvency regime – a Chapter 11 ‘lite’. Under the SRR a bank can be put into conservatorship by the regulator before it has become balance-sheet insolvent or liquidity-insolvent. So there is a third form of insolvency for systemically important financial institutions: regulatory insolvency.

The conservator appointed by the regulator can fire the management and the board. He can, for the duration of the conservatorship, suspend the voting rights and other decision rights of the shareholders and the unsecured creditors. He has full executive authority. He can ring-fence business units, financial instruments and activities. For instance, for a prime broker or broker-dealer, he can ring-fence the securities clearing, settlement and custodial activities, including the systemically important counterparty role of prime brokers in the tripartite repo markets. He can transfer the deposits of the bank to another bank, sell assets, mandate a partial or complete debt-for-equity swap, break up the institution or order its liquidation.

If there had been an SRR for investment banks in the US, the Lehman disaster would not have happened, because it would have been possible to ring-fence the systemically important bits. Bear Stearns likewise could have been resolved without reducing competition in the banking sector and without the need to engage in quasi-fiscal window-dressing activities by the central bank.

#### **Recommendation 14.**

*Create a Special Resolution Regime with Structured Early Intervention and Prompt Corrective Action for all systemically important financial institutions.*

### **III.2 Mandating Capital Raising and Capital Injections**

Banks don't like to be told to raise additional capital. When the amount of capital that is appropriate from the perspective of the private bank itself, and perhaps also from the perspective of the micro-prudential regulator, is insufficient from a financial stability or macro-prudential perspective, the macro-prudential regulator has to be able to force the bank to raise, within a given time span, the amount of capital the authorities deem appropriate.

If the required capital cannot be raised privately and if the authorities deem the institution to be systemically important, the authorities must be able to mandate that the bank accept an injection of public capital. The terms of the government capital injection (what kind of equity, what interest rate in the case of preference shares, restrictions on dividend payments etc.) are up to the government.

### **III.3 Getting Rid of Failing Boards and Managements**

Any institution that gets itself into a such a bind that an injection of government capital is deemed necessary by the authorities, has failed. It should be axiomatic and automatic that the senior management and the board of such an institution resign immediately, without any entitlement to a golden parachute.

### **III.4 Mandating Lending**

Banks that don't lend to the real economy are socially useless institutions. The extension of new credit facilities and new loans by banks to the non-financial business sector is collapsing. Ongoing credit extension is mainly the drawing down of pre-existing facilities and commitments. By guaranteeing certain kinds of bank lending, governments can address the failure of banks to lend. Ideally, this would involve some continued risk-sharing by the banks, otherwise any incentives for the bank to manage risk prudently will be killed. Government guarantees should be priced properly and include an element of co-insurance.

Banks that don't lend voluntarily even with reasonable government guarantees should be mandated to lend. This should be done with the smallest possible degree of micromanagement – governments and civil servants make lousy loan officers.

One approach would be to give all existing borrowers whose credit arrangements expire during the next year, the option to roll over the existing arrangement for another year on the same terms as the original arrangement. This would be a form of debt-standstill. It would do nothing for new borrowers, of course, but it would have the advantage of not forcing the bank to lend in situations where the demand for credit is the binding constraint rather than the supply of credit.

Another proposal is for the government to mandate a given overall volume of bank lending to a broadly defined sector (non-financial SMEs, say). Any shortfall from the target is paid to the government as a tax. This only makes sense if the target not set so high that it exceeds the demand for credit at an interest rate that covers the banks' cost of funds.

It is possible that mandating (forcing) banks to lend could lead to legal complications unless the state is the only shareholder. In that case, full nationalisation of the banking sector may be necessary, at least for the duration of the crisis.

## **IV Further Tips for Governments and Regulators**

### **IV.1 Don't Expect people to Tell the Truth**

Most economic players treat truth telling as a tactical or strategic option, not as something you do regardless of whether it is in your short-term or long-term private interest – because it is right. I leave it as a subject for discussion whether such behaviour is amoral or immoral. It is common, both in the private sector and in the public sector, including the government: lying is ubiquitous. If you are lucky you may get nothing but the truth; the whole truth is never revealed. This suggests that the Revelation Principle may not be terribly useful as a descriptive device. It also has important implication for regulators:

**Recommendation 15.**

*Don't regulate on the basis of information that is private to the regulated entity. Only use independently verifiable information.*

**IV.2 Don't Overburden the Regulator and Don't Expect too Much of Him**

Regulators are not Platonic guardians – omniscient, omnipotent and benevolent. They know rather little, have limited capabilities and are motivated at best only in part by the public interest and the common good, as it is defined in the laws or decrees establishing them.

The fact that the financial regulator can never have accurate information about a modern universal bank's or investment bank's balance sheet, its exposure to off -balance sheet vehicles or its internal incentive structure, means that proposals for regulatory reform that rely on such information are pointless. Proposals for making regulatory capital requirements dependent on the internal incentive structure of the bank are an example of pointless regulation.

Regulatory capture is a fact of life. Regulators everywhere and at all times have been at risk of being captured by the industry or private interest they are meant to regulate in the public interest. This risk has often materialised. Such capture need not take the form of bribery, blackmail, corruption or deliberate perversion of the regulator's mandate. It is more likely to occur through what I have called *cognitive regulatory capture*, the process through which those in charge of the relevant state entity internalise and adopt, as if by osmosis, the objectives, interests, fears, hopes and perception of reality of the vested sectional interest they are meant to regulate.

Our regulators must know how the financial sector thinks; they must understand its moods and mood swings, but they have to keep their distance, emotionally and intellectually. They can smoke it, as long as they don't inhale. That's not an easy task. Expect failures. The American SEC is a spectacular example of regulatory capture. While less easily manipulated and pushed around than the SEC, the Fed is also an example of cognitive regulatory capture.

**V Limit Your Ambitions: The Inconsistent Quartet**

For the first time since the German default of 1948, a number of countries in the north Atlantic region (North America and Western Europe) face a non-negligible risk of sovereign default. The main driver is their governments' *de facto* or *de jure* underwriting of the balance sheets of their banking sectors and, in some cases, of a range of non-bank financial and non-financial institutions deemed too big to fail. Unfortunately, in a number of cases, the aggregate of the institutions deemed too large, too interconnected or too politically connected to fail may also be too large to save. The solvency gap of the private institutions the authorities wish to save may exceed the fiscal spare capacity of the sovereign (see Buiter and Sibert (2008)).

The clearest example of the 'too large to save' problem is Iceland. Iceland's government did not have the fiscal resources to bail out their largest three internationally active banks.

The outcome was that all banks went into insolvency. The government then nationalised some key domestic parts of the three banks out of the insolvency regime. It decided (under massive pressure from the British, Dutch and German governments) to honour Iceland's deposit guarantees and left the rest of the unsecured debt to be resolved through the insolvency process.

Other countries face the problem of the inconsistent quartet – (1) a small open economy; (2) a large internationally exposed banking sector; (3) a national currency that is not a major international reserve currency; and (4) limited fiscal capacity. They include Switzerland, Sweden, Denmark and the UK. Ireland, the Netherlands, Belgium and Luxembourg have all but the third of these characteristics.

There can be little doubt that, faced with the choice between sovereign default and an unexpected burst of inflation to reduce the real value of the government's domestic-currency-denominated debt, many countries' governments would choose inflation. They would instruct their central banks to produce the required inflation. I expect the US (where the Fed has little operational independence) and the UK (where the operational independence of the Bank of England can be suspended instantaneously by the Chancellor invoking the Reserve Powers of the Treasury, and ended through a simple amendment of the Bank of England 98 Act) to fall into this category of countries whose governments would choose inflation before sovereign default. They have, after all, done so before.

De-facto default through unexpected inflation is not an option in the Euro Area. The independence of the ECB is embedded in the Treaties. A unanimous decision by all member states is required to change the Treaty. Given this operational independence 'on steroids' of the ECB, it is unlikely that any Euro Area national government or coalition of governments could bully the ECB into engaging in a burst of public-debt-busting unanticipated inflation. Since the ECB cannot be made to bend, could this create a risk that the euro area would burst? The risk is minimal, because there are no debt-eroding benefits from a high domestic rate of inflation for a country leaving the Euro Area: the existing stock of debt would remain euro-denominated. Redenominating the debt into 'new lira' or 'new drachma' would constitute an act of default – the exact contingency that leaving the Euro Area was intended to forestall.

So the final lesson is that the ability of the state to support the banking sector and the rest of the financial system is limited by its capacity to extract resources from reluctant tax payers and its ability to impose public spending cuts against the opposition of vociferous beneficiaries from existing spending programmes. Isn't political economy a beautiful subject?

## **Conclusion**

Reaction follows action in politics as in physics. There inevitable result of the financial collapse and deep contraction we are going through now will be at least a decade of over-regulation in the financial sector. Popular outrage at the excesses that were permitted to range unchecked during the era of self-regulation and light-touch regulation will have to be

assuaged. The 'pound of flesh' demanded by the body politic is likely to involve a fair amount of 'if it moves, stop it' type regulation. That is regrettable but politically unavoidable.

The public no longer trust the captains of finance and the politicians and appointed official that either actively contributed to the excesses (like Larry Summers and Timothy Geithner during the Clinton administration or Gordon Brown in the UK) or failed to warn or protest sufficiently vigorously when these excesses materialised on their watch (Ben Bernanke (in public service since September 2002), Mervyn King (at the Bank of England since March 1991)) and most other leading central bankers). Neither the public nor the new vintage of politicians that will take over is likely to listen to those who either actively contributed to the disaster or failed to foresee it or warn against it.

Over-regulation will harm the dynamism of the economy. How serious the damage will be is not clear. What is clear is that a lot more regulation, and regulation different from what we have had in the past, will be required to reduce the likelihood of future systemic failures and to better align private and public interests. The fifteen recommendations made in this lecture would represent a useful first step for financial sector regulation. As long as they are implemented, I am not too worried about whatever over-regulation may be imposed on top of them.

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# IMF Reform in the Aftermath of the Global Financial Crisis: Let the IMF Speak Truth to Power

Matthias Lücke

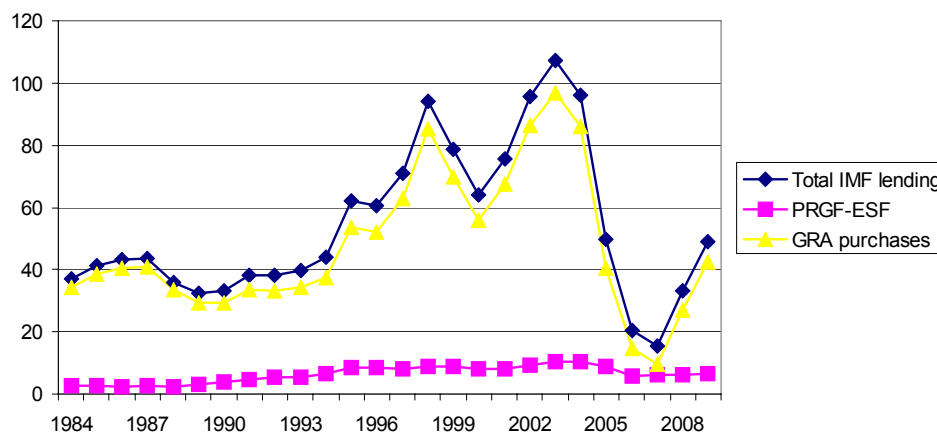
## Abstract

*This paper argues for an ambitious but realistic approach to defining the future role of the International Monetary Fund (IMF). The IMF is the only international institution with the analytical capacity and political standing to hold all national governments accountable to the same standards for macroeconomic policies and financial sector regulation. By focusing on this task, the IMF will make a crucial contribution to the international coordination of macroeconomic and financial market policies and to preventing future financial crises. This paper makes specific proposals for empowering the IMF for this role. The IMF's independence from individual member state governments should be strengthened and its governance structure should be reformed to enhance ownership by all stakeholders.*

Many proposals for a reform of the global financial architecture place the International Monetary Fund (IMF) at their center – as lender of last resort, supplier of authoritative economic analysis, or supervisor of global financial markets. Already, in recent months, the IMF has extended historically large loans to help prevent the imminent collapse of several troubled economies, from Iceland to Latvia, Hungary, and Ukraine.

This renewed interest in the IMF and the sharp increase in IMF lending since 2007 mark an astonishing reversal in the IMF's fortunes. Less than two years ago, IMF lending had declined to a historic low (Figure 1) and professional staff were offered golden handshakes to leave the IMF. Many observers expected the IMF to become a niche provider of modest, medium-term loans and technical assistance for macroeconomic policies in developing countries, especially under its Poverty Reduction and Growth Facility (PRGF – see Figure 1). Balance of payments crises in emerging economies, which had accounted for most of the IMF's public visibility in the past, seemed to be gone for good.

Figure 1: IMF Credit Outstanding, 1984–2009 (Billion US\$; Year-end; 2009 Figure is for May 31)



Source: IMF – <http://www.imf.org/external/np/fin/tad/extcred1.aspx> (download: August 20, 2009).



It is now clear that reports of the death of balance of payments crises or, for that matter, of the IMF were greatly exaggerated (to paraphrase Mark Twain). Nevertheless, many current proposals to expand the IMF mandate, for example, by having the IMF supervise global financial markets, appear unrealistic. This article argues instead for a more modest approach. The IMF appears to be the only international institution that has the analytical capacity and political standing (potentially at least) to hold all national governments accountable to the same benchmarks and standards for macroeconomic policies and financial market regulation. Thus the IMF has a crucial role to play in the international coordination of macroeconomic and financial market policies that will be key to preventing global financial crises in the future. Therefore, the current momentum should be used to strengthen the stature of the IMF, make it more independent from member state governments, and achieve substantial but realistic reforms:

- recalibrate voting power to give all members, including borrowers, an effective say in decisions by the IMF Executive Board;
- lower the highest threshold for qualified majority voting such that no single country enjoys veto power over important decisions;
- ensure that new sources of loanable resources do not create political liabilities for IMF governance;
- provide dependable funding specifically for the IMF's monitoring and surveillance activities whose importance will grow;
- promote a culture of comprehensive public debate on IMF policy documents and country reports, involving governments as well as civil society, to ensure that findings are taken seriously (if not literally) by all member states;
- continue to apply policy conditionality to IMF loans to ensure that necessary economic reforms supported by loans are undertaken even when they are politically difficult.

### **The Future Mission of the IMF: Speak Truth to Power**

Historically, the mission of the IMF has evolved from regulating the Bretton Woods System of fixed exchange rates to providing external financing to emerging and developing economies with balance of payments needs. Along the way, the IMF has developed considerable expertise in the surveillance of national macroeconomic policies (for example, through the Article IV consultation process), global macroeconomic forecasting (World and Regional Economic Outlooks), and monitoring of international financial markets (Global Financial Stability Report). Besides, the IMF has developed standards for data provision and transparency in monetary, financial and fiscal policies and provides technical assistance to developing countries on macroeconomic policies and financial market regulation.

Given this history, how can the IMF contribute to preventing global financial crises in the future? And would another adjustment of the IMF mandate represent mere "mission creep" by an organization whose original (1947) mandate, arguably, has long expired? To answer these questions, it is useful to take a broad look at how the regulation of global financial

markets is likely to evolve now that the immediate pressures of the financial crisis are subsiding.

There is wide agreement among observers that national financial markets have become intensely interdependent through cross-border holdings of assets and liabilities. Therefore, a crisis that originates within one country (such as sub-prime mortgages going awry in the United States) may be transmitted internationally. Similarly, most observers agree that the current system for regulating financial markets, with its national focus and, at best, ad-hoc coordination among national actors, is insufficient and should be replaced with a more comprehensive international framework.

However, it is becoming increasingly unlikely that national legislators will be willing to transfer significant national sovereignty in the area of financial market supervision to a regional or international body. One plausible reason for this reluctance is the fact that national governments are still the only feasible lenders of last resort for globally large financial institutions. Even within the European Union with internally free movement of capital and right of establishment for financial institutions, the prospects for firmer EU-wide rules are uncertain. It is even less likely that the US Congress would transfer responsibility for overseeing US financial institutions to an international body.

Therefore, a more comprehensive international regulatory framework for financial markets will have to emerge through closer and more binding cooperation among national regulators. National practices in financial market regulation as well as macroeconomic policies will need to be evaluated according to common standards and developments will need to be analyzed in a disinterested but authoritative manner. Emergency lending will have to be coordinated – both for globally large financial institutions and for countries facing balance of payments problems. Among other things, such coordination requires an international institution with the credibility and political standing to “speak truth to power” – to address emerging policy concerns in any country solely on the basis of their perceived relevance for the global economy, not on the basis of political expediency or the size of that economy.<sup>1</sup>

The IMF appears to be the only international institution that potentially has the political standing and analytical capacity to perform these tasks. As an organization, the IMF is geared towards analyzing macroeconomic policies and financial market regulation both at the national and global levels. It also has extensive experience engaging national authorities and the international public in a results-oriented debate on its analytical findings. At the same time, communication with national authorities currently works much better when the IMF has something to offer (for example, emergency loans) in return for a government facing up to an unpopular challenge, compared to a situation when the IMF provides politically inconvenient advice to policy-makers who are driven by short-term agendas and have little to gain from engaging with the IMF.

This raises the question of what it will take to make the IMF more universally credible. At present, the undue influence of large member states on what the IMF can say publicly

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<sup>1</sup> German sociologist Renate Mayntz calls “speaking truth to power” the main task of research-based policy advice. The term itself goes back (at least) to a “charge” given to 18<sup>th</sup> century members of the Religious Society of Friends (Quakers).

appears to be the single biggest obstacle. For example, the United States was able to delay the start of a much-needed critical assessment of its financial services industry (FSAP) for several years without good cause. Similarly, the IMF has found it politically difficult to analyze the exchange rate policy of China and publicize the results. As a result, the IMF's role in analyzing and developing a policy response to today's most serious global macroeconomic imbalance (the US trade deficit and Chinese trade surplus) is impaired. If large countries can avoid engaging in a serious debate with the IMF and other member countries, smaller countries will hardly be inclined to take the IMF seriously (that is, other than as a precondition for borrowing from the IMF).

On the other hand, it seems notable that some large member countries seek to undercut public debate of IMF analyses of their macroeconomic and financial policies, rather than simply ignoring the IMF. This observation suggests that, if the IMF could act more independently and with less regard to the size and voting power of affected member countries, the analytical work of the Fund might have a greater impact on public debate and on the ultimate policy response. The remainder of this article discusses several proposals for IMF reform that would help to strengthen the institutional independence of the Fund and enable it to play a key role in the emerging framework of global governance for the coordination of national macroeconomic and financial sector policies.

## **IMF Quota Distribution and Voting Power**

The distribution of voting power in the IMF's executive board, which takes most policy and operational decisions, has been debated intermittently for several decades. Currently, voting power is based mainly on the size of each member's "quota", i.e. its capital subscription that ultimately funds IMF loans to other member countries (and also determines how much each member country can borrow from the IMF). Members' quotas, in turn, are allocated according to a formula that now includes several economic criteria such as Gross Domestic Product and international payments (Bradford, Linn, 2007; Cooper, Truman, 2007; IMF, 2008). Quotas are indicated in terms of an accounting unit, the Special Drawing Right (SDR), which reflects a basket of major currencies in world trade (on August 7, 2009, 1 SDR was equivalent to US\$ 1.57). Each IMF member currently has one vote for every SDR 100,000 in quota, plus 250 basic votes (to go up to 750 basic votes under an April 2008 decision by IMF Board of Governors that still requires ratification by national legislatures). Table 1 lists the resulting vote shares of selected IMF members and relates them to demographic and economic criteria.

Criticism has focused on the slow process of adjusting quotas to the rise of emerging economies as well as the choice of variables in the quota distribution formula. Decisions on quota changes are taken by the IMF Board of Governors, based on recommendations by a Quota Review Committee, and require an 85 per cent majority of total voting power in the IMF. While the process was often tedious, the April 2008 decision simplifies the underlying formula and adjusts quotas for a large number of countries. This decision should go a long way towards rendering quotas much more transparent and up-to-date.

However, the focus on economic variables implies that poor countries with large populations still have only a weak voice on the IMF Executive Board. Table 1 compares IMF members' current vote shares to their shares in world population, world GDP (calculated at purchasing power parity – PPP), and world imports of goods and services. Specifically, by subtracting members' percentage shares in world population, GDP or imports from their vote shares Table 1 gives a sense of whether a given member is over- or underrepresented in terms of a particular criterion. Furthermore, the sum of absolute percentage deviations for a criterion, added up over all member countries, gives a sense of how closely the distribution of votes overall follows the global distribution of that particular variable.

*Table 1: Country Shares in IMF Voting Power, World Population, GDP, and Imports (Percent)*

	Current share in IMF voting power (August 2009)	Current minus share in world population	Current minus share in world GDP at PPP	Current minus share in world imports	After April 2008 changes are implemented	Scenario: 20 percent of votes by population
United States	16,8	12,1	-5,6	0,1	17,6	15,0
Japan	6,0	4,0	-0,9	1,2	5,6	4,9
Germany	5,9	4,6	1,3	-2,3	5,5	4,6
France	4,9	3,9	1,5	0,1	4,5	3,8
United Kingdom	4,9	3,9	1,4	-0,7	4,5	3,8
China	3,7	-16,7	-6,7	-2,2	3,4	6,8
Italy	3,2	2,3	0,3	-0,6	3,3	2,8
Saudi Arabia	3,2	2,8	2,3	2,5	2,9	2,4
Canada	2,9	2,4	0,8	-0,3	2,7	2,3
Russia	2,7	0,5	-0,5	1,3	2,5	2,5
Netherlands	2,3	2,1	1,3	-0,9	2,2	1,8
Belgium	2,1	1,9	1,5	-0,5	2,0	1,6
India	1,9	-15,3	-2,8	0,3	1,8	4,8
Switzerland	1,6	1,5	1,1	0,3	1,5	1,2
Spain	1,4	0,7	-0,8	-1,5	1,7	1,5
Brazil	1,4	-1,6	-1,5	0,5	1,3	1,6
Korea	1,3	0,6	-0,6	-1,3	1,4	1,3
Venezuela	1,2	0,8	0,7	1,0	1,1	1,0
Indonesia	0,9	-2,5	-0,4	0,3	0,9	1,4
Pakistan	0,5	-2,0	-0,2	0,3	0,5	0,9
Singapore	0,4	0,3	0,1	-1,7	0,6	0,5
Bangladesh	0,3	-2,2	-0,1	0,1	0,3	0,7
Total absolute deviation (all IMF members)		112,4	44,3	34,0		

Notes: A country is shown if its share in the the IMF vote diverges by more than 2 percentage points from its population share or by more than 1 percentage point from its PPP GDP or import shares.

Source: [www.imf.org](http://www.imf.org); World Bank, World Development Indicators Database.

The top ten countries in terms of vote share are the G8 plus China and Saudi Arabia. Of these countries, the top five (US, Japan, Germany, France, UK) currently control 38.4 per cent of IMF votes but account for only 9.8 per cent of world population; individually, they are “over-represented” relative to their population shares by between 3.9 and 12.6 percentage points. By contrast, both China and India are under-represented not only in relation to population, but also to GDP at PPP (and China in relation to its share in global imports of goods and services). Pakistan and Bangladesh, both with a history of IMF loans and macroeconomic conditionality and a combined population of more than 300 million people, have a combined vote share of 0.8 per cent – approximately the same as Norway’s.

Hence the current distribution of votes does not give all members, including borrowers, a sufficient stake in the decision making process for them to feel that they “own” the decisions taken. As long as the IMF was mainly a regulator of a system of fixed exchange rates, the focus on economic variables as the basis for the distribution of quotas and votes may have been plausible because a member’s stake in IMF decisions would be strongly related to its share of global international payments. However, the IMF now plays a much greater role in the monitoring of national macroeconomic and financial policies and has a strong influence on those policies when it extends loans; in fact, we have argued above that this role should be strengthened. Therefore, population-rich and poor countries in particular need to have a stronger voice in order to develop a sense of ownership in the IMF.

One possible way of giving greater weight to this group would be to base IMF members’ voting power partly on member countries’ populations. The underlying logic would be to reflect the number of people potentially affected by IMF surveillance or policy conditionality who are represented by each member country. The last column in Table 1 presents a hypothetical scenario under which 20 per cent of total voting power is allocated on the basis of population, while the remainder is allocated in line with the new quotas according to the April 2008 decision. Under this assumption, China and India would be among the top five members in terms of voting power, together with the US, Japan, and Germany. The combined share of Pakistan and Bangladesh would grow to 1.6 per cent, whereas that of Norway would decline to 0.6 per cent. While details would have to be negotiated, this example demonstrates that when population is included in the formula for vote distribution, the gross under-representation of population-rich poor countries is alleviated without introducing excessive shifts relative to current vote shares.

A conceivable alternative would be to move closer towards “one country one vote” as in the World Trade Organization. In practical terms, this could be achieved by increasing the number of basic votes (identical for all members) as a share of total votes. Already, the planned increase of basic votes from 250 to 750 per country will increase the share of basic votes in total voting power from approximately 2.1 per cent to 5.8 per cent; historically, this share has been as high as 11 per cent. However, it is not clear that “one country one vote” would be either workable or fair. To be acceptable to large member countries, this rule would probably have to be combined either with a consensus requirement (as in the WTO) or high thresholds for qualified majority voting. However, the uncertain fate of the WTO Doha Round demonstrates that decision-making by consensus can be exceedingly tedious when more than 150 countries are involved. At the same time, the European Union under its Lisbon Treaty is moving towards lower thresholds for qualified majority voting in order to streamline its decision-making process. Therefore, a cautious refinement of the current formula for determining members’ voting power by including population, rather than a move towards “one country one vote”, appears to be the most promising approach to giving more voice to hitherto neglected member countries.

## **Other Governance Issues: Qualified Majority Voting and Selection of the Managing Director**

The proposed changes in members' voting power will need to be calibrated to the qualified majority voting rules used by the IMF. Although decisions are normally taken by a simple majority of the votes cast (Article XII, Section 5c), many decisions require a qualified majority of either 85 per cent or 70 per cent of total voting power. These rules currently give veto power to the US alone when the 85 per cent threshold applies, or to the US plus at least 3 other members with large vote shares when the 70 per cent threshold applies.

Many nation states and international organizations require qualified majorities for changes to their constitutions and organizational structures. However, given the paramount importance of strengthening credibility vis-à-vis all members, it seems no longer appropriate for the IMF to give veto power to a single member or a very small group of members. This assertion may appear to be contradicted by the example of the UN Security Council where five member countries that possess nuclear weapons enjoy veto power. However, (i) the Security Council has proven to be ineffective in handling international conflicts where any of the veto powers have taken sides (e.g. Kosovo), which limits the Council's ability to fulfill its mission; (ii) there is wide-spread dissatisfaction with the current setup of the Security Council as evidenced by the long-lasting debate about Security Council reform; and (iii) the Security Council often deals with matters of war and peace where it may be imprudent to ignore the views of any country that has nuclear weapons to back up its views, irrespective of the merits of that country's views otherwise.

Therefore, the 85 per cent threshold for qualified majority voting should be eliminated and a single rule for qualified majority voting instituted, say, with a threshold of two thirds of total voting power. This should be sufficient to prevent erratic decisions that lack the support of key IMF member countries while not granting excessive influence to a single member or a small group of countries.

One change that is already on its way to being implemented concerns the selection of the IMF Managing Director. There was in the past an informal understanding, backed up by the respective countries' voting power in the IMF and the World Bank, that the President of the World Bank would be nominated by the US whereas the Managing Director of the IMF would be nominated by the West European members. Clearly, the independence of the IMF and its ability to speak truth to power would be enhanced if the Managing Director did not owe his or her appointment in part to his or her national government. There appears to be an understanding on the part of the US and West European members that whenever the next Managing Director is appointed, the current restrictive leadership selection process will no longer be used. The examples of the selection processes for the United Nation Secretary General and the WTO Director General demonstrate that an open selection process can lead to the appointment of dedicated individuals who enjoy broad support among members.

## **New Sources of Funding for Loans and Surveillance**

Enhanced independence of the IMF will need to be backed up by funding that is both robust to the influence of individual members and adequate for the tasks of the IMF. This requirement applies to financing for IMF lending as well as to current income to pay for the surveillance of national macroeconomic and financial policies.

With respect to lendable resources, the April 2009 London Summit of the G20 has called for tripling the available amount to approximately US\$ 750 billion. As actual IMF lending stood at less than US\$ 50 billion at end-May 2009 (Figure 1), this total might seem excessive. It is motivated, however, by the new flexible credit lines that emerging economies with sound macroeconomic policies may call upon in the event of a crisis, such as a sudden reversal in private capital flows. Mexico has already received a credit line for US\$ 47 billion that is not reflected in the figure for total IMF lending because the credit line has not been drawn upon. Therefore, the large increase in lendable resources will give the IMF ample but not excessive resources to counter future instability in financial flows to developing and emerging countries.

Traditionally, lendable resources derived mostly from the quota subscriptions of member countries. Quota subscriptions are paid in full when a country joins the IMF; subscriptions cannot be withdrawn, but constitute the basis of most types of loans to member states with balance of payments needs. By contrast, new lendable resources will come mostly from bilateral borrowing agreements with high-income countries (Japan, US, EU, and several others) as well IMF notes likely to be issued to China, Brazil, and Russia. Borrowing and note purchase agreements will be on similar terms, with a period of commitment on the part of the creditor between one year and five years. IMF notes will be tradable within the “official sector”, i.e. all IMF member governments, their central banks, and 15 multilateral institutions.

The maximum maturity of five years corresponds closely to the repayment periods of stand-by arrangements and flexible credit lines. Thus, as long as borrowers repay the IMF on schedule, the IMF should be able to meet its own obligations towards its creditors. However, if borrowers face unforeseen debt service problems and require longer repayment periods, the IMF might become quite dependent on creditor countries to roll over loans or notes, unless it can find lendable resources elsewhere.

Therefore, large lenders might gain influence on IMF decisions beyond their formal voting rights as their decision to either extend or withhold lending could have far-reaching consequences for the IMF and global financial markets. IMF notes are thought to be attractive in part because they are tradable among official creditors and denominated in SDR; they may help countries with large international reserves to reduce their exposure to the US dollar (although the US dollar still accounts for 44 per cent of the value of the SDR). What can be said at this point that all this is untested territory. As borrowing and note purchase agreements are implemented in the coming months, it will be important to keep an eye on possible future challenges they may pose to the IMF’s independence.

Regarding income to pay for current operations, most IMF revenue so far has come from fees charged on loans to emerging economies. These fees were sufficient to pay not only for the operational cost of credit intermediation but also for the administration of loans to low-income countries (e.g. under the Poverty Reduction and Growth Facility) along with surveillance

and technical assistance. However, the sharp decline in lending since 2003 led to a full-blown budget crisis in 2007 and 2008 which has eased only when lending and the associated fee income recovered recently.

For the IMF's surveillance of national policies to be independent and credible, it should not depend on being effectively cross-subsidized by other IMF operations but should have a solid source of income to pay for it. Since it constitutes a public good, it would be appropriate to charge IMF members according to their ability to pay, measured for example by their Gross National Income converted at market exchange rates. While details would need to be worked out, the assessment of UN members for their contributions to the regular UN budget constitutes a possible example, with reduced charges for low-income and least developed countries as well as a cap on national contribution to ensure that the richest country (the US) does not pay an excessively large share.

As discussed by the Crockett Report (IMF, 2007), national contributions could be complemented by higher investment revenue, for example by allowing the IMF to invest lendable resources in the capital market as long as they are not needed for lending to members, and by selling IMF gold reserves to create a capital endowment. However, implementing a system of national contributions, even if it initially covers only a small share of the expenditures for surveillance, would establish the important principle that surveillance of national policies is a global public good that IMF members need to pay for and may therefore be inclined to take more seriously.

## **Promote a Culture of Public Debate on Policy Documents and Country Reports**

Over the last ten years, IMF operations have become much more transparent as most policy documents and country reports are now published in a timely manner. This trend is to be welcomed because, absent an IMF loan to the member country in question, IMF surveillance will be effective only if the results become part of the public discourse on economic policy options. If members can delay analytical work (such as the US FSAP), influence the presentation of conclusions, or prevent the publication of findings altogether, there will be little pressure on national authorities to amend policies. Therefore, surveillance should be rules-based: according to a set time schedule, against transparent and widely discussed standards, with the analysis and conclusions published in a timely manner. If members then do not cooperate or do not agree to publish country reports, this fact should be publicized so that financial markets may pass judgment on it.

At the same time, while economic analysis and surveillance by the IMF should be of high quality to be authoritative, no economic analysis will ever be infallible. Therefore, IMF analysis should be considered primarily as an input into an informed public debate, rather than as the end point of that debate. The more a culture of informed debate is established, markets will not over-react to published findings of IMF surveillance work but rather look at them in connection with national authorities' responses. Ultimately, IMF analysis will be the



more effective the better it holds up under the scrutiny of an informed international and national public.

For national authorities to avoid public debate by delaying surveillance work or keeping findings secret should be seen as a sign of great weakness. For them to disagree publicly with IMF analysis should be seen as natural, up to a point, and their arguments should be judged on their merits. Already, many country reports on the annual Article IV consultations between IMF staff and national authorities reflect a dialogue along these lines. It would be helpful to bring this experience to bear on the surveillance of national financial systems (e.g. the findings of the Financial Sector Assessment Program).

The situation differs somewhat in the case of policy conditionality for loans to member countries with balance of payments needs. While the underlying economic analysis here is not infallible either, the IMF staff will ultimately have to recommend some conditionality to the Executive Board, and the Board will have to make a decision – leaving the potential borrowing country with the choice of either taking the loan along with the conditionality or leaving it. Typically, borrowers have pursued macroeconomic policies that have landed them with the balance of payments problems that lead them to request IMF assistance in the first place. Therefore, a long-term solution to the balance of payments problems will require policy changes.

Hence the IMF should continue to tie its lending to policy conditionality that ensures that borrowers implement those policy changes that are required to overcome the crisis and pay back the IMF loan. A full dialogue with national authorities should deal with both, what is needed and how much can feasibly be done within a given time frame and level of external support. It is also true that in the past there may have been, at times, a counterproductive overreach on conditionality by the IMF. However, to do away with policy conditionality altogether on the grounds that it limits “policy space” or national sovereignty would be tantamount to throwing out the baby with the bathwater. The credibility of policy conditionality will be enhanced by open debate and public scrutiny, but conditionality remains an essential element of loans to member countries.

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# New Risk Management Practices

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## Abstract

*Risk evaluation is crucial for practitioners as it allows them to make better investment decisions. However, the recently witnessed financial turmoil has demonstrated the inadequacy of many models for preventive risk evaluation. In particular, it is now evident that new methods are needed to anticipate and manage risk in asset markets more accurately. In this article we discuss some of the “blind spots” in risk management uncovered by the financial crisis and suggest alternative models for the evaluation and prevention of risk that can be useful for the new “toolkit” of financial practitioners and regulators.*

## 1 Introduction

Risk evaluation is crucial for practitioners as it allows them to make better investment decisions. However, the recently witnessed financial turmoil has demonstrated the inadequacy of many models for preventive risk evaluation. In particular, it is now evident that new methods are needed to anticipate and manage risk in asset markets more accurately.

There are many discussions about what risk entails but very few concrete definitions (Holton 2004). The difficulty in arriving to a general definition of risk arises from the long lasting philosophical debate over objective versus subjective interpretations of probability (Knight 1921; Keynes 1921; von Mises 1928; Kolmogorov 1933). Objective interpretations of probabilities are thought to be real and can be obtained via logic or statistical analysis. On the other hand, subjective interpretations of probabilities are not intrinsic to nature and individual beliefs or perceptions can play a role when specifying them. Others suggest that risk evaluation requires the combination of both statistical techniques (e.g. objective perception) and the judgement of practitioners (e.g. subjective perception) (Markowitz 1952).

To define risk we follow Holton (2004) who argues that risk is exposure to a proposition of which one is uncertain. Thus, the latter definition includes two main factors, exposure and uncertainty which are sufficient for our purposes as they encapsulate many risk situations such as trading commodities, launching a new business, sky diving, etc. However, the latter definition of risk is not operational. In order to make risk operational, we need to design a framework to evaluate and manage risk. Naturally, given the difficulty in arriving to a consensus on what determines risk, it should be no easy task to design a new framework for risk management in the outset of the recently witnessed financial crisis. Nevertheless, in this article we discuss some of the “blind spots” in risk management uncovered by the financial crisis and suggest alternative models for the evaluation and prevention of risk that can be useful for the new “toolkit” of financial practitioners and regulators. The discussion and subsequent recommendations mostly draw on research results from the project “Forecasting in Macroeconomics and Finance” at the Kiel Institute for the World Economy.

The article is organized as follows. In the next section we briefly discuss the stylized facts of asset prices. Section 3 gives an overview of the Efficient Market Hypothesis and section 4 considers some evidence on forecasting in financial markets. Section 5 addresses issues with respect to Value-at-Risk evaluation in the context of the financial crisis and section 6 presents a perspective on other models for ex-ante risk analysis. Section 7 concludes with some recommendations.

## 2 Stylized Facts of Asset Prices

Following Lux (2007), asset prices are characterized by a set of statistical properties that prevail with surprising uniformity. These statistical properties have been observed in various studies in the finance literature across financial instruments, markets and time periods so that they have been categorized as “stylized facts”. In what follows we define asset prices as  $p_t = \log(P_t)$  where  $P_t$  is the asset price at period  $t$  and  $\log(P_t)$  its natural logarithm. Asset returns are defined as  $r_t = p_t - p_{t-1}$ , i.e. the change in the (log) asset price from period  $t-1$  to period  $t$ . The unconditional mean and variance are defined as  $\mu = E[r_t]$  and  $\sigma^2 = Var[r_t]$  respectively, where  $E$  is the expectations operator. In finance, two meaningful measures are the conditional mean and the conditional variance defined as  $\mu_t = E[r_t | F_{t-1}]$  and  $\sigma_t^2 = Var[r_t | F_{t-1}]$  respectively, where  $F_{t-1}$  is the information set at period  $t-1$ . The measure  $\sigma_t^2$  is usually referred to as conditional volatility in the finance literature. Note that  $F_{t-1}$  may contain any variable which is predetermined (its realization occurred at  $t-1$ ) such as, e.g. past returns, past volatility, past macroeconomic variables, etc. The stylized facts of financial market data applicable in our context can be summarized as follows:

1. Asset *prices*  $p_t$  are non-stationary while asset *returns*  $r_t$  are mostly stationary.<sup>1</sup>
2. Empirical autocorrelations of returns  $r_t$  are small (or even zero) while the empirical autocorrelations of squared returns  $r_t^2$  (a proxy for volatility) are long lasting and slowly decaying.<sup>2</sup>
3. Periods of higher and lower return volatility alternate which is usually referred to as “volatility clustering”.
4. The unconditional distribution of returns is leptokurtic, i.e. it exhibits “fat tails” and higher probability mass around the mean.<sup>3</sup>

The above stylized facts of financial time series can be better appreciated in Figures 1 to 3. Figure 1 depicts the daily (log) DAX index for the period 01/01/1980 to 12/08/2009. Figure 2

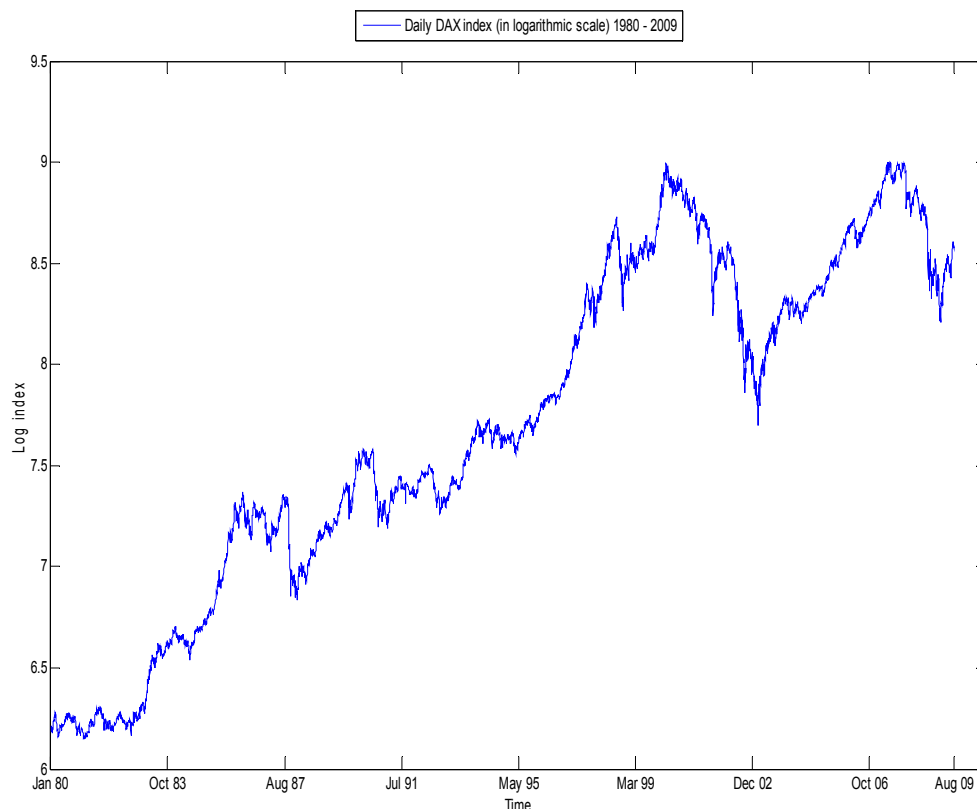
<sup>1</sup> A stationary process is a stochastic process whose joint probability distribution and conditional distribution are both invariant to displacement and time (Pindyck and Rubinfeld (1998)).

<sup>2</sup> The significant autocorrelation in squared returns is also referred to as conditional heteroskedasticity in the financial econometrics literature.

<sup>3</sup> A leptokurtic distribution is a distribution that exhibits excess kurtosis. A Normal distribution has a kurtosis of 3 while a leptokurtic distribution has a kurtosis greater than 3 which means that the tails of the distribution are “fatter” (higher probability than the Normal distribution of extreme values). A leptokurtic distribution also exhibits a higher probability mass around the mean in comparison to the Normal distribution (i.e. a more acute peak).

shows the DAX log returns and squared log returns and their corresponding empirical auto-correlations. Figure 3 displays the empirical distribution of returns for the same sample period along with the distribution of normally distributed noise. The concepts of non-stationarity vs. stationarity can be exposed by noticing that the (log) DAX series (Figure 1) follows a “random” path or trend while the return series (Figure 2) shows fluctuations around a constant unconditional mean. Computing the mean and variance for the log DAX index would yield different (and increasing) values for distinct windows of time, thus hinting at non-stationarity.<sup>4</sup> As shown in Figure 2, the empirical autocorrelations of the DAX returns (squared returns) show a low (high) level of predictability, that is, the series exhibits insignificant (significant) dependence with respect to most past daily returns (squared returns). The plot of squared returns (Figure 2) also shows “clustering” of volatility, for instance, in the period before and after the recent financial turmoil in September 2008. That is, it is very likely to observe high (low) volatility today if volatility was high (low) yesterday. Lastly, the unconditional distribution of the DAX returns seems quite different to the Normal distribution (Figure 3). The former exhibits “fat tails” (higher frequency of extreme returns) and higher probability mass around the mean than the latter. Moreover, the quantile-quantile plot of the DAX returns and the normally distributed noise shows that the samples are most likely not generated by the same distribution (Figure 3).

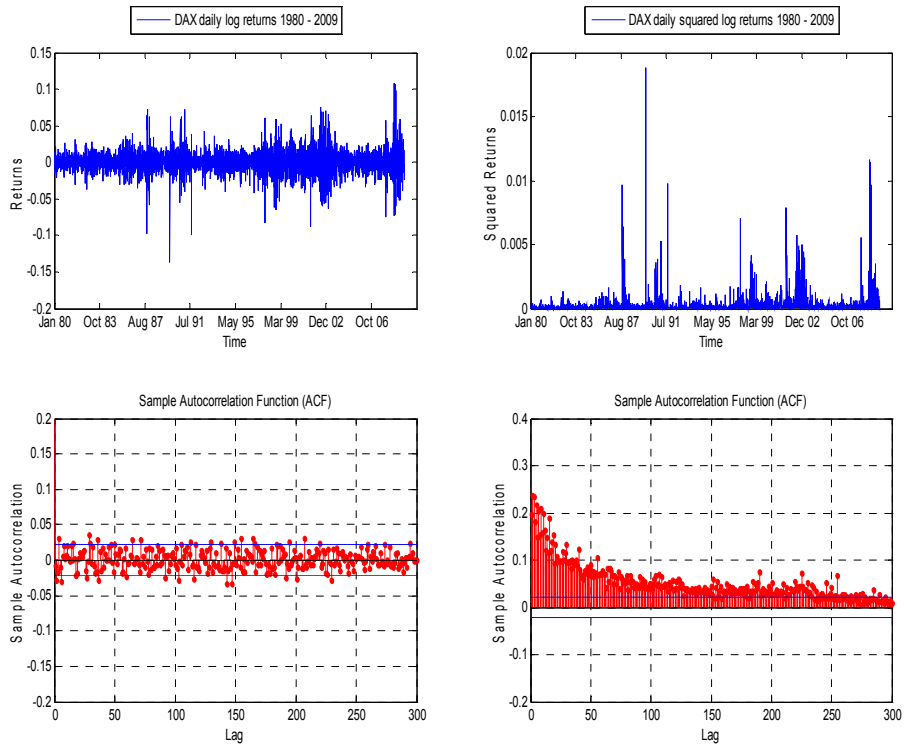
Figure 1: DAX Index<sup>a</sup>



<sup>a</sup>The figure shows the daily DAX index in logarithmic scale for the sample period 01/01/1980 to 11/08/2009.

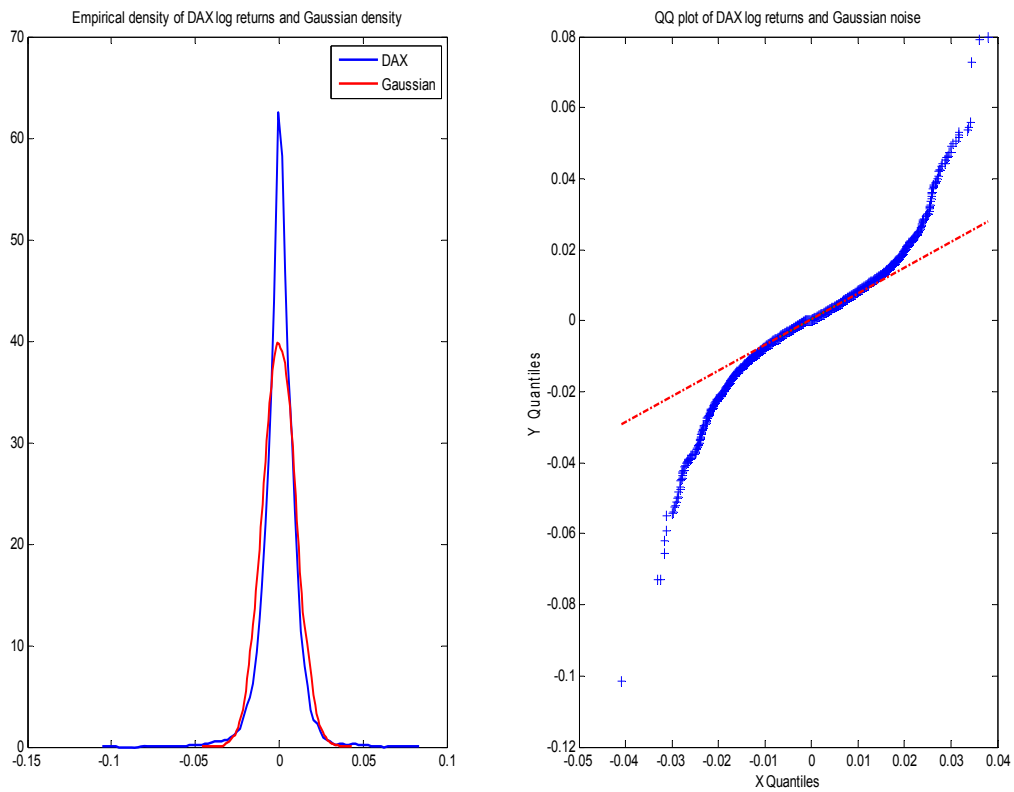
<sup>4</sup> A formal statistical non-stationarity test is, for instance, the unit root test introduced by Dickey and Fuller (1979). A series is non-stationary when it has a unit root.

Figure 2: DAX Returns and Autocorrelation<sup>a</sup>



<sup>a</sup>The figure shows the DAX log returns and squared returns (upper panel) and the sample autocorrelation of the DAX log returns and the squared returns (lower panel), respectively.

Figure 3: Distribution of DAX Returns<sup>a</sup>



<sup>a</sup>Kernel Densities of the Standardized DAX Returns and Standardized Normally Distributed Noise (Left Panel) along with the Quantile-quantile Plots of the Log DAX Returns and the Gaussian Noise (Right Panel).

### 3 The Efficient Market Hypothesis

The low level of predictability in the DAX returns is in line with the Efficient Market Hypothesis (EMH) which was introduced in the 1960's by Eugene Fama. In short, the EMH states that at any given time, security prices fully reflect all available information. In other words the EMH suggests that it is not possible to forecast future changes in (log) asset prices (i.e. log returns  $r_t$ ) based on current information. Depending on the type of information sets, three different levels of market efficiency can be distinguished according to the EMH:

1. The weak form of the EMH states that prices fully reflect the information contained in past prices. This means that investors cannot make excess profits by using trading strategies based on past price information (i.e. technical analysis). In the finance jargon the weak form of the EMH implies that asset prices follow random walks, i.e. asset price increments are completely random.
2. The semi-strong form of the EMH states that asset prices not only reflect historical price sequences but also all publicly available information (e.g. information pertinent to a company's securities). Under the semi-strong EMH, asset prices adjust rapidly to new information so that investors cannot make excess profits by using trading strategies based on, e.g. price-earnings ratios, dividend yields or other fundamental factors (i.e. fundamental analysis) nor past prices (i.e. technical analysis).
3. The strong form of the EMH states that all information, whether public or private, is already reflected in the market price of the asset. This means that investors cannot generate excess profits based on fundamental, technical analysis or even insider information (i.e. privileged information about a company's stock).

### 4 Forecasting in Financial Markets

The finance literature has had a long tradition of evaluating models implied by the EMH. However, the empirical evidence for or against the EMH differs (Fama 1991; Campbell 2000 for comprehensive literature reviews) and the current financial stability context has given strong evidence of informational inefficiency (The Economist 2009b). In fact, Grossman and Stiglitz (1980) pointed out a paradox of the EMH: if information gathering is costly and prices reflect all available information, then there is no incentive for an investor to gather information on which prices are based. Thus, some inefficiency is needed in order to provide investors an incentive to gather information and drive prices back to efficient levels.

While it is usually the case that the EMH in its weak form holds empirically (as shown in the lack of predictability from past returns in Figure 2), there is substantial evidence that contradicts the EMH in its semi-strong form. For instance, several macro-finance models have shown that fundamental factors such as term spreads (the difference between long term and short term bond yields), price-earnings ratios, consumption-to-wealth ratios, to mention a few, can predict asset returns more accurately than the historical mean of returns (i.e. a random walk with drift) at long return horizons (Lamont 1998; Lettau and Ludvigson 2001; Campbell and Thomson 2007). In addition, recent studies from the behavioural finance

literature have shown that “behavioral” factors such as investor sentiment can also predict asset returns more accurately than the historical mean of returns, even after accounting for transaction costs (Neal and Wheatley 1998; Brown and Cliff (2004); Lux (2008b, 2009). Thus, there is some evidence from both the macro-finance and the behavioural-finance streams that several factors can predict future asset returns ( $\mu_{t+h}$  for  $h=1,2,\dots$ ) thus providing evidence against the EMH.

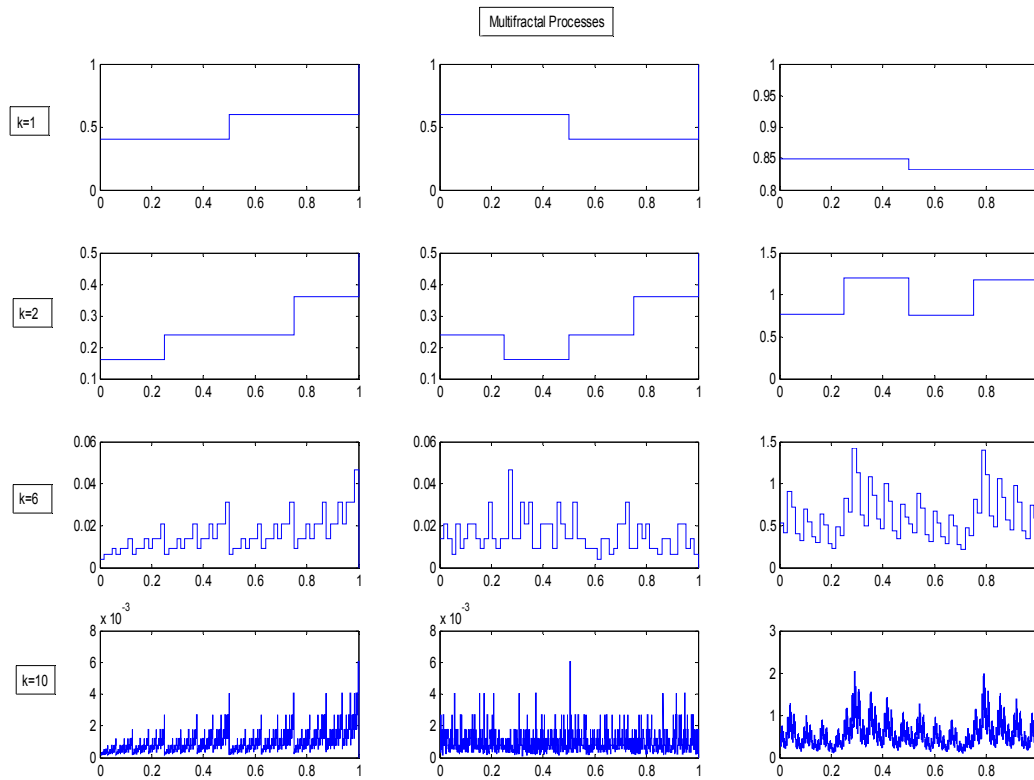
It is important to note, however, that the EMH does not restrict volatility of asset returns (or its proxy squared returns) to being unpredictable. That is, the EMH is not violated by the fact that squared returns are autocorrelated hinting at predictability in second order moments of returns. To model conditional volatility Engle (1982) introduced the Autoregressive Conditional Heteroskedasticity (ARCH) model which specifies the conditional variance  $\sigma_t^2$  as a function of past square returns ( $r_{t-1}^2, \dots, r_{t-p}^2$ ).<sup>5</sup> Since then, many studies in finance have proposed models to forecast future conditional volatility (Andersen et al. 2005) for a recent review on volatility modelling and Poon and Granger (2003) for a review on volatility forecasting) which exploit different “stylized features” observed in squared returns. For instance, as shown in Figure 2, squared returns of the DAX from 100 days ago can explain today’s returns. This feature is usually referred to as long range dependence or long memory in volatility and is usually found at higher frequencies of the data such as daily or intra-daily. In general, asset volatility models that account for long memory have shown to forecast volatility more accurately than models that do not account for such a feature at higher frequencies of the data (Baillie 1996; Lux and Kalsoji 2007).

In addition to long term dependence in squared returns, it has also been found in the finance literature that higher moments of asset return data (for instance  $|r_t|^q$  for  $q=3,4$ ) also show different degrees of long term dependence (Lux 1996; Mills 1997). The variation in the scaling behaviour of various moments or the different degrees of long term dependence in various moments of the data is called *Multifractality*. The concept of *Multifractality* was first introduced by Benoit Mandelbrot in the context of turbulent flows in physics. The basic principle for construction of multifractal models is a cascading process of iterating splitting of initially uniform probability mass into more and heterogeneous subsets. Starting with a uniform distribution over a certain interval, one splits this interval into two subintervals that receive fraction say  $\pi$  and  $1-\pi$  of the overall mass. In the next step, the same procedure is repeated for the newly created subsets so that one ends up with four intervals with probability mass  $\pi^2$ ,  $\pi(1-\pi)$ ,  $\pi(1-\pi)$  and  $(1-\pi)^2$ , respectively. In principle, this process can be repeated at *infinitum*. One thus obtains a hierarchical structure of components, where smaller ones emanate from the higher levels of the hierarchy via this probabilistic split of energy. By its very construction, a combinatorial multifractal along the above lines exhibits different degrees of scaling or long-term dependence for different powers of the resulting measure. To illustrate the concept of *multifractality*, Figure 4 provides examples of some multifractal processes.

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<sup>5</sup> Robert Engle won the Nobel prize in economics in 2003 for his ARCH model.

Figure 4: Multifractal Processes<sup>a</sup>



<sup>a</sup>The Left Panel Shows the Combinatorial Construction of a Multifractal Process with Masses  $\pi=0.4$  and  $1-\pi=0.6$  for Cascade Levels  $k=1,2,6,10$ . The Middle Panel Shows the Multifractal Process with Randomized Intervals at Each Cascade Level. The Right Panel Shows the Multifractal Process with Masses  $\pi$  Obtained from a Lognormal Distribution with Mean  $M=-0.15$  and Variance  $V=0.3$ .

The multifractal apparatus was first introduced for models of financial prices in the Multifractal Model of Asset Returns (MMAR) due to Calvet et al. (1997). Unfortunately, the MMAR suffered from severe limitations (e.g. nonstationarity) which hampered its statistical evaluation and comparison to more traditional volatility models such as the ARCH model of Engle (1982) and its variants. Calvet and Fisher (2004) introduce the Markov-switching Multifractal Model of Asset Returns (MSM) which overcomes the statistical limitations of the MMAR. The MSM can be estimated and evaluated by means of techniques that are commonly used in econometrics (Lux 2008a). Recent studies have shown that the MSM model can forecast future volatility ( $\sigma_{t+h}^2$  for  $h = 1, 2, \dots$ ) more accurately than traditional volatility models of the ARCH family (Calvet and Fisher 2004; Lux and Kaizoji 2007; Lux 2008a). This can be attributed to the higher flexibility of MSM models to capture, in addition to long memory and regime-switching, different degrees of temporal dependence of various moments which traditional volatility models ignore. Moreover, the flexible regime-switching structure of the MSM allows integrating seemingly unusual time periods such as the Japanese bubble of the 1980s in a very parsimonious manner (Lux and Kaizoji 2007).

To sum up, several asset return models and asset volatility models from both the “traditional” and “behavioural” finance streams have provided evidence of forecastability power. Therefore, it would be very unrealistic to think that one particular model is the “best”



model to forecast future returns  $\mu_{t+h}$  and future volatility  $\sigma_{t+h}^2$  as the performance of a model can be, e.g. sample or asset dependent. In fact, recent studies have found that combining forecast of various models can improve upon the performance of one single model. For instance, combining forecasts of return models conditioned with “fundamental factors” (e.g. price earnings ratios, term spreads) and “past asset price changes” (e.g. past returns, past interest rate changes) can improve upon their single forecasts (Herwartz and Morales-Arias 2009). Similarly, combining forecasts of volatility models accounting for “traditional features” (e.g. past volatility) and “multiplicative features” (e.g. multifractality) can also improve upon their single forecasts (Lux and Morales-Arias 2009; Herwartz et al. 2009). The latter results are in line with recent findings on the advantages of forecasting combination strategies (Ailofi and Timmermann 2006).

## 5 Value-at-Risk

This section explains how forecasts of conditional returns and volatility denoted,  $\hat{\mu}_{t+h}$  and  $\hat{\sigma}_{t+h}^2$  respectively, can be used for risk management purposes. One important measure used in finance to quantify and manage the risk exposure of a particular investment is Value-at-Risk (VaR). Following Tsay (2002), VaR is the amount by which an institution’s position in a risk category could decline due to general market movements during a given holding period. In practice, financial institutions and regulators use VaR to assess the risk of their financial positions or to set margin requirements, respectively. In the case of a financial institution, VaR is the maximal loss of a financial position during a given period of time and for a given probability. On the other hand, for a regulatory institution, VaR is the minimal loss that an institution would make under extraordinary market circumstances. A very common VaR model used in practice is, for instance, the RiskMetrics model developed by J.P. Morgan.

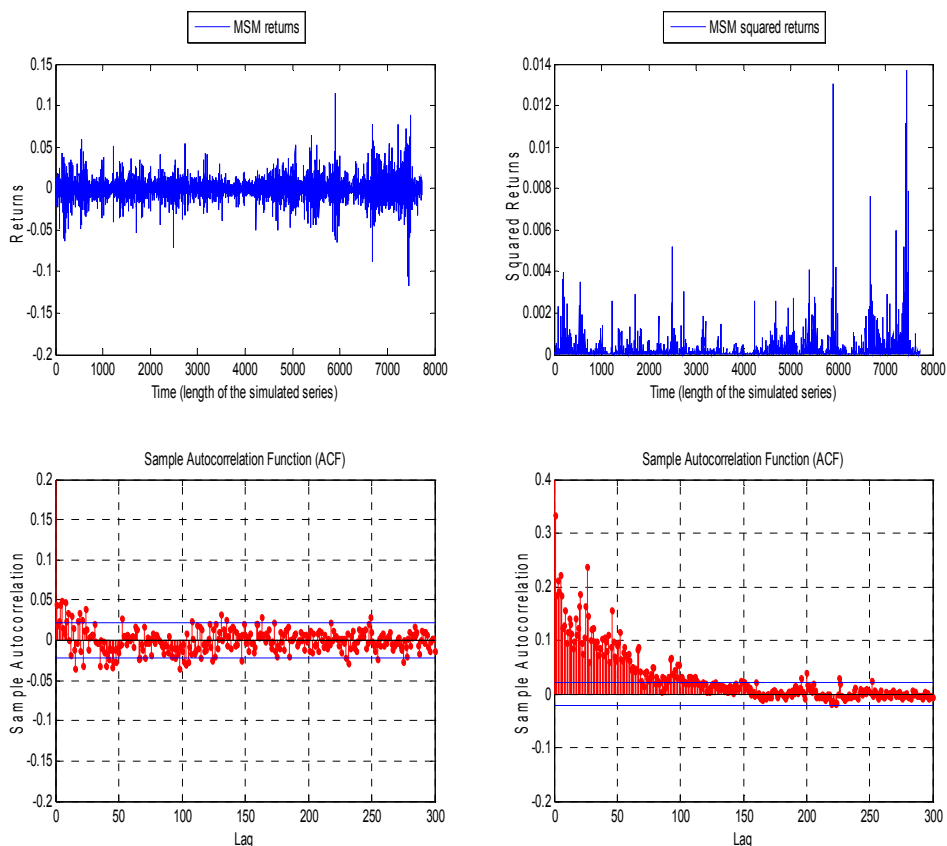
As an example of VaR, let’s suppose that time  $t$  is Wednesday, 12 of August 2009 and we obtain a one-day ahead forecast of the DAX return,  $\hat{\mu}_{t+1} = 0.0005$  and a one-day ahead forecast of its standard deviation  $\hat{\sigma}_{t+1} = \sqrt{\hat{\sigma}_{t+1}^2} = \sqrt{0.0004} = 0.02$ . Then the 5% quantile of the left tail of the distribution (assuming a Normal distribution) is  $0.0005 - 1,645 \times 0.02 = -0.0324$ . Therefore, the VaR for a long position of 20 million EUR with probability 0.05 is  $VaR = 20,000,000 \times 0.0324 = 648,000 EUR$ . In other words, the potential loss of holding the position next day is 648,000 EUR or less with a 95% probability.

Note then that in principle, forecasts of both the future returns  $\hat{\mu}_{t+1}$  and the variance  $\hat{\sigma}_{t+1}^2$  of the investment are needed to have a correct VaR evaluation. As explained in the previous section, several studies propose different models to have more accurate forecasts than simple measures such as estimates of the unconditional mean of returns  $\hat{\mu}$  (which would be implied by the EMH) and the unconditional variance of returns  $\hat{\sigma}^2$  up to time  $t$ . Thus, better models for forecasting the quantities  $\hat{\mu}_{t+1}$  (returns) and  $\hat{\sigma}_{t+1}^2$  (volatility) would yield a more accurate VaR evaluation.

The example also shows that it is also crucial to have the right distributional assumption for returns as the VaR calculation is done with the quantile of a Gaussian distribution. However, VaR calculations can be very misleading when “tail risk” has not been taken into consideration as investors may underestimate risk and engage in excessive risk taking (Einhorn 2008; The Economist 2009a). Coming back to the previous discussion on the stylized facts of financial prices, “tail risk” refers to the fact that tails of the distributions of DAX returns are rather “fat” (see Figure 3). In other words, there is a higher frequency of (say) extreme losses or gains in comparison to what a Normal distribution would suggest. Thus, taking the Normal distribution as the “true” distribution of returns would mean underestimating extreme events.

Interestingly, “tail risk” has been studied since the 1960’s but has been again and again forgotten. Benoit Mandelbrot was one major proponent of the incorporation of “tail risk” in models of asset returns (Mandelbrot and Hudson 2004) for a non-technical treatment of this issue) and suggests modelling this stylized fact via the concept of *multifractality* introduced in the previous section. To give an idea of how the *multifractal* mechanism would work in a model of financial prices, Figure 5 displays simulated MSM returns and squared returns along with their corresponding sample autocorrelations. The latter figure shows many of the stylized features found for the DAX (Figure 2), for instance, low (high) autocorrelation of

Figure 5: Simulated Returns<sup>a</sup>

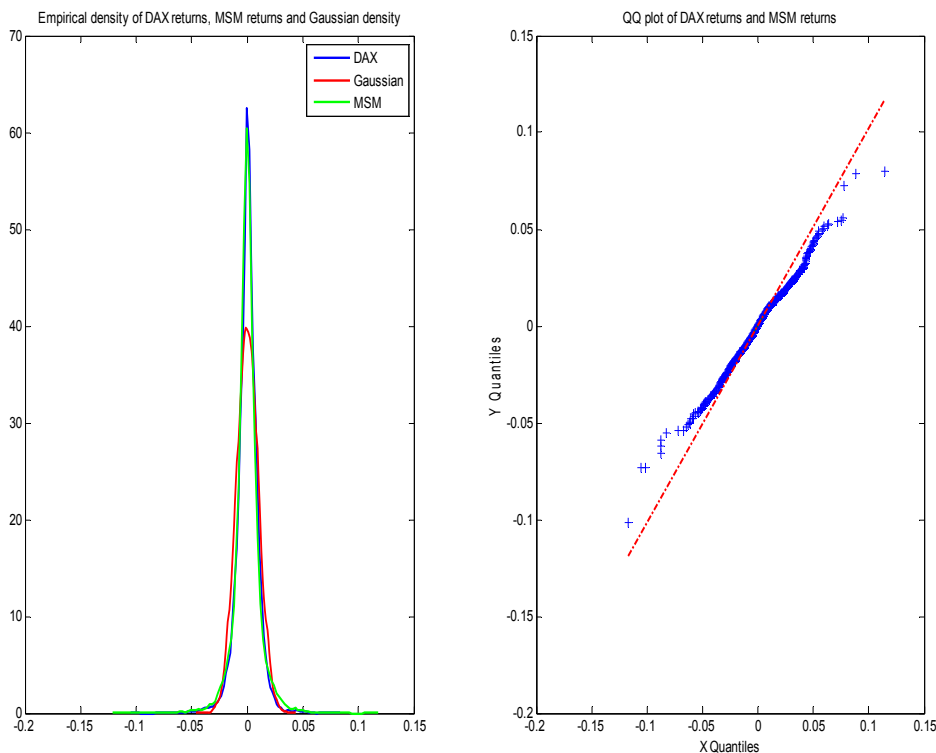


<sup>a</sup>Simulated MSM Returns and Squared Returns (Upper Panel) and the Sample Autocorrelation of the Simulated MSM Returns and the Squared Returns (Lower Panel), Respectively. The MSM Model was Simulated with a Multifractal Parameter of 1.4 and a Cascade Level  $k=10$ .

returns (squared returns) and volatility clustering. Figure 6 displays the empirical distribution of DAX returns along with the Normal distribution and the implied distribution of the MSM model which accounts for multifractality. As noted previously, the Normal distribution does not account for the fatter tails of the empirical distribution of DAX returns and thus underestimates “tail risk”. However, at least from visual inspection, Figure 6 shows that the MSM model does quite a good job in accounting for the leptokurtic feature (fat tails and high probability mass in the middle) found empirically in the DAX returns. Moreover, the quantile-quantile plot also shows that the sample of MSM returns and the DAX returns have a similar underlying distribution.

Lux (2000) provides statistical evidence on the excellent capabilities of multiplicative cascade models (such as the MSM) to fit the empirical distribution of asset returns, and shows that the fit is also better in comparison to more traditional volatility models of the finance literature (such as the ARCH and its variants). Intuitively, a model that yields a distribution that is very close to the empirical distribution of returns, should be capable of giving better quantile forecasts and thus improve VaR evaluation. In fact, Lux and Morales-Arias (2009) find for three different cross-sections of assets (equities, bonds and real estate securities) that volatility forecasts obtained from MSM models coupled with a “fat-tailed” distribution (Student-t) give the most accurate forecasts in comparison to other volatility models in terms of the Mean Absolute Error criterion.

*Figure 6: Empirical Distributions of DAX Returns<sup>a</sup>*



<sup>a</sup>Kernel Densities of the Standardized DAX Returns, the Simulated MSM Returns and Standardized Normally Distributed Noise (Left Panel) along with the Quantile-quantile Plots of the Log DAX Returns and the Simulated MSM Returns (Right Panel).

Recent research conducted by means of simulations has shown that the MSM model which accounts for multifractality seems to be the best model in comparison to other popular volatility models to forecast volatility and for VaR valuation (Herwartz et al. 2009). Interestingly, in line with previous empirical findings by Lux and Morales-Arias (2009), it has been found in the same study that forecast combinations of models that account for both “traditional” (e.g. past volatility) and “multiplicative” (e.g. multifractality) features lead to an improvement in forecasting volatility and also improve VaR valuation. Thus, it appears from both simulations and empirical applications that “hybrid” specifications obtained via forecast combinations of various models are the most promising avenue for VaR evaluation.

## 6 A Perspective on other Risk Evaluation Methods

This section summarizes other important research results that could be used as perspective for further improvement of risk evaluation and management. Risk management models should be developed to consider other types of risk such as liquidity risk, systemic risk, counterparty risk, and compliance risk amongst others (see Basel II enhancements). In order to manage such type of risks *ex-ante* it is necessary to develop new approaches for stress testing and for detecting abnormal market moves, evaporation of liquidity, prolonged periods of market distress or structural changes (Bernanke 2009).

Interestingly, finance academics have given relatively little attention to developing *ex-ante* models that address the latter issues. In fact, modern macro-finance models usually work under the assumptions of complete financial markets and have generally avoided the explicit modelling of complex frictions that could be helpful to manage many risks *ex-ante* (The Economist 2009b). Since the behaviour of financial markets is very complex and modern macro-finance models have failed (or ignored) to account for such complexity, some suggest that models of risk in the financial markets should be addressed via, i.e. interaction based models and data-driven models (Colander et al. 2009).

Interaction based models (also known as agent based models) draw their inspiration from models of multi-particle interaction in physics. The basic idea of these models is that the regularities observed in asset (and other) markets can be explained via the microscopic interactions of the constituent parts of a complex system. Recent research has found that interaction based models can replicate the stylized facts of controlled laboratory experiments of an artificial financial market with human subjects (Hommes and Lux 2008). Such a result implies that, generally speaking, it is now possible to develop computational models that can replicate human behaviour and which could be subsequently used as benchmark for (say) stress testing or other risk scenarios. Similarly, recent research has found that it is possible to estimate parameters of interaction-based models by means of advanced statistical methods (Lux 2008c; Lux 2009). Such econometric models can accurately forecast factors such as investor sentiment or “animal spirits” and could be very useful to detect *ex-ante* whether there is “irrational exuberance” in financial markets as well as periods of market distress (Ghoshadze and Lux 2008).

Other propositions suggest that empirical models based on, for instance, Vector Error Correction models are flexible enough to “let the data speak freely” and also for nesting various data generating processes (e.g. long run equilibrium, short-run dynamics and second order moments) and relevant economic theories (Juselius 2006; Hoover et al. 2008). That is, data-driven models can be applied to uncover new trends in financial markets, structural breaks and abnormal market moves without resorting to restrictive structural relationships which are generally rejected by the data.

## **7 Concluding Remarks and Recommendations**

This article has highlighted some characteristics of financial prices as well as their implication for market efficiency and forecasting in financial markets. Financial prices exhibit regularities which prevail uniformly across time and asset classes. Research in finance has also shown that there is evidence of forecastability of returns both in the macro-finance literature as well as in the behavioural finance literature which is at odds with the EMH. Predictability in volatility is more robust and several models have been proposed in order to forecast volatility. One recent addition to volatility modelling is the MSM model of asset returns which accounts for multifractality, an important stylized feature of financial prices that traditional models in finance neglect. It has also been found that combining forecast of different return models or volatility models (“traditional” or “behavioural”) can improve upon forecasts of single models. Thus, forecast combinations provide an interesting avenue for forecasting in financial markets.

Risk management measures such as VaR need accurate forecasts of both returns and volatility to be meaningful. In particular, VaR evaluations which do not account for “tail risk” (e.g. via the volatility forecast) underestimate a risk exposure and may lead investors to take on excessive risk. MSM models which account for multifractality are able to incorporate “tail risk” which should intuitively improve VaR evaluation. Recent research provides evidence that MSM models can forecast volatility and VaR more accurately than other traditional volatility models. In line with previous forecasting applications, forecast combinations of “traditional” volatility models and the MSM seem to be the best avenue for VaR evaluation.

There are other types of risk such as liquidity risk, systemic risk and counterparty risk as well as risks created by abnormal market moves, structural changes, and long periods of markets distress. However, there are up to date very few models in the toolkit of practitioners and regulators to manage such risks. Some models that appear to be promising for this respect are interaction based models and data-driven models. Recent research has shown that such models can be useful for e.g. stress testing, detecting market trends and structural breaks amongst other risks.

To sum up, we give the following three main recommendations:

1. When building VaR frameworks, forecasts of future returns should be obtained from forecast combinations of models that contain predictors such as, “fundamental factors” (e.g. price-earnings), “behavioural factors” (e.g. sentiment) and atheoretical dynamics (e.g. past return innovations).

2. Similarly, for VaR and other applications of risk management, forecasts of future volatility should be obtained from forecast combinations of models that account for features such as multifractality, regime switching and short/long memory (e.g. short/long range dependence of volatility).
3. Academics and practitioners should have a closer look at (and deeper search for) interaction based models and data-driven procedures which have recently shown to be more in lines with the needs for monitoring and managing, e.g. systemic risk, liquidity risk and counterparty risk ex-ante.

It is, however, very important to make a caveat to the above recommendations. Mathematical or statistical models can only take us so far, and as suggested by Markowitz (1952), proper risk evaluation requires not only quantitative techniques but also the judgement of practical men.

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# **After the Crisis: New Patterns in the World Economy**

# Will Global Imbalances Decrease or Even Increase?

*Jens Boysen-Hogrefe, Klaus-Jürgen Gern, Nils Jannsen*

## **Abstract**

*The ongoing global financial crisis has been preceded by a steady rise in global current account imbalances. Recently, in the course of the global recession, global imbalances have declined, albeit without having disappeared completely. As the outlook for global growth gets brighter, it is important to be aware of the possibility of again arising global imbalances in the future, since many of the structural reasons for the foregoing build up of imbalances remain largely in place. This is particularly important against the background of a close relationship between the global imbalances and the financial crisis. Important steps that would help to avoid the reoccurrence of unsustainable global imbalances and contribute to stabilize the global economy in the medium run are a tighter regulation of financial markets, the strengthening of the role of the IMF in monitoring global capital markets, and the development of social security systems and financial markets in emerging economies.*

## **Introduction**

The ongoing global financial crisis has been preceded by a steady rise in global current account imbalances. Recently, in the course of the global recession, global imbalances have declined, albeit without having disappeared completely. As the outlook for global growth gets brighter, it is important to be aware of the possibility of again arising global imbalances in the future as it is unlikely that the structural reasons that have led to the imbalances in the past have vanished thoroughly. In this contribution we discuss the nature of the global imbalances of the past, describe structural factors that caused them and ask to what extent these factors have changed, and propose policy options that may contribute to improving the situation in the future.

Generally, current account imbalances are nothing to worry about. Indeed imbalances can be desirable, if they reflect cross border capital flows that help employing capital where it is most productive and smoothing consumption in individual countries over time. However, in the case of high and prolonged current account deficits the question of sustainability might arise. Unsustainable large current account deficits can potentially lead to sudden stops of capital inflows and consequently to severe recessions (see e.g. Edwards, 2004). In recent years, the duration, the level and the structure of global imbalances have raised concerns that the situation may have become unsustainable as deficit countries including highly developed countries like the US, Australia or Spain accumulated external liabilities at a high rate while many emerging economies, which according to traditional theory should receive net capital inflows to accelerate economic growth, ran large current account surpluses. The case of the US is of particular importance, because a slump of import demand in an economy representing almost 25 per cent of global demand could potentially trigger a world

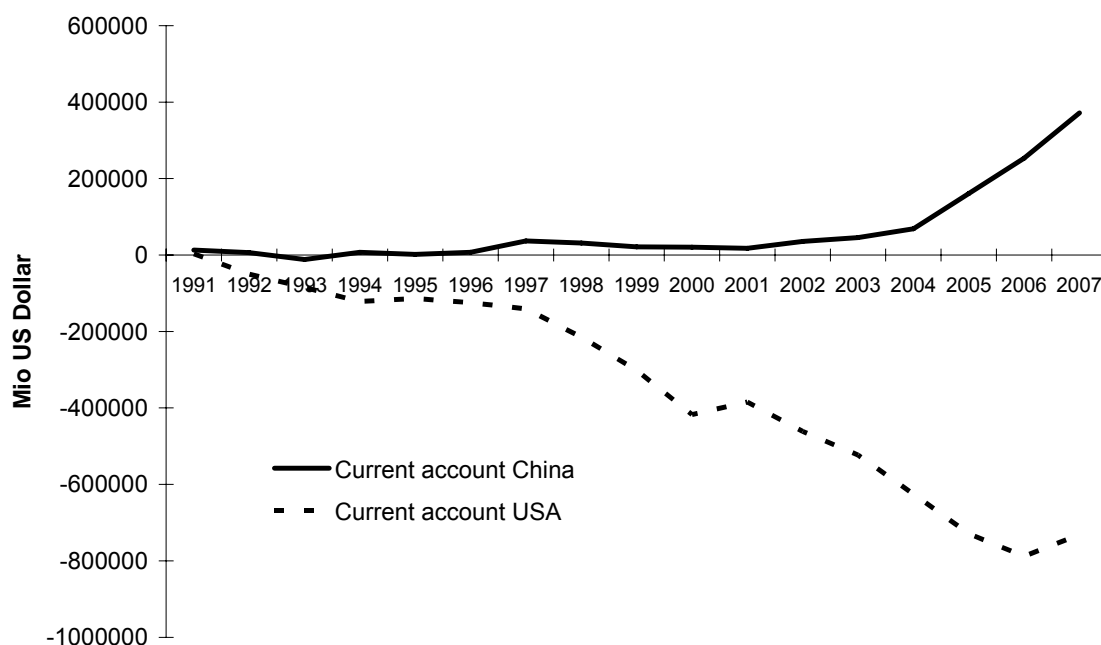
recession. Furthermore, there seems to be a close connection between the financial crisis and the preceding global imbalances, as it had been anticipated among others by BIS (2006). It has, however, also been argued that the pattern of global imbalances with the US in substantial deficit and Japan, continental European countries (esp. Germany) and China in surplus was largely in line with economic fundamentals, especially secular demographic trends, and therefore no major correction was to be expected in the near future (e.g. Cooper 2006).

## Circumstances and Causes of Recent Global Imbalances

While the current account deficit of the US grew from 1.7 per cent relative to GDP in 1997 to 5–6 per cent in 2005–2007, China's surplus after a period of relative stability exploded in recent years to reach a value of 11.5 per cent relative to GDP in 2007 (Figure 1). At the same time, current account imbalances increased all over the world. The United Kingdom, Spain and Australia posted rising deficits while current account surpluses grew in Japan, Germany, Asian tiger countries and in a number of raw material (particularly oil) exporting countries. Correspondingly, the world wide dispersion of current account levels increased steadily in absolute as well as in relative terms (Figure 2).

Several explanations for the increase of global imbalances have been broad up by the literature.<sup>1</sup> First, expected high productivity growth in the US relative to other countries may

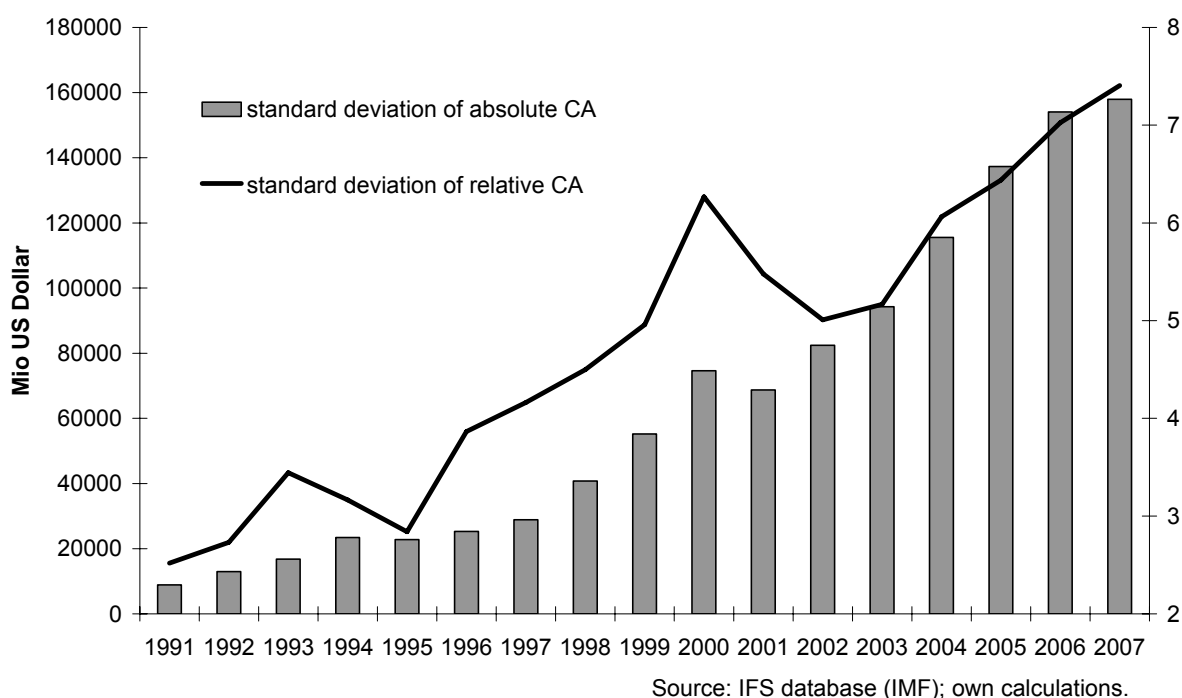
Figure 1: Current Account of China and the US



Source: IFS database (IMF).

<sup>1</sup> For an overview, see Dovern et al. (2006) or EEAG (2006).

Figure 2: Current Account Imbalances



Note: Calculations are based on current account (CA) figures from 32 major economies.

have attracted capital from abroad.<sup>2</sup> Moreover, measurement errors in foreign capital positions (“dark matter”) may have contributed to overstate imbalances.<sup>3</sup> Most frequently in the literature a global “savings glut” in combination with loose monetary policy and developments in financial markets have been discussed. A global “savings glut” has been seen as the main driver for the rise of global imbalances in several analyses (see e.g. Bernanke 2005). Several countries contributed to the “savings glut” for different reasons. The Asian tigers suffered a collapse of their high investment ratios during the Asian crisis 1997/8 which never fully recovered (see Chinn and Ito 2007, 2008), while savings remained at a high level. The excess savings allowed monetary authorities to build up large foreign currency reserves aiming to prevent future currency crises. In addition, private savers sought investments in industrialized countries, mainly the US, as they were regarded as “save haven” especially in contrast to the crisis-ridden emerging market economies. The turnaround of the Asian tiger countries’ current accounts was facilitated by a large devaluation of their currencies during the crisis which made their exports more competitive and depressed imports. China experienced moderate current account surpluses for many years but with a rising trend from 2002 onwards and an enormous acceleration between 2005 and 2007. China had kept a fixed exchange rate to the US Dollar since 1995 and switched to a policy of gradual appreciation in 2005, and the consequences of the Asian crisis were less severe compared to other East

<sup>2</sup> See, Engel and Rogers (2006).

<sup>3</sup> Compare Hausmann and Sturzenegger (2006) for introducing the argument and Buiter (2006) for a critical discussion.

Asian countries due to the system of capital controls. Thus, the huge accumulation of foreign currency reserves that has taken place in recent years as a consequence of current account surpluses was not a deliberate policy in response to devaluation risks but rather by-product of an export orientated growth policy.<sup>4</sup> In the Chinese case, the strong improvement of the current account was not result of a fall in the investment ratio of the economy but, to the contrary, went along with an extremely high steadily increasing share of investment in GDP which eventually became widely regarded as being excessive rather than insufficient. Thus, extraordinarily high savings of the private sector seem to be at the root of the rise in Chinese current account surpluses. The high savings rate in China might be explained by the underdeveloped financial markets and an inadequate social security system. Within the last ten years social security, like public health care, has even been reduced and a bond market offering reasonable low risk assets to private investors *de facto* does not exist.

Generally, in light of traditional economic thinking, the high current account surpluses in many of these Asian countries are puzzling as one would expect capital productivity to be higher in these emerging economies compared to developed countries due to the relative abundance of labour. This should lead to net capital flows into these countries which, as the flip side of the coin, should be running current account deficits. However, in the real world additional factors affecting investor decisions and the level of savings such as economic uncertainty, the struggle for credibility, the prevalence of export oriented growth models or deficiencies in the national financial and social security systems; compare Caballero et al. (2008).

Another group of countries with high current account surpluses in recent years are the oil exporters (esp. OPEC countries and Russia). The rise in their external balances can be regarded as to a large part being transitory, although probably enduring for several years. As the huge increase in oil revenues came unexpectedly, imports have not grown correspondingly, but should be gradually adjusted as a higher level of oil prices gets embedded in expectations. To some extent it is economically reasonable to save (and invest abroad) some of the extra money induced by price fluctuations as an insurance against falling prices in the future.

Not only emerging economies and raw material exporting countries built up large current account surpluses in the past years, but also some industrialized countries like Japan and a number of continental European countries, including Germany, the Netherlands, Switzerland and most Scandinavian countries. Most of these countries are confronted with demographic trends characterized by declining birth rates and shrinking population of young adults. In this environment, investment opportunities seem to be relatively unfavourable while at the same time the propensity of private households to save remained high and public deficits were reduced. In Germany this development was accompanied by a steady gain of competitiveness and the rise in trade surpluses was particularly pronounced.

The rising surpluses in some countries were matched by growing current account deficits in a group of other countries, mainly industrialized economies but also a number of emerging

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<sup>4</sup> Compare Dooley et al. (2004).

economies such as India, South Africa, Turkey and most Central European countries<sup>5</sup> The main exponent of the deficit countries, however, are the US, where the current account balance turned negative again in 1992 and the deficit widened almost continuously to reach a level of 6 per cent of GDP in 2006. Two main arguments for rising current account deficits in the US have been put forward, that should be regarded as complementary: the “savings glut” has led to a steady capital inflow into the United States and rather loose monetary as well as expansive fiscal policies in the years following the 2001 recession (Taylor, 2008; Chinn and Ito, 2008). In sum, interest rates were relatively low and a housing price bubble emerged, which provided “seemingly” profitable investment opportunities and supported consumption which was accompanied by high import growth and a decreasing savings rate.<sup>6</sup> The emergence of the housing boom and the associated house price inflation was supported by aggressive behaviour of financial institutions which financed acquisition of property at extremely favourable terms, e.g. making extensive use of the now infamous sub-prime mortgages partly endowed with “teaser rates”.

Low real interest rates are one reason for high and increasing current account deficits in some European countries, too. Since there is only a single monetary policy of the European Central Bank (ECB) designed for the aggregate of the Euro area, countries with inflation significantly above average on a persistent basis like Spain, Ireland or Greece were persistently facing significantly lower real interest rates. This triggered a credit boom as well as a housing boom in these countries. In Spain low real interest rates and a steady inflow of migrants caused a house price bubble even though the country had the most prudent banking regulation within Europe. The construction sector in Spain prospered, unemployment shrank and wages rose. The loss of competitiveness and the growth of domestic demand resulted in increasing trade and current account deficits. Spain registered the second largest current account deficits in absolute terms worldwide.

A number of other industrialized countries, like the UK or Australia, and some emerging countries in Central and Eastern Europe also faced asset or housing price booms and rising current account deficits during the past decade. For some of these countries carry trades played an important role during the emergence of deficits. They used lower interest rates abroad, like in Switzerland or in Japan, to finance the accumulation of large debts in the private sector.

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<sup>5</sup> The low level of savings in these industrialized countries seemed to offset the rather high savings in the group of surplus countries. Overall, in recent years world savings were rather low compared to former times; see Chinn (2009) or Desroches and Francis (2007), p. 2. Thus, the term “savings glut” does not just reflect an increased savings tendency but rather the result of a mismatch between savings and (lower) investments in some parts of the world that drove down world's interest rates.

<sup>6</sup> The link between housing price bubble and current account deficits is analyzed in Fratzscher et al. (2007) or Punzi (2007).

## **Global Imbalances and the Financial Crisis**

The former section pointed out the savings glut in East Asia as one potential driver of excessive global imbalances in the past years. Furthermore loose monetary policy and financial innovations may have contributed to build up the large current account deficits in United States. There is some reason to believe that these factors played a considerable role in causing the financial crisis, too.

High private saving rates in combination with underdeveloped financial markets and the high demand for US Dollars of East Asian Central Banks either to stabilize the exchange rate or to prepare against speculative attacks led to a steady capital inflow in the United States. Since a considerable share of the demand for US dollars was directed at purchases of long-term bonds, long-term interest rates were driven down to unsustainable low levels. Consequently the demand for alternative long-term investment increased. This development has contributed to an oversupply of mortgages because they seemed to be a reasonable alternative low-risk investment but more profitable; see Gros (2009).

Also loose monetary policy in the United States may have contributed to the financial crisis and global imbalances. Low credit cost supported an unsustainable path of credit financed private consumption. At the same time it boosted the risk appetite of financial institutions and the demand for alternative investments like asset-backed securities, further increasing consumption opportunities. Thereby domestic demand and consequently the trade deficit increased.

Ultimately, the highly developed financial markets in the United States and financial innovations reinforced the impact of the savings glut and loose monetary policy on global imbalances and the financial crisis. Financial innovations supported the translation of low interest rates and increased asset prices into private consumption. In particular the unsustainable housing boom in the United States that triggered the global financial crisis was boosted by financial innovations that on the one hand increased the supply of credit and on the other hand stimulated credit-financed domestic demand; see Brender and Pisani (2009).

## **Recent Developments**

In the course of the current world wide recession the current account balances have been gradually shrinking (Table 1). The bursting of the asset price bubbles increased the propensity to save in US households as negative wealth effects diminish the value of collaterals, and weak domestic demand reduced imports. Helped by drastically lower oil prices the US current account deficit decreased substantially to 2.9 per cent of GDP in the first quarter of 2009, a level that has often been regarded as being sustainable in the longer term. At the same time, the gap in the current account of surplus countries such as Germany or Japan narrowed as exports crashed. Indicators suggest that the Chinese surplus has also been reduced, as a huge fiscal stimulus package has kept domestic demand in China running while Chinese exports have also suffered. However, it seems unlikely that the US current account deficit will shrink much further as the government has massively stimulated domestic absorption and increased the public deficit to unprecedented levels. Furthermore, export

Table 1: Current Account relative to GDP

	2007	2008	Q4 2008	Q1 2009
USA	-5.30	-4.95	-4.36	-2.88
Spain	-10.03	-9.54	-8.55	-7.63
Japan	4.86	3.24	1.69	1.41
Germany	7.88	6.63	4.83	3.08

Source: National Statistical offices.

orientated economies like China, Germany, Japan or Korea will not change their economic structures rapidly and these countries will particularly benefit from a recovery of the world economy. Therefore, even though some of the recent reduction of global imbalances is probably structural, for example as a result of a persistently higher personal savings rate in the US, overall global imbalances are likely to increase again as the economic recovery proceeds.

### Managing Global Imbalances After the Financial Crisis

Although global imbalances have diminished to some extent during the ongoing financial crisis, the phenomenon of high and persistent current account imbalances will stay with us since the structural reasons behind them have mostly not been resolved. In East-Asian countries like China financial markets will remain underdeveloped and precautionary saving will continue to play an important role in the medium term and may reinforce the 'saving glut'. Oil exporting countries are likely to be net savers in the foreseeable future as well. Conversely, in countries that have run large current account deficits so far, structural reasons such as relatively favourable demographic trends or a particularly flexible and dynamic economy may remain relevant. In addition, unsustainably high levels of domestic absorption in some countries may be supported to some extent by governments running large fiscal deficits for an extended period of time.

In general, government policy should probably not try to focus on the external balance of a country or on global imbalances in general as net exports and associated changes in net foreign assets can be seen as the natural outcome of individual agents' economic decisions governments should only carefully interfere with. However, high and persistent current account imbalances may indicate structural problems in an economy which should be approached in the interest of the economy. For example, in the case of China the extremely high level of the household savings ratio which is behind the high current account surplus suggests that there may be policy options available which increase the welfare in the Chinese economy and at the same time work in the direction of more balanced external accounts. In particular, an improvement of social security systems could decrease the need for private savings and provide a rather quick alignment of current accounts. However generally, emerging market economies need investments to build up a suitable capital stock. Thus, a more important step is the improvement of financial institutions in emerging markets. The inability of financial systems in emerging markets to provide suitable assets and thereby to



intermediate savings and investments on a national level increased the demand for assets denominated in Dollars contributing to the phenomenon that we became used to call “savings glut”. Building a more developed and integrated financial system in emerging economies could change the situation (Prasad, 2009).<sup>7</sup>

Probably even more importantly, the regulation of financial markets on a global scale and in particular in countries with highly developed financial markets is necessary to reduce the probability of re-occurrence of asset price bubbles. Apparently financial institutions took on too much risk. Some of the underlying faults that led to financial crises also supported global imbalances to rise. One example may be the excessive mortgage supply for non-credit-worthy homebuyers in the United States that were financed via structured securities internationally. Therefore an institutional framework that stabilizes financial markets at a global level could be one cornerstone in preventing unsustainable global imbalances as well as global financial crises in the future. Reasonable steps towards a better regulation of financial markets are a ban of off-balance-sheet liabilities, implementation of a new structure in the field of rating agencies in order to prevent moral hazard, or introduction of a compensation scheme for bank managers orientated at sustainable developments, among others (Tabellini, 2009; see also GES, 2009).

Better regulation of financial markets and institutional changes on a global scale are necessary, but it seems unrealistic that economic policy is able to prevent future unsustainable global imbalances definitely all the more that reforms are hard to enforce as coordination of all big economies in the world is very ambitious, if even impossible. Therefore, to strengthen the role of the IMF in monitoring global capital markets could be a more practical approach (Dunaway, 2009). It is questionable that its’ political power will be increased, but a well equipped and (more) independent IMF could provide profound policy advice and urge even large countries to unilateral or bilateral action.

Recently it has been argued that a world currency would prevent the rise of imbalances to some extent. Emerging economies would not have the need for building up large reserves to prevent a currency crisis. In this regard a corresponding reform of the world financial system is postulated. However, one has to keep in mind, that there are several possible reasons for rising imbalances. Export orientated policies like in China<sup>8</sup> as well as the windfall profits of oil exporters would have not been prevented by a world currency. Furthermore, experiences in the Euro area show that a single currency does not dampen or even prevent imbalances.

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<sup>7</sup> Chinn and Ito (2007) argue that marginal improvements of the financial sector itself in East Asian economies have no impact on current account surpluses. They identify additional circumstances like the legal system and the international financial integration as important determinants of the link between current account and financial development. Thus in lines of their argumentation an alleviation of the intermediation between savings and investments in emerging market economies has to take measures that aim on broader reforms than just the improvement of the domestic financial sector.

<sup>8</sup> The Chinese surpluses in connection with its currency peg are often regarded as an argument in favour of flexible exchange rates, as the assumed undervaluation of the Chinese currency – in this line of thought a main driver of global imbalances – would have been prevented by freely floating currencies. However, this argument is contradicted by McKinnon and Schnabl (2009). These authors favour domestic economic policies for China as a contribution to the solution to the problem of global imbalances. Furthermore, it seems rather unrealistic that a fully free floating currency system will prevail (Calvo and Reinhart, 2002).

Persistent differences in inflation occurred and triggered over investments and current account deficits in some countries, like Spain or Ireland, where too low real interest rates prevailed.

The imbalances within the Euro area rather seem to offer an argument for the opposite opinion, namely, for fully flexible exchange rates. However, on the one hand the argument with respect to the dependency of emerging economies on international capital markets and their struggle for reputation stays valid, where the anticipation or the fear of exchange rate volatility increased national savings. On the other hand the phenomenon of carry trades and the experiences of some Middle and East European countries prove that flexible exchange rates cannot prevent rising imbalances. Thus, flexible exchange rates are not a tool to guarantee a sustainable development of international capital flows as well.

Overall, the role of exchange rates with respect to global imbalances is ambiguous. While exchange rate risks can be a trigger for “savings gluts” in emerging market economies, a fixed exchange rate system or a world currency does not provide a guarantee that “unhealthy” global imbalances will vanish.

## Conclusion

In the past years global imbalances increasingly became a major concern for the future economic development. Recently, in the course of the global financial crisis, global imbalances declined considerably, albeit without disappearing completely. There is some reason to believe that structural reasons like globally deregulated financial markets and underdeveloped financial markets in emerging market economies are an important force behind the build-up of external imbalances. As these factors remain largely in place, there is the danger of a reoccurrence of excessive global imbalances in the future. Important steps to stabilize the global economy can be seen in a tighter regulation of financial markets and the strengthening the role of the IMF to monitor global capital markets. Furthermore an improvement of social security systems and financial markets in emerging economies could dampen steady capital inflows into the United States. In contrast the role of exchange rate schemes is ambiguous.

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# Back to Normal? The Future of Global Production Networks

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## Abstract

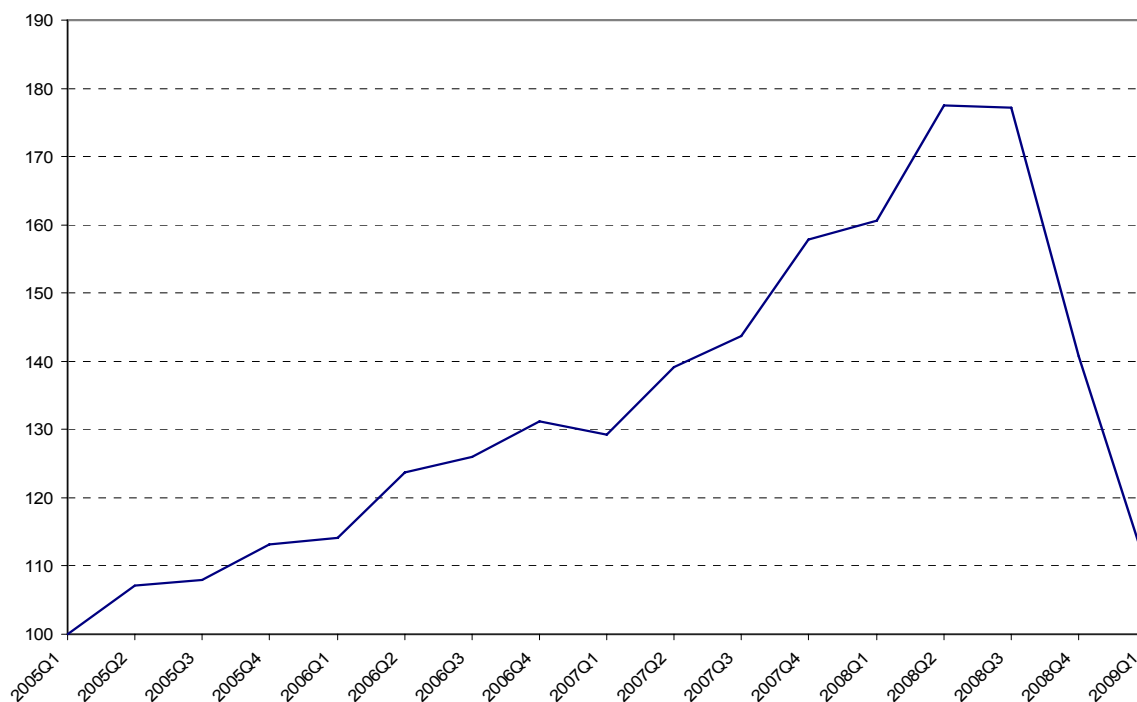
*Since the economic downturn started, exports have fallen dramatically and rapidly. One reason for this is the importance of vertical specialization, where the drop in demand for the final good induces a domino effect on to demand for intermediate inputs. Hence, the strong collapse in exports in the recent month is at least partly driven by the same forces that allowed global trade to expand much faster than global GDP in the last two decades, i.e. global production networks. One view is that after the crisis, these networks will bounce back and trade will be back to normal quite rapidly. We point out, however, that this may be an overly optimistic view. Building global production networks involves substantial set up costs that are often non-recoverable. These might be sunk costs of exporting or sunk costs of foreign sourcing of inputs. The existence of such costs may make it unlikely that international trade relationships will restart as quickly once the economic situation improves again. Hence, the international crisis may have consequences that go well beyond the prediction of a standard economic model, when the presence of global production networks and sunk costs of building foreign trade nodes are taken into account.*

## Introduction

The current global economic crisis has again pushed the issue of international trade into the spotlight of public and academic debates. Since the economic downturn started, exports have fallen dramatically and rapidly. Figure 1 illustrates this dramatic decline: at the end of the 1<sup>st</sup> quarter of 2009, world merchandise exports have fallen back to the level of 2005, after a steady increase between 2005 and the 3<sup>rd</sup> quarter of 2008.

One may suggest that even though trade volumes have declined during the economic downturn, international trade will pick up again once the crisis is over. Indeed, in a standard economic model, downswings in business cycles reduce the demand for domestic and foreign goods, causing firms to reduce or put on hold their exports. During upturns, conversely, companies start to export again and expand further into foreign markets.

While this line of argument may be appealing in light of the current international crisis, it neglects an important fact. Today's world economy is characterized by high degrees of globalization of production, with firms exporting final goods around the globe and sourcing intermediate inputs from suppliers located in many countries. This is sometimes referred to as global production networks. The need to consider these networks stems from the fact that building foreign trade nodes involves a range of substantial set up costs that are often non-recoverable. They are generally referred to as sunk costs. These might be sunk costs of exporting or sunk costs of foreign sourcing of inputs. The existence of such costs may make

**Figure 1: Quarterly World Merchandise Export Developments 2005–2009 (2005Q1=100)**

Source: WTO Secretariat, available at <http://www.wto.org>.

it unlikely that international trade relationships will restart as quickly once the economic situation improves again.

The questions this essay attempts to address are: what will happen to global production networks during and after the crisis? Are the predictions of the standard model the most likely outcome of the international crisis in the light of global production networks and sunk costs of building foreign trade nodes?

To examine these questions, we will start with briefly charting the importance of global production networks, or international sourcing as it is also referred to, before the crisis. We then comment on the development during the crisis, and consider what may happen once the world economy leaves the current situation behind and picks up again.

## The Importance of Global Production Networks

Global production networks are an important aspect of the current globalized world economy. This is evident not only from anecdotal evidence on where firms source their inputs, but also from more aggregate statistics on imports of intermediate products and international sourcing behaviour.

The World Trade Organization (1998, p. 36) provides a good example of the extent of internationally linked production activities when it describes the geographic sources of inputs for the average American car: “30 % of the car’s value goes to Korea for assembly, 17.5 % to Japan for components and advanced technology, 7.5 % to Germany for design, 4 % to Taiwan and Singapore for minor parts, 2.5 % to the UK for advertising and marketing services

*and 1.5 % to Ireland and Barbados for data processing. Only 37 % of the production value is generated in the United States.”*

Another illustration is provided by Linden et al. (2007) who determine the source of inputs for an iPod, sold by the US company Apple. They estimate that the hard-drive, produced by the Japanese company Toshiba using affiliates based in China accounts for 51 per cent of the cost of all iPod parts. The display module and display driver, produced by Japanese companies in Japan, account for 16 per cent of input costs. 2 per cent of the value of inputs are supplied by Samsung, a Korean company producing the input in Korea. The final assembly, accounting for 3 per cent of the input cost, is carried out by a Taiwanese company in a plant in China. The source of 20 per cent of inputs cannot be determined by the researchers. This leaves 9 per cent of input costs that are supplied by US firms, who provide the video/multimedia processor as well as the portal player CPU. The former input is produced, however, in either Singapore or Taiwan, while the CPU may stem from production plants in either the US or Taiwan. This, hence, shows again the importance of global production networks in the assembly of an iPod.

Examining the importance of such production sharing at a more aggregate level is not straightforward, as no harmonized and internationally comparable statistics are available. Hummels et al. (2001) proposed a method that enables them to gauge the magnitude of what they refer to as “vertical specialization”. This is based on the idea that such global production sharing involves that at least one stage of production that relies on imported inputs, and that some share of the production is exported. Applied to Apple’s iPod, consider that China imports many inputs and then assembles the iPod, which is then exported to the US or indeed other countries. From the point of view of the US, Apple imports the final assembled product and then exports the final good (after some marketing) to final customers in Europe and elsewhere.

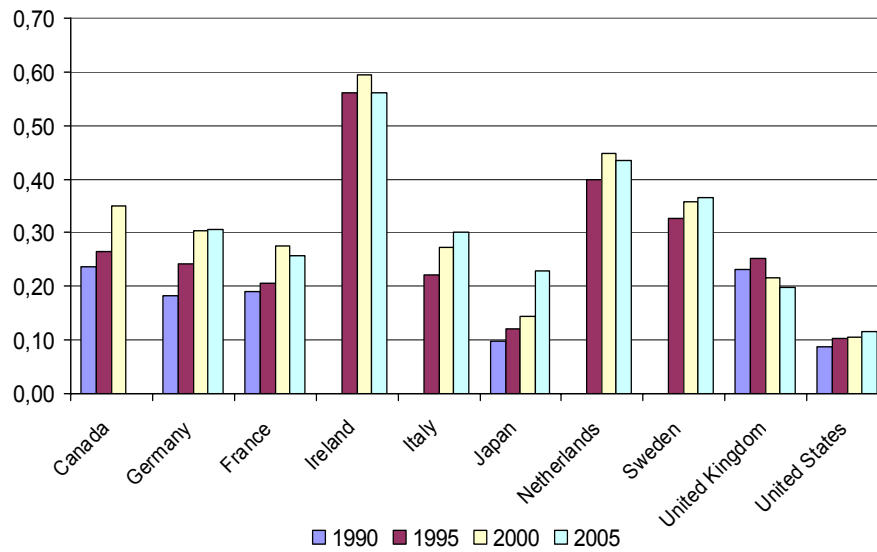
This logic can be applied to aggregate trade data, and one can measure the importance of imports for exports in a given industry and country. Figure 2 provides some evidence on the imported intermediate input content of exports for a number of European countries, Canada and the United States, calculated using the Hummels et al. (2001) method based on data from national input-output tables.

The data show that vertical specialization is widespread among these industrialized countries. It is also apparent, however, that the magnitude of global production sharing differs across countries. In Ireland, vertical specialization accounts for almost 60 per cent of exports, while in the US the corresponding figure is around 10 per cent. It is obvious that it is mainly the smaller countries (Ireland, the Netherlands, Sweden) that engage in more pronounced levels of vertical specialization.

Vertical specialization has grown in some, but not in all countries. For example, from 1990 to 2005, the share of vertical specialization in total German exports has almost doubled, while it remained almost constant in the US. The UK even experienced a slight decrease in this measure over that period. Unfortunately, we cannot calculate these figures for years later than 2005, as the underlying input-output data are not available yet.

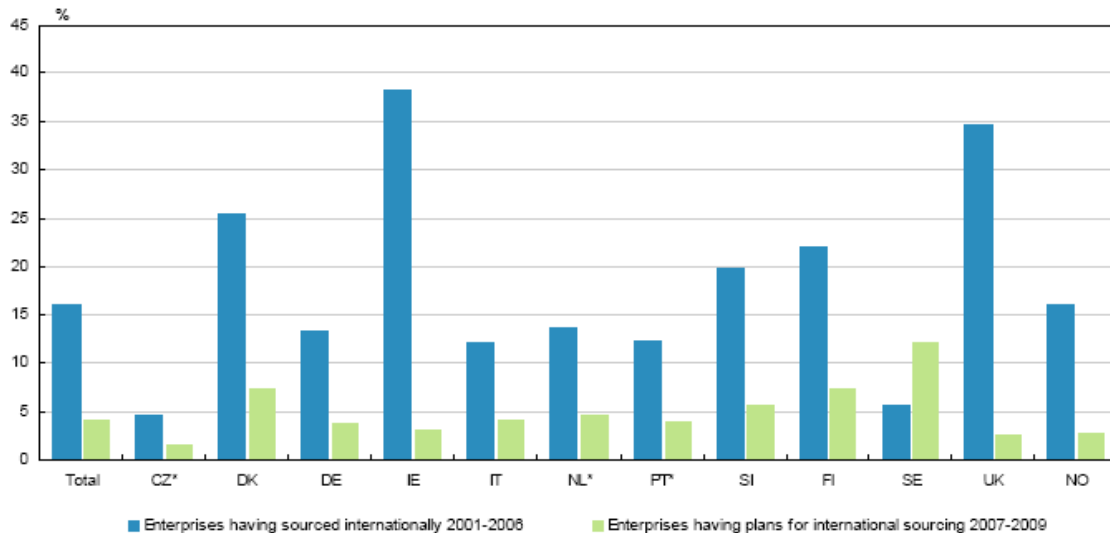
An alternative indicator of global production sharing is provided by Eurostat, using results from a survey on international sourcing behaviour of European firms with more than

Figure 2: Vertical Specialization Share in Total Exports



Source: Authors calculations based on countries' input-output tables (OECD).

Figure 3: Level of International Sourcing of Enterprises during 2001–2006 and Planned International Sourcing 2007–2009



\* CZ, PT: provisional data; NL unreliable data for enterprises having international sourcing plans 2007-2009.  
 Note: Enterprises with plans for 2007-2009 only include enterprises not having sourced internationally in the previous period 2001-2006.

Source: Eurostat, SBS

Source: Eurostat: International Sourcing in Europe, Statistics in Focus 4/2009.

100 employees. Figure 3, taken from their publication, shows in the blue columns the share of surveyed firms having sourced inputs internationally during the period 2001 to 2006. (We will come back to the other column in the discussion below.) It shows again that international sourcing is important for European firms, although the magnitude of the phenomena differ across countries. Most importantly, and in line with our findings above, Irish firms are the most prolific “outsourcers” in the European comparison. The survey also shows that inter-

national sourcing is highly important for British firms. While this may seem at odds with Figure 2, it is important to point out that Figure 3 shows the incidence of international sourcing, i.e., the number of firms engaged in the activity, rather than the level of outsourcing. In Germany, only roughly 15 per cent of firms source their inputs abroad.

## **Global Production Networks During the Crisis**

Unfortunately, it is difficult to measure with any precision what happens to the extent of global production networks when adjustments to the crisis are still ongoing. Furthermore, there are no consistent up-to-date data available that would, for example, enable us to calculate measures of vertical specialization as done in Figure 2. There are, however, some sound economic reasons for why one would expect that vertical specialization has fallen as a result of the crisis. We discuss two in turn.

The first reason is the fall in exports. The financial crisis has translated into a world-wide drop in consumer spending. Since consumers demand not only locally produced goods but also exports, this has led to a quite substantial decrease in export activity in world exports, as shown above in Figure 1, especially in North America, Europe and the far East. For example, Yi (2009) reports that exports in the US fell by an annual rate of 43 per cent during the fourth quarter of 2008. The corresponding figure for Germany is a drop by just over 80 per cent. Given the existence of vertical production chains, or global production networks described above, a fall in exports of final goods also implies lower demand for intermediate inputs, and hence a decrease in the value of vertical specialization. Indeed, a number of economists, for example Yi (2009), have recently voiced their opinion that the rapid decline in exports is partly due to the importance of vertical specialization, where the drop in demand for the final good induces a domino effect on to intermediate inputs. Hence, the strong collapse in exports in the recent month is at least partly driven by the same forces that allowed global trade to expand much faster than global GDP in the last two decades, i.e. global production networks.

The second reason concerns availability of financing instruments related to trade. Access to services in general, and financial services in particular, are vitally important for exports and imports. Firms need access to available bank loans in order to finance imports of intermediate goods that will only after some value adding and sale translate into revenues. Furthermore, exporters are dependent on access to finance in order to bridge the gap between the date of invoice and the receipt of the payment, which may only happen with a substantial delay when interacting with customers abroad. Furthermore financial instruments like letters of credit play an important role as insurance against default of the buyer or any risk in international transactions.

Due to the financial crisis banks in need of liquidity in an uncertain environment, tend to be much more reluctant to provide such credit easily. This implies that exporting and importing are additionally constrained: a further reason to expect that some global production networks are hurt during the financial crisis.



Some anecdotal evidence illustrates the potential severity of the problem. The *Financial Times*, for example, has recently announced that Sony plans to halve its supplier networks in an effort to cut costs in order to deal with the slump in sales. Specifically, Sony plans to reduce its current network of roughly 2,500 suppliers to about 1,200 by March 2011 with the expectation of cutting its procurement costs by roughly \$ 5.3bn as a result. Ford is also quoted by the *Financial Times* as engaging in a similar exercise. They have cut back from more than 3,000 suppliers to around 2,000, with a target of reducing this further to 750. Indeed, Ford's procurement chief is quoted as saying that he expects "more stress in the supply base in the short term, not less". For the *International Herald's Tribune*, Hiroko Tabuchi reports that Japanese small and midsize exports of intermediate components are the most vulnerable to the global downturn. They supply many firms abroad and are at the "heart of the economy".

If these cases are anything to go by, then international sourcing and global production networks may become somewhat less important as a result of the financial crisis. Moreover, the value of foreign nodes in global international networks should be lost for all participants of these networks.

### **Back to "Business as Usual" After the Crisis?**

If some global production networks do in fact decline during the crisis, the important question becomes: what will happen afterwards? There are two views on this: one, things will be back to business as usual, as suggested by the standard economic model directly applied to the current situation. The other view is that, no it will not – or at least not so easily and so quickly. Let us discuss these two views in turn.

Proponents of the first view would argue that during the financial crisis exports have fallen so dramatically because of the existence of global production sharing and the associated domino effect – lower exports of final goods also imply fewer imports of intermediate products. This has dire implications for international sourcing during the crisis, but there is an optimistic ending. The argument goes that, once the crisis is over and global demand picks up again, exports of final goods will rise again and with it global production networks. Export producers will need to source inputs, and they will source them, as before the crisis, from suppliers world-wide. If the domino effect works adversely in the time of crisis, it works positively in the time after the crisis.

The second view is somewhat more pessimistic. Recent work in international economics, using both theoretical analysis and careful evaluation of firm level data tells us that "sunk costs matter". This means, in a nutshell, that export and the setting up of global production networks involve substantial set up costs, which can to a large extent not be recouped once a firm leaves the export market or terminates its international customer-supplier relationships. Examples of this are costs for market research, searching for adequate suppliers abroad, setting up foreign distribution and sourcing networks, paying for lawyers versed in the law of the foreign country, etc. While setting up a global production network means that the firm has covered these costs and got the knowledge, the value of this knowledge tends to

depreciate rather quickly once the firm leaves the export market, or stops international sourcing.

The empirical relevance of this argument is illustrated forcefully in a study on Colombian exporters by Roberts and Tybout (1997), showing the response of exporters to changes in the Colombian peso exchange rate. The study shows that there was substantial exit of exporters during an appreciation of the Peso lasting up to 1984. A following much stronger depreciation of the currency, after 1984, however, only led to a much lower rate of re-entry into export markets. In other words, firms that were out of the export market were reluctant – or unable – to get back in. That study also carefully quantifies the importance of sunk costs. A firm was 60 per cent more likely to be an exporter if it also was one in the previous period. However, once a firm quitted the export market for longer than one year, it was just as likely as a domestic firm that never exported before, to re-enter the export market. This points at how important it is for a firm to stay in the export market.

While there is no equivalent study for global production networks, it is very likely that a similar mechanism would be at work. As pointed out above, both exports and international sourcing involve substantial sunk costs of a similar nature. Once out of the sourcing market, much of these costs would have to be borne again by a firm wishing to re-enter after a pause. Let us assume that sunk costs are as important for international sourcing as they are for exporting. This would imply that, as in the Colombian case, firms that drop out of their international sourcing network for more than one year, are as likely to re-establish global production networks as are firms that never engaged in international sourcing before. This brings us back to Figure 3 above. Interestingly, the survey on which this figure is based also includes firms that did not do any international sourcing before. These firms were asked how many of them were planning to do so in the future. The green column in Figure 3 reports the percentage of firms that were planning to start international sourcing. This is below five per cent in most cases.<sup>1</sup> So among those firms that never engaged in any international sourcing, the probability of starting to do so is definitely quite low. This probability may be similarly low for firms that did do some international sourcing before, but quitted it for a year or more.

What does this imply? If, as a result of the international crisis, demand for exports falls dramatically and a firm stops sourcing inputs internationally, then re-entrance into international sourcing will be seriously hampered, even if foreign demand picks up again. So, once a firm stops, the concern is that it is going to be hard to re-establish foreign trade nodes and get back in. A firm may be likely to decide not to re-establish global production networks again, or, at least, it is likely to take some time before it is able to do so. Hence, the international crisis may have consequences that go well beyond the prediction of a standard economic model, when the presence of global production networks and sunk costs of building foreign trade nodes are taken into account.

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<sup>1</sup> This survey was undertaken in 2006, before the crisis started. Were it taken today, one may expect even lower numbers wishing to start international sourcing.

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# Why Trade Barriers Hurt: Protectionism in the New Trade Model

Wolfgang Lechthaler

## Abstract

*The current economic crisis has led to a worrying increase in protectionist measures. National governments try to protect their economies by raising trade barriers and by using “Buy National” clauses in their stimulus packages. In a dynamic trade model with heterogeneous firms, I show that this beggar-thy-neighbour policy does not work. In contrast, raising trade barriers hurts the country implementing them, even if the trading partners do not react by raising trade barriers themselves. The reason lies in the worsening of the terms of trade and the redistribution of production from efficient exporting firms to less-efficient import-competing firms.*

## 1 Introduction

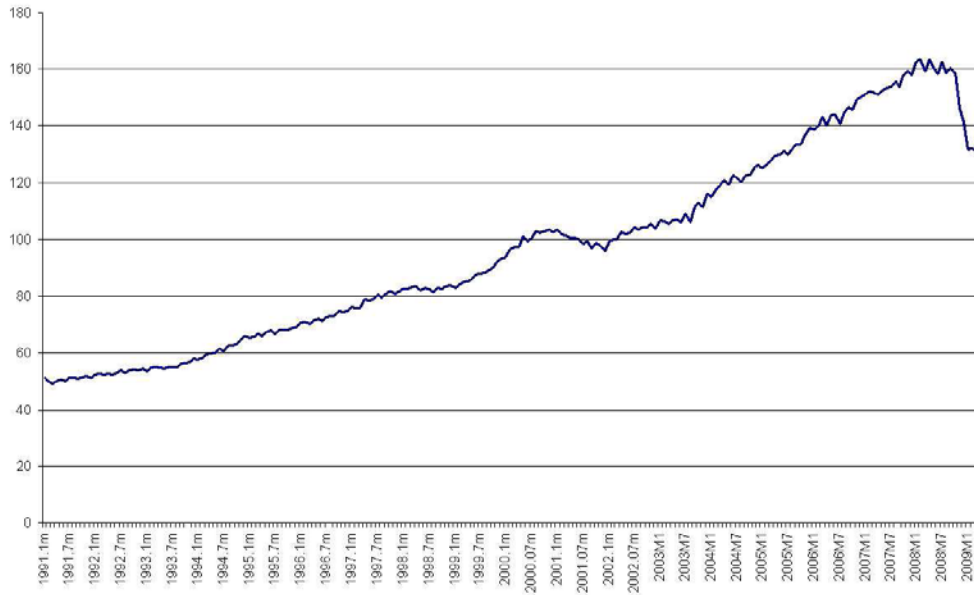
During the great depression of the 1930's many countries tried to protect their economies by building up trade barriers. Today there is widespread agreement that these measures contributed importantly to the depth and persistence of the crisis. Nevertheless, there has been a worrisome, although still small, increase in protectionist measures. In this paper, which is based on a joint project with Mario Larch of the ifo Institute for Economic Research in Munich, I try to analyze the consequences of protectionism in the new trade model of Melitz 2003 and its dynamic version in Ghironi and Melitz 2005. The latter is especially well suited for the analysis of the current crisis since it allows for deviations from the long-run equilibrium – in other words it allows for recessions.<sup>1</sup> The main conclusion is that protectionism hurts all countries, including the country imposing the protectionist measures, even if the other countries do NOT react with protectionism by themselves. Thus, the new trade theory yields a powerful argument against any kinds of protectionism.

In the course of the current crises world trade has suffered tremendous decreases over the last few months. This is very well illustrated in Figure 1, showing the development of world trade (in levels) since 1990. Over the first half of 2009 world trade has seen an unprecedented slump of approximately 20 per cent and is almost back to the level it had at the beginning of 2005. As shown in Figure 2, this phenomenon is not restricted to just a few countries, but has hit most economies around the globe. As noted by Baldwin and Evenett 2009, so far, this reduction is only due to the recession and not (yet) due to protectionist measures.

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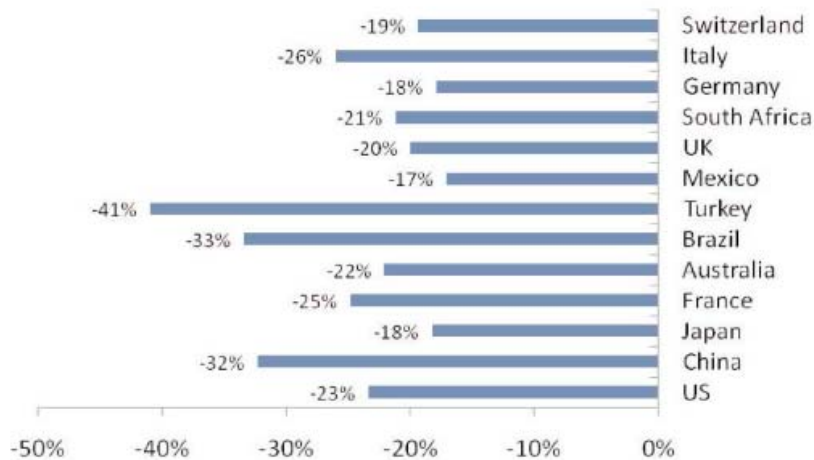
<sup>1</sup> Melitz 2003 only allows for comparisons of different steady-states, thus the current crisis cannot be covered.

Figure 1: Development of World Trade



Source: CPB world trade monitor 2009.

Figure 2: Change in Monthly Trade Flows Between October and December 2008



Source: Baldwin and Evenett 2009.

Nevertheless, there has already been an increase in protectionist measures as documented, e.g., by IMF and World Bank 2009 or Erixon 2009. At the beginning of this year, the US-congress wanted to build in severe “Buy American” clauses into the huge stimulus package. After an outcry of policy-makers and economists around the globe, these measures have been cut down by a considerable degree. Much more recently China shocked the world community by announcing that it would use similar clauses for their stimulus package. One problem is, that there is relatively large room for increasing protectionism, even without violating the rules of the WTO. As argued in Bouet and Laborde 2008, most developed countries could increase tariffs by as much as 100 per cent, because they already set their tariffs lower than obliged. For low-income countries this margin is even higher.

Thus, it does not seem exaggerated that Richard Baldwin and Simon Evenett 2009 brought together well-renowned researches to contribute to a recent VoxEU-E-book “The collapse of global trade, murky protectionism and the crisis: Recommendations for the G20”. They propose five steps to counteract recent protectionist tendencies:

- Follow Keynes at home and Smith abroad: Fiscal stimulus packages are fine, but it should be taken care that the measures do not harm trade. Spill-over to other countries are explicitly encouraged, or as Simon Crean put it: “Nurture-thy-neighbor” instead of “beggar-thy-neighbor”.
- A global surveillance mechanism: Assemble a team of independent experts to track protectionism and issue warnings in real-time.
- A temporary, legal-binding standstill on protection: Government leaders should commit not to raise trade barriers for the duration of the global economic downturn.
- Don’t abandon developing nations.
- Trade facilitation as foundations for export-led recovery: Use the momentum of the crisis to accelerate the completion of the WTO’s current negotiations on trade facilitation.

Especially, the first point is criticized by Fredrik Erixon 2009. He argues that “higher government spending means more discretionary powers for politicians and bureaucrats, indiscriminate subsidies, rent-seeking and corruption” and “Big Government at home means a new Age of Protection abroad”. Instead he calls for a “coalition of the willing” committing themselves to not raise trade-barriers. Kumar 2009 argues that the main problem lies in the shortage of credit and suggests the foundation of an “International Trade Financing Fund”, a new international organization along the lines of IMF and World Bank with the mandate to finance trade of large global firms.

The E-book of Baldwin and Evenett 2009 also discusses some reasons why protectionism would hurt a country rather than protecting it from the global downturn: One argument is that through the global interlinkages and supply chains, import restrictions would harm domestic firms because input-costs are increased. Anne Krueger argues that import-competing goods would have higher prices and thus reduce demand, while Viktor Fung stresses the danger of retaliation from trading partners. In line with this, Hufbauer and Schott 2009 estimate that a “Buy American” clause could gain 10.000 jobs but loose as much as 65.000 through retaliation. However, a thorough analysis using the models of new trade theory is still missing and thus I try to close this gap.

## **2 Modelling Approach**

The contribution by Melitz 2003 has proofed to be very influential. It is currently by far the most heavily used model for the analysis of international trade. Its popularity stems from the combination of being able to capture important stylized facts,<sup>2</sup> while still being very tractable. While the original model only compares different steady-states, Ghironi and Melitz 2005 also

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<sup>2</sup> Like the fact that only very productive firms export; that exporters are bigger and employ more workers than domestic firms; and that small firms with low productivity are driven out of the market.

captures transitional dynamics. It is quite obvious that we are currently not in a long-run equilibrium and thus a sensible analysis of protectionism in the current crisis needs to refer to the latter. In this section I will only briefly describe the model framework and then discuss the consequences of protectionism in the following section.

Ghironi and Melitz 2005 assume that firms are heterogeneous with respect to their productivity. Each period new firms try to enter the market. Before entering the market firms have to pay a fixed entry cost. Only afterwards they will learn their productivity, which is drawn from a random distribution. Entering firms anticipate their future profits. Since during an economic downturn, profits are lower, the number of new firms will also go down. The productivity of a firm stays the same for the rest of its life, until it is hit by an exogenous shock, destroying the firm.

After learning the productivity, firms will decide whether to export or whether to serve only the domestic market.<sup>3</sup> Since export is subject to fixed costs, only the most productive firms will export. Additionally, exports are due to iceberg transport costs, i.e. it is assumed that a firm that wants to sell one good at the foreign market, needs to ship one plus  $\tau$  units of the product. The parameter  $\tau$  measures the waste of resources during transport but is supposed to cover regulatory restrictions and tariffs, too. Typically, trade liberalization is modeled as a permanent decrease in this parameter. In the remainder of this paper, it is assumed that the long-term value of trade costs is fixed exogenously, but that a country might want to deviate from this long-run value by raising short-term trade barriers.

### 3 Three Scenarios

In this section I will describe the transmission mechanisms of how a recession in one country could spill-over to its trading partners. I will illustrate three different scenarios: First I discuss the standard case of Ghironi and Melitz 2005 where no change in trade costs takes place. In a second scenario I will assume that one country tries to protect itself from the recession in the other country by increasing trade-costs. In other words, that country tries a beggar-thy-neighbor approach. In a third scenario, I will analyze the situation where the other country reacts itself, by increasing trade costs. For the illustrations in this section I will use the exact same calibration as Ghironi and Melitz.

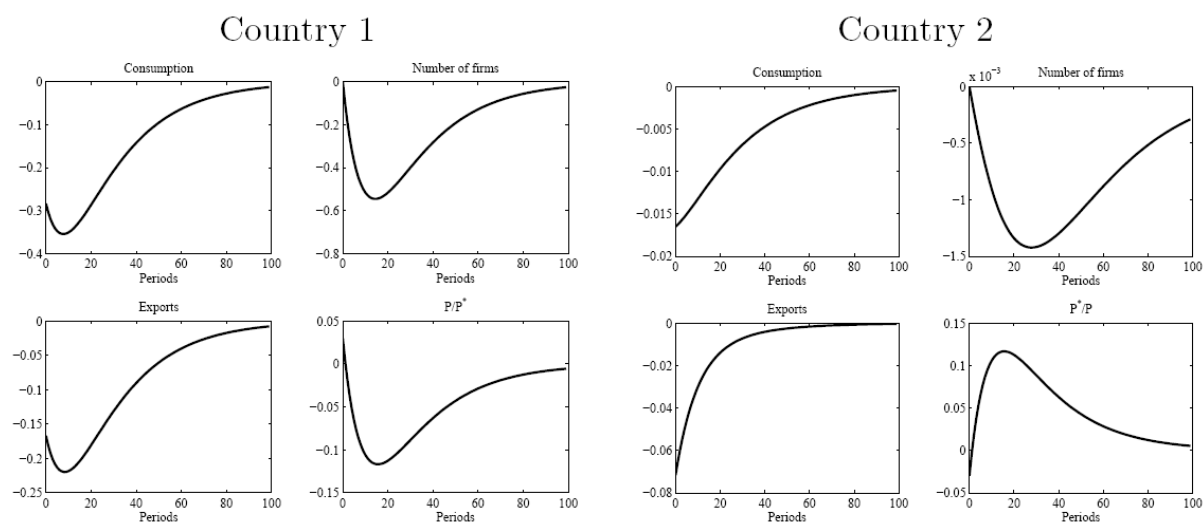
#### 3.1 Scenario 1: No Change in Trade Costs

In line with Ghironi and Melitz, I model the recession in such a way that only one country is hit by a temporary decrease in aggregate productivity. Although temporary, the shock is assumed to be persistent and follows an autoregressive process with an autocorrelation-coefficient of 0.9, which is actually lower than most people in the business-cycle literature would use. Figure 3 illustrates the results.

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<sup>3</sup> In Melitz 2003 domestic production is subject to fixed costs and therefore firms with very low productivity will immediately exit. This is different in Ghironi and Melitz 2005 because there are no fixed costs of production.

Figure 3: Reactions of Model Economy to a Productivity Shock in Country 1



Source: Own computations.

The left-hand panel illustrates the effects for country one, where the shock has occurred. Not very surprisingly, an increase in productivity implies a reduction in production and consumption. Since the profitability of firms is decreased, the number of new firms diminishes and therefore also the total number of firms. The reduced income in country one has also consequences for country two, because the demand for imports in country one goes down. This reduces returns in the export sector in country two and thus output and production go down there as well – this is how the recession spills over from one country to the other.

Because country one becomes poorer relative to country two, there will be a depreciation of the real exchange rate (see the bottom right display in each panel). The reduced demand in country one implies a decrease in the price level relative to the price level of country two, where the drop in demand is much lower. These price effects increase the share of exporting firms in country one, but the total level of exports goes down. Nevertheless, the price-adjustments help country one to overcome the crisis but hurt country two. It is this phenomenon on which the popular argument is based, that one country is exporting its recession to the its trading partners. One might think, that raising trade barriers is thus a good way to avoid, or at least dampen, these spill-over effects. However, it will be shown that this view is indeed too shortsighted.

Before we discuss the effects of protectionism, it is worth noting two more facts about the adjustment illustrated in Figure 3: a) the effects are very persistent and in fact much more persistent than the underlying shock process. While productivity returns to its long-run value after 50 periods, for consumption this takes twice as long. The reason for this lies in the sluggish adjustment of the number of firms. b) Note that the effects for country two are quite small. This phenomenon is not new in the literature and therefore it is usually assumed that the productivities of countries are positively correlated. Further below it will be shown, that this assumption does not change the results of my analysis.

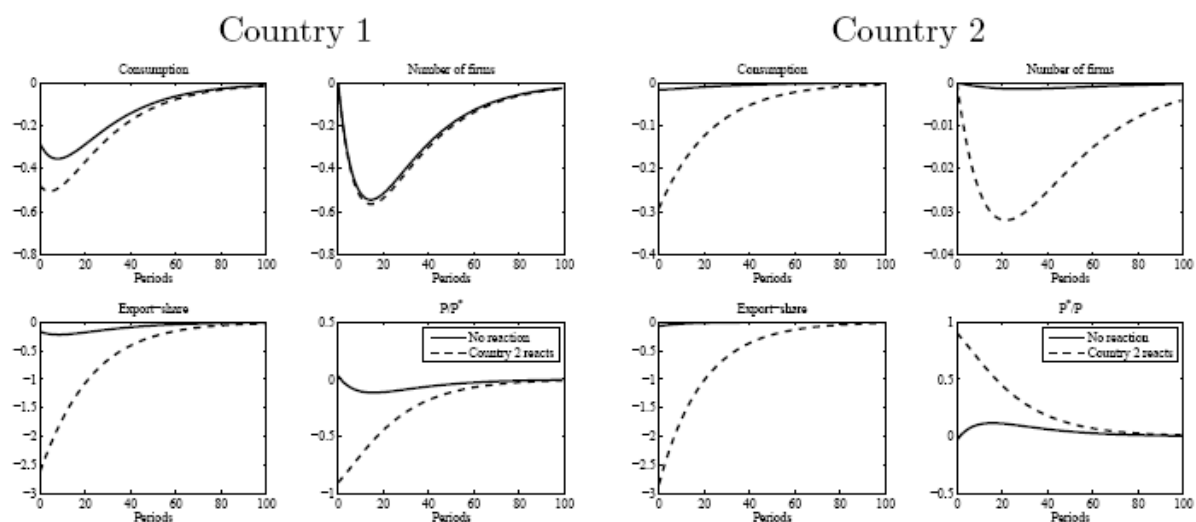


### 3.2 Scenario 2: Country Two Raises Barriers to Trade

Next assume that country two tries to shield itself from the economic downturn of its trading partner and thereby raises import restrictions, in order to protect import competing firms from cheap exports. For simplicity, I assume that the deviation of trade costs from its steady-state value mirrors the development of productivity in country one. Note that only the costs of exporting from country one to country two are affected, while country one does not increase trade barriers, i.e. the costs of exporting from country two remain at their steady-state value. It is assumed that the increase in trade costs does not yield any direct returns to the government. In other words the increase in trade costs is not due to an increase in tariffs but rather due to non-tariff barriers. This is very much in line with the empirical facts of the current crisis, as documented by Baldwin and Evenett 2009.

The results are illustrated in Figure 4, where the solid line is scenario one and the dashed line scenario two.<sup>4</sup> The effects for country one in the left-hand panel are not very surprising. The increase in trade barriers, further reduces exports and overturns the increase in the share of exporting firms that would have taken place without a reaction in trade policy into a decrease (not shown in the graph). Of course, this further decreases output and thereby consumption in country one.

*Figure 4: Reactions of Model Economy to a Productivity Shock in Country 1, when Country 2 Raises Trade Barriers*



What is maybe more surprising is the fact that this does not help country two. In stark contrast, it makes things much worse. The decrease in consumption in country two is multiplied and is almost as strong as it was in country two when trade policy did not react. This result is explained by the effects of trade barriers on the real exchange rate. Demand in country one has been further dampened, lowering the price level there and putting down-

<sup>4</sup> The solid lines for country two in Figure 4 look so different than in Figure 3 due to the different scaling of the graphs. In fact, this difference demonstrates powerfully how big the negative effect of protectionism is.

wards pressure on the real exchange rate to counteract the effects of increased trade barriers. Lower income and demand in country one, as well as the accompanying depreciation of the real exchange rate, lead to a sharp decline in exports in country two.

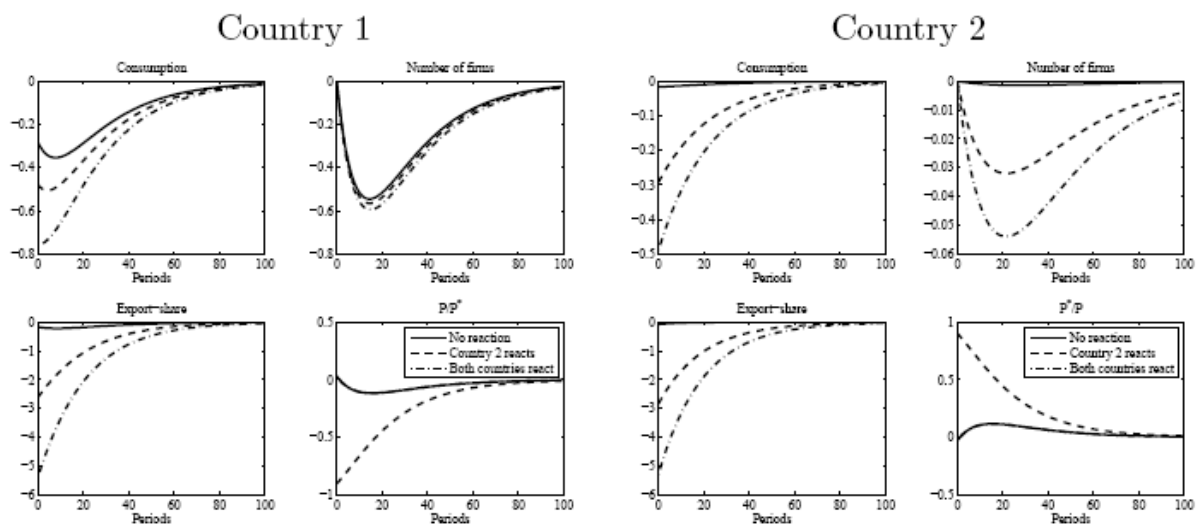
Although it is true, that import-competing firms in country two are shielded from cheap imports, the decrease in output of the export-industry far outweighs these effects and implies a strong decline in income. In fact, this kind of trade policy implies that production is shifted from efficient exporting firm to inefficient import-competing firms. On top of the decrease in output, for the consumer this implies unnecessary increases in prices, due to inefficient production.

So far we have assumed that country one does not care about the increase in trade barriers of country two. However, it is much more likely that country one looks for retaliation and therefore also increases trade barriers for imports from country two. This scenario is described in the next section.

### 3.3 Scenario 3: Both Countries Raise Import Barriers

During the great depression the attempts of some countries to shield themselves by erecting trade barriers was retaliated by other countries which in turn raised trade barriers and thereby started a vicious cycle that proved to be disastrous. Therefore, in this section I analyze a third scenario in which both countries increase trade barriers. For simplicity I assume, that both countries set the same level of trade barriers, mirroring the development of productivity in country one. The resulting effects are illustrated in Figure 5, showing all three scenarios in one graph.

Figure 5: Reactions of Model Economy to a Productivity Shock in Country 1, when Both Countries Raise Trade Barriers



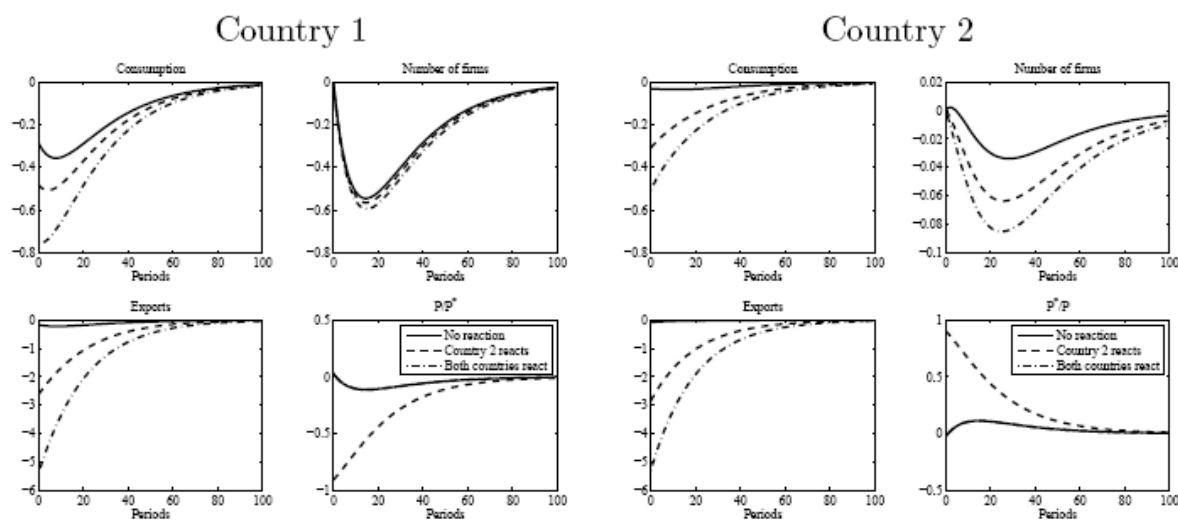
In line with the results of the previous section, retaliation only makes matters worse for both parties. The real exchange rate is brought back exactly to the path it had without any changes in trade costs. So in this sense the two policy reactions offset each other. However,

the retaliation of country one deepens the inefficient redistribution of output between relatively unproductive domestic firms and highly productive exporting firms, in this way further wasting resources. This illustrated by the increased slump in export shares and results in a stronger – and also more persistent – decline in output and consumption.

### 3.4 Correlated Shocks

As a robustness check, in this section it is assumed that productivity across countries is positively correlated. In line with Backus et al 1992, I use a coefficient of correlation of 0.088. The results are illustrated in Figure 6. It is immediately clear, that the picture does not change all. Of course, the recession in country two is stronger, because now productivity there also declines, but effects of protectionism are exactly the same as in the scenarios above.

*Figure 6: Reactions of Model Economy to a Productivity Shock in Country 1, when Both Countries Raise Trade Barriers*



## 4 Conclusion

In this paper it was demonstrated that a beggar-thy-neighbor policy does not work in the new trade models. A country cannot shield itself from an economic downturn in one of its trading partners by imposing trade barriers, but rather hurts itself (along with its trading partners). The reason for this result lies in the composition of producing firms. On the one hand, trade barriers shield import-competing firms from foreign competition and thus help them to survive. But on the other hand, trade barriers distort prices, change the real exchange rate and thus hurt the export industry.

Because exporting firms tend to be more productive than import-competing firms, this kind of policy redistributes production from efficient firms to inefficient ones. As a consequence, the slump in output is rather increased than avoided. In other words, raising trade barriers decreases average productivity and makes the recession deeper.

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# Firing Costs and the Business Cycle: Policy Implications in Light of the Financial Crisis

*Alessio Brown, Christian Merkl, Wolfgang Lechthaler*

## Abstract

*This article shows that different firing costs substantially affect individual countries' business cycle dynamics. This may lead to asymmetric reaction patterns in a monetary union of countries with heterogeneous labor market institutions. As in a monetary union monetary policy cannot react to these business cycle differences, we recommend two things. First, labor market institutions should be similar across countries in a monetary union to prevent too large divergences. Second, as long as this is not the case, structural policies, such as hiring vouchers, can be used as second best instrument to prevent divergences.*

## 1 Introduction

The recent financial crisis has produced substantial turmoil in countries all over the world, both in their financial sectors and in their real economies. To be able to cope with the crisis, it is very important to have a solid understanding of how various labor market institutions affect the macroeconomic reaction to various aggregate shocks. Experience gained during the crisis can, however, only provide some understanding in this regard, as the time spans involved are still relatively short.

To contribute to this understanding, we therefore rely on recent theoretical and empirical research that analyzes the role of firing costs in macroeconomic volatilities. Both theory and empirics show that output reacts less volatily (i.e., in a more persistent manner) to aggregate shocks in countries with higher firing costs. Thus, all else being equal, it can be expected, on the one hand, that countries with higher firing costs will experience a small immediate effect in response to aggregate productivity shocks. However, persistence due to high firing costs implies, on the other hand, that such shocks will have long-term aftereffects, and thus, countries with high firing costs will need a long time to return to their precrisis level of employment and output.

We draw two policy conclusions from this. First, heterogeneity in firing costs within a monetary union may cause stress within the monetary union, as monetary policy can only react to the average aggregate situation, whereas, due to different firing costs alone, the turning point in the various national recessions will be very different. Therefore, it is advisable within a monetary union to have firing costs that are as homogenous as possible. Second, the larger firing costs are, the more effective it may be to have countervailing automatic stabilizers such as hiring vouchers. Once unemployment has started to rise, it will be very persistent and, thus, take a long time to return to its old steady state level. Therefore, hiring vouchers may be a desirable and suitable instrument to shorten a long-lasting recession.<sup>1</sup>

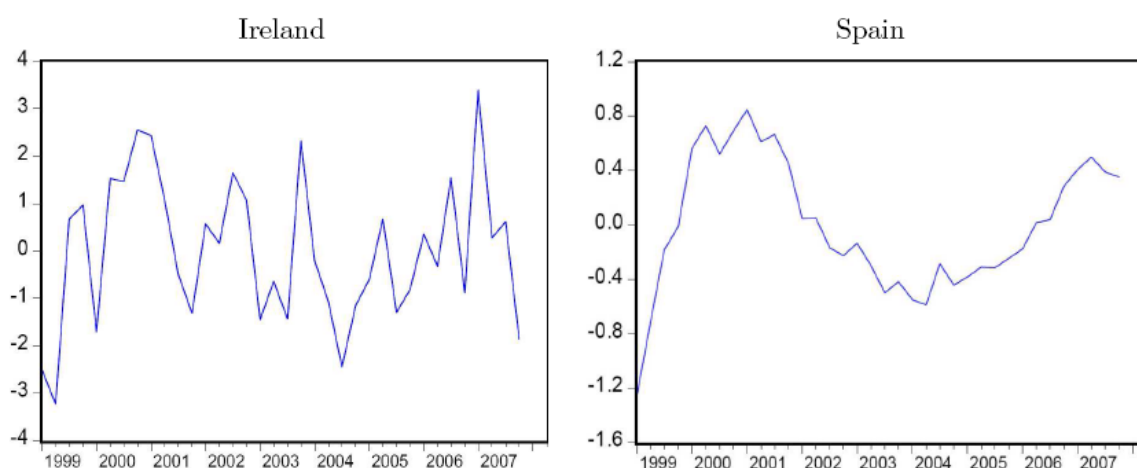
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<sup>1</sup> Boss et al. (2007) provide a detailed account of how hiring vouchers could be specified and implemented in Germany.

## 2 Empirical Evidence

Even several years after implementation of the euro as a common currency, business cycles show significant performance differences across Europe. Consider the cases of Ireland and Spain illustrated in Figure 1. While the cyclical component of the gross domestic product (GDP) is highly volatile in Ireland, it is not in Spain. If the current quarter GDP of Spain is above its long-run trend, it is very likely to stay above this trend. The current GDP in Ireland, however, has a much lesser effect on future trends there.

Figure 1: Per cent Deviation from Trend GDP



One potential explanation for these differences is that the degree of employment protection legislation in these countries (i.e., the flexibility of their labor markets) varies. As illustrated in Table 1, employment protection legislation varies by a large degree between countries worldwide, but also within the euro area. The Anglo-Saxon countries have a low degree of employment protection legislation (i.e., have flexible labor markets), while the countries in Southern Europe have a high degree (i.e., have inflexible labor markets). And indeed, regressing the volatility of output on the degree of labor market flexibility reveals a clear relationship between these two variables. As illustrated in Figure 2, countries with inflexible labor markets show a lower degree of output volatility over the business cycle. The same is true for inflation volatility.

The macroeconomic baseline model is not able to replicate these stylized facts. Therefore, we now proceed to extend the standard model by adding a richer and more detailed labor market featuring heterogeneities as well as hiring and firing costs. We will show that such a model can explain the empirical findings much better and has important implications for optimal monetary policy.<sup>2</sup>

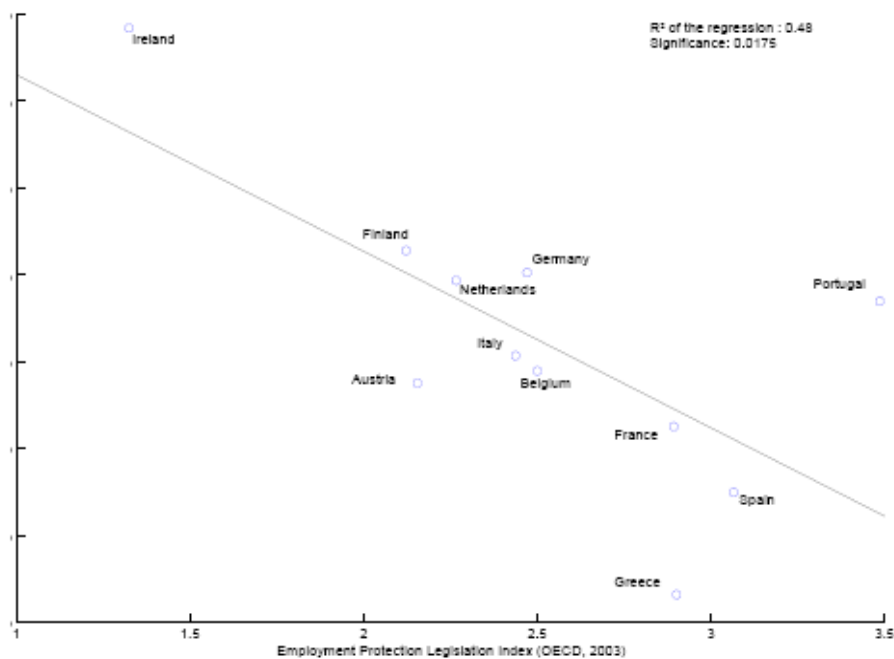
<sup>2</sup> For a more detailed description of the model and its policy implications, see Lechthaler et al. (2008) and Faia et al. (2009).

Table 1: Version 2 of the EPL, Including Protection against Collective Dismissals

	1998	2003		1998	2003
<b>Eastern Europe</b>			<b>Southern Europe</b>		
Czech Republic	1.94	1.94	Greece	3.49	2.90
Hungary	1.54	1.75	Italy	3.06	2.44
Poland	1.93	2.14	Portugal	3.66	3.49
Slovak Republic	2.20	1.70	Spain	2.96	3.06
<b>AVERAGE</b>	<b>1.90</b>	<b>1.88</b>	<b>AVERAGE</b>	<b>3.29</b>	<b>2.97</b>
<b>Northern and Central Europe</b>			<b>Anglo-saxon countries</b>		
Austria	2.38	2.15	Australia	1.47	1.47
Belgium	2.48	2.50	Canada	1.13	1.13
Denmark	1.83	1.83	Ireland	1.17	1.32
Finland	2.18	2.12	New Zealand	0.78	1.29
France	2.84	2.89	United Kingdom	0.98	1.10
Germany	2.64	2.47	United States	0.65	0.65
Netherlands	2.27	2.27	<b>AVERAGE</b>	<b>1.03</b>	<b>1.16</b>
Norway	2.72	2.62			
Sweden	2.62	2.62	<b>Rest of the world</b>		
Switzerland	1.60	1.60	Japan	1.94	1.79
<b>AVERAGE</b>	<b>2.36</b>	<b>2.31</b>	Korea	2.00	2.00
			Mexico	3.23	3.23
			Turkey	3.40	3.49

Source: OECD.Stat, originally published in the OECD (1999 and 2004).

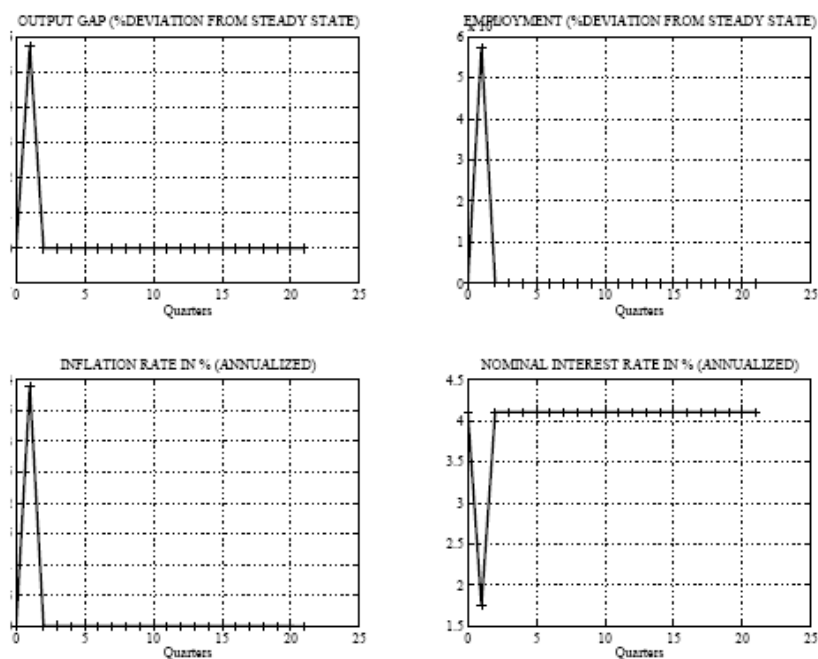
Figure 2: Output Gap Volatility and Employment Protection Legislation



### 3 The Standard Model

The standard New-Keynesian model for the analysis of monetary policy assumes that prices are not fully flexible, to assure that monetary policy can have real effects in the short run,<sup>3</sup> while assuming that labor markets are perfectly competitive and flexible. The empirical evidence discussed above demonstrates, however, that this approach has two serious shortcomings: on the one hand, a relationship like the one depicted in Figure 2 could never be replicated because labor turnover costs play no role in such a model. On the other hand, the flexible structure of the model implies that an economy would jump back to its old equilibrium after a shock has vanished. This is illustrated in Figure 3, which depicts the reaction of the standard model economy to a one-period decrease in the nominal interest rate. Given the obvious importance of labor turnover costs, it is only natural to amend the standard model to address these two shortcomings.

Figure 3: Response to a Monetary Shock in the Standard Model



### 4 A Model with Labor Turnover Costs

For the most part, we stick to the standard New-Keynesian model. Specifically, we also assume that firms produce slightly differentiated products and thus have price-setting power. However, we assume that changing the price from one period to the other is costly to the firm.<sup>4</sup> Further, we assume that the central bank sets the nominal interest rate in dependence

<sup>3</sup> If prices were fully flexible, an increase in the nominal interest rate would only drive up inflation one-to-one, so that the real interest rate would remain unchanged. In such a case, monetary policy would only affect the level of prices and inflation, but it would not affect real variables (like real GDP or employment) at all.

<sup>4</sup> Thus, we assume the existence of Rotemberg price adjustment costs.



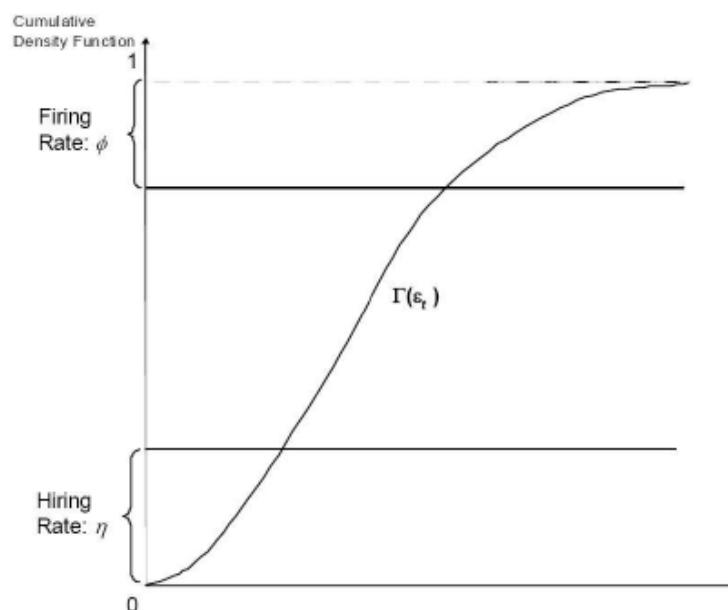
of the output gap and inflation (i.e., we use a standard Taylor rule to model the monetary authority). Thus, if the output gap increases (e.g., in a recession), the central bank will lower the interest rate to provide a positive impulse to the economy, while if inflation increases, it will increase the interest rate to fight the inflation.

The only place where we deviate from the standard model is in modeling the labor market. Here we assume that firms employing workers are subject to hiring and firing costs. On the one hand, a firm that wants to hire a new worker has to incur some costs, such as screening and training costs. On the other hand, a firm that wants to fire a worker is subject to strict regulations, which can make firing the worker very costly. These assumptions alone suffice to make an economy adjust to shocks much more sluggishly. This can be easily seen by looking at the dynamic equation of the stock of workers:

$$n_{t+1} = n_t(1 - \phi) + (1 - n_t)\eta \rightarrow n_{t+1} = \eta + (1 - \phi - \eta)n_t \quad (1)$$

where  $\eta$  is the hiring rate,  $\phi$  the separation rate, and  $1 - \phi$  the retention rate, i.e., the probability that a worker will keep his/her job. In a perfectly competitive labor market, the retention rate of employed workers would be exactly equal to the hiring rate of unemployed workers:  $1 - \phi = \eta$ . In other words, the probability that a worker will have a job in the current period is independent of whether he/she had a job in the previous period. In such a case, flow equation 1 collapses to  $n_{t+1} = \eta$ . It is immediately clear that employment in the current period does not depend on employment in the previous period. However, this is no longer true as soon as firms have to bear labor turnover costs. These drive a wedge between the retention rate and the hiring rate, as illustrated in Figure 4. The higher the labor turnover costs are, the larger the wedge between the two rates becomes, and, thus, the more current employment depends on past employment. In other words, the economy becomes more sluggish and persistent.

Figure 4: The Effect of Firing and Hiring Costs



This is confirmed by numerical simulations of this model, calibrated to the German economy. The main results are illustrated in Figure 5, which shows the reaction of the model economy to a one-period decrease in the nominal interest rate. It can be clearly seen that the reaction is much more sluggish than in the standard model: the economy takes much longer to converge back to its old steady state. Furthermore, we are able to replicate the empirical finding that economies with higher labor turnover costs face lower volatilities over the business cycle. This is illustrated in Table 2.

Figure 5: Response to a Monetary Shock in a Model with LTCs

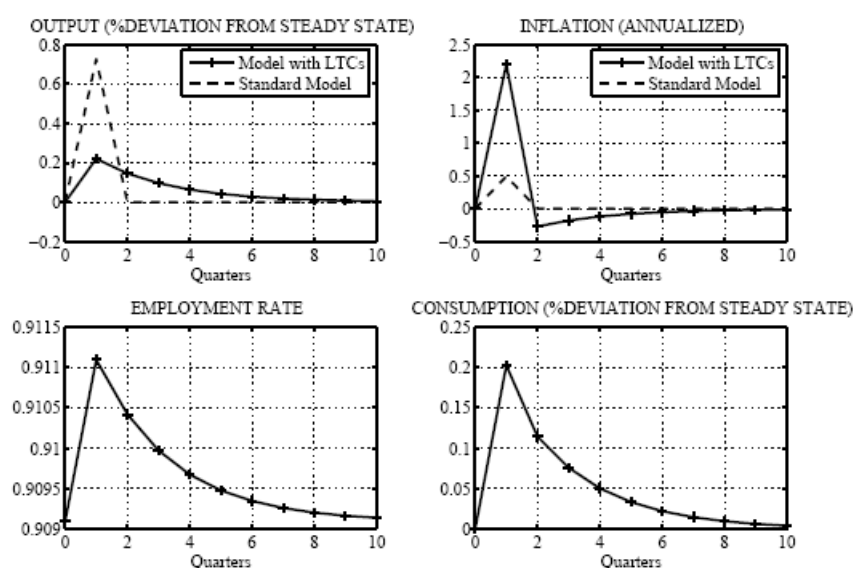


Table 2: Firing Costs and Volatility

Standard Deviations	fc=0.5	fc=0.6	fc=0.7
Inflation	0.68	0.60	0.59
Output	0.40	0.34	0.29

## 5 Implications for Monetary Policy

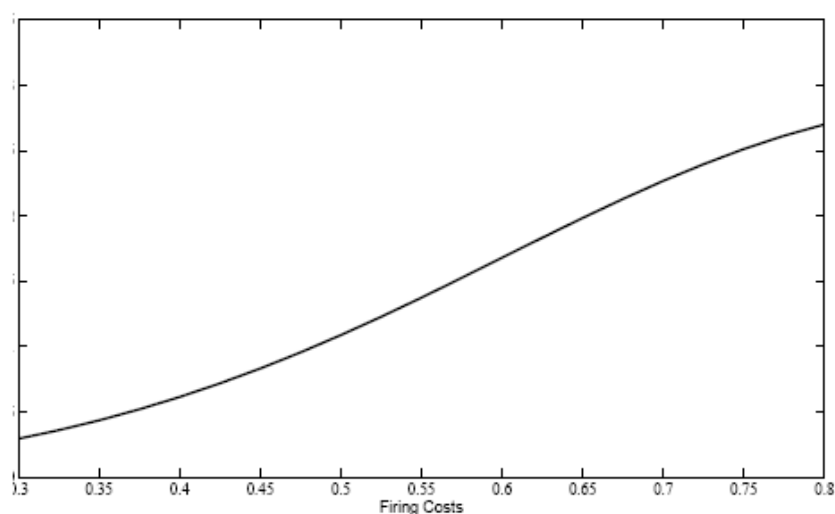
So far, we have only used a standard Taylor rule to describe the monetary authority. We now want to proceed by asking how the central bank should respond optimally to economic shocks.

In the standard model without labor market frictions, this question is easily answered. The central bank does not face a tradeoff between stabilizing inflation and stabilizing the output gap. By avoiding fluctuations in the inflation rate, the central bank automatically stabilizes the output gap. Thus, the optimal monetary policy is simple: just target inflation and try to ensure stable prices.

In a model with labor turnover costs, this is no longer true, however. In fact, the central bank cannot stabilize both inflation and the output gap. Instead, there is a severe tradeoff between the two goals. If the central bank stabilizes prices it drives up the volatility of output

and employment. This implies that price stability is no longer optimal and that the central bank should allow for fluctuations in prices. It turns out that the optimal degree of inflation volatility depends on the magnitude of labor turnover costs. The central bank of a country with high turnover costs should allow for larger deviations from price stability than the central bank of a country with low turnover costs. This result, which is illustrated in Figure 6, has important implications for monetary policy in a currency union, where a common central bank can only set one nominal interest rate for many countries with varying degrees of labor turnover costs.

*Figure 6: Optimal Inflation Volatility*



## 6 Implications for Labor Market Policy

The analysis above shows that optimal inflation volatility is an increasing function of firing costs. However, under conventional policy rules (such as a Taylor rule), inflation volatility is lower in countries with higher firing costs (i.e., is exactly the opposite of the situation in a country with an optimal rule). Thus, a monetary union imposes an implicit cost on member countries whenever firing costs are heterogeneous. This leads to the immediate policy conclusion that countries within a monetary union should not have too different firing costs in order to prevent high welfare costs.

This policy conclusion is particularly relevant during the current crisis. Large shocks will lead to substantial business cycle divergences whenever firing costs vary. Thus, the homogeneity of firing costs is of particular importance for the Euro area. Additionally, flexible labor markets may enable firms to adapt to the challenges of globalization. Thus, policymakers may wish to reduce employment protection and firing costs. However, this may generate opposition if the distributional consequences of more flexible labor markets are not explicitly addressed.

This underlines the need for fundamental labor market reforms with a set of broad and deep policies that imply strong economic complementarities and that, at the same time,

encompass political complementarities by taking distributional objectives into account, thereby facilitating support for such reforms. One concept that could be used for such reforms is the Danish labor market policy concept of flexicurity, which combines very flexible labor markets, i.e., low job security, with generous unemployment support and active labor market policies. By balancing flexible firing rules and workfare requirements with higher unemployment benefits, political support can be gained for such reforms.<sup>5</sup>

Since institutions can be changed only gradually and with considerable lag, it would be useful to implement a different instrument in the shorter run while existing institutions are still in place. The relevant instrument is hiring vouchers. Hiring vouchers may be a very suitable second-best instrument to make the labor market more flexible and to trigger the synchronization of business cycles between countries. They would refund part of a firm's labor costs during the first period of employment of a new hire. The amount of the voucher should depend positively on the length of time the new hire was unemployed and negatively on his/her skill level.<sup>6</sup> Since more workers would qualify for hiring vouchers in periods of high unemployment, the vouchers would act as automatic stabilizers. Thus, hiring vouchers may not only lead to positive employment effects (see Brown et al. 2007b), but they may also make a rigid labor market more flexible. This may reduce the costs of a too heterogeneous monetary union and shorten downturns.

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<sup>5</sup> For the Danish flexicurity concept and its effects in Germany, see Brown and Snower (2009).

<sup>6</sup> See Boss et al. (2007) for a proposal for specifying and implementing hiring vouchers in Germany. Also see Brown et al. (2007a).

# Structural Adjustment: Will the Financial Sector Shrink and Entrepreneurship Boom?

*Frank Bickenbach, Eckhardt Bode, Dirk Dohse, Aoife Hanley, Rainer Schweickert*

## Abstract

*The rapid growth of the financial industry in the U.S. during recent years has contributed to opinions that this industry has grown oversize such that it must shrink back to “normal” size, and that such shrinking might be socially beneficial as it could induce a re-allocation of human capital from the financial industry to more productive occupations such as entrepreneurship. In this paper we analyze whether such expectations are justified for the US on the one hand and (central) Europe on the other hand.*

*We find that there are marked structural differences between continental Europe and the U.S., such that the prospects for a socially beneficial re-allocation of human capital and a resurrection of economic growth after the crisis appear much better in the U.S. than in continental Europe. As a corollary, structural differences between continental Europe and the U.S. require different policy responses to the crisis, in particular in the area of financial market regulation.*

## I The Crisis as a Schumpeterian Event and the Chance of Human Capital Re-allocation

We are living through historic times. The world economy is suffering from one of the greatest financial crises of all times and we cannot yet know its full consequences for the financial system, the economy or society as a whole. Not surprisingly, most commentators focus on the dangers and damages that the crisis brings with it: The crisis as a destroyer of wealth, the crisis as a threat for growth and free world trade, the crisis as a threat for our living-standards and so forth.

In this article we offer an alternative view, looking at the crisis as a Schumpeterian event, i.e. a process of creative destruction, at the macro level. Most creative destruction takes place at the micro level when innovative young firms fundamentally change production processes or bring new and superior products to market. Due to the pressure of new inventions commercialized by competing entrants the profits of incumbent firms fall, their dominance vanishes and ultimately they are squeezed out of the market. Creative destruction at the micro level can be regularly observed whereas creative destruction at the macro level has almost fallen into oblivion.<sup>1</sup> However, from time to time there are Schumpeterian events at the macro level. The great crisis of the late 1920's and early 1930's was such an

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<sup>1</sup> Indeed, Daron Acemoglu argues that in view of the crisis one of the most significant intellectual failures of the economists' profession has been that we have thought that “ ... the era of aggregate volatility had come to an end” (Acemoglu 2009).

event and we presume that the current crisis has a similar potential to fundamentally re-shape the world economy.

There can be little doubt that the crisis will set free (or make obsolete) a significant amount of productive resources, in particular human resources. Whether this is good or bad news for long-run economic growth is not clear *ex ante*; it depends on whether these resources will find their way into more productive occupations or if they will move to less-productive occupations or stay unemployed. Hence, the question how human capital is re-allocated during and after the crisis is pivotal in understanding the impact of the crisis on long-term economic growth.

The sector most directly and heavily struck by the crisis is the financial sector. At least in the U.S., the financial sector has ballooned dramatically in size in recent years. Boykin Curry, managing director of Eagle Capital was quoted in NEWSWEEK magazine, stating that: "30 percent of S&P profits last year were earned by financial firms, and U.S. consumers were spending \$ 800 billion more than they earned every year. As a result, most of our top math PH.D.s were being pulled into nonproductive financial engineering instead of biotech research and fuel technology." The view that the financial sector has become too large and will have to shrink is shared by the new U.S. administration under President Barack Obama. The financial sector will make up a smaller part of the U.S. economy in the future as new regulations clamp down on "massive risk-taking", Obama said in an interview published in the New York Times Magazine on Saturday May 2, 2009. He explicitly welcomed that this would lead to a more productive allocation of talent, stating that "We don't want every single college grad with mathematical aptitude to become a derivatives trader" (*ibid.*). MIT economist Esther Duflo goes in the same vein when writing: "What the crisis has made bluntly apparent is that all this intelligence is not employed in a particularly productive way. Admittedly, a financial sector is necessary to act as the intermediary between entrepreneurs and investors. But the sector seems to have taken a quasi-autonomous existence without close connection with the financing requirements of the real economy."

So, can we be optimistic that the crisis will stop the misallocation of human capital into the financial sector? Will some of the brilliant minds on Wall Street or the financial districts in London, Frankfurt and Tokyo end up as entrepreneurs, inventors or engineers, using their creative energies socially more usefully? In a nutshell: Can we expect a higher growth dynamics after the crisis due to a more efficient allocation of human capital?

The answer is: *It depends*. Long term economic growth is driven by innovation and, in particular, by innovative firm start-ups. Such innovation requires:

- (i) a sufficient supply of highly-qualified, entrepreneurial people,
- (ii) adequate finance,
- (iii) an innovation-prone macroeconomic environment.

Hence, the course of the investigation in the remainder of this paper is as follows: In the next section (II) we analyse if there is – apart from the prominent opinions quoted above – empirical evidence for overbanking in the U.S. and in continental Europe such that we can expect an increasing supply of entrepreneurial talent from the finance sector. Section III focusses on the availability of adequate finance instruments (private equity, in particular) for young, fast

growth but asset poor firms. Section IV discusses the macroeconomic environment for innovation in the U.S. and in continental Europe and how it is affected by the crisis. Section V concludes.

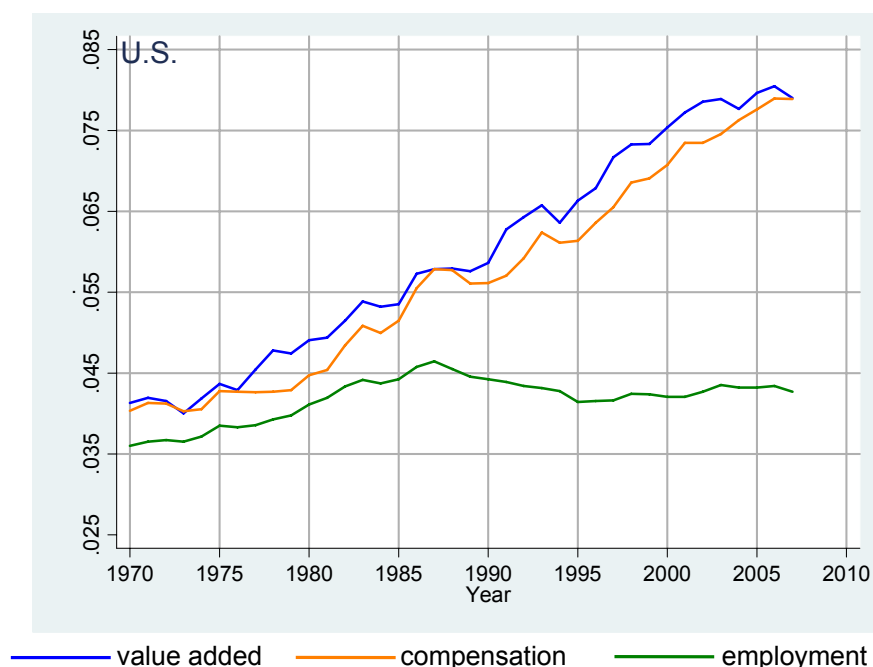
## II The Size of the Financial Industry and the Potential for Re-allocation of Human Talent in the U.S. and Europe

This section deals with the question of to what extent the financial industry in the U.S. and Europe has in fact grown oversize, and to what extent bright minds employed in this industry so far may be redirected to socially more beneficial activities in other industries, where they can contribute more to future economic prosperity.

### Overbanking in the U.S.

Figure 1 shows that the share of the financial industry in total value added (upper, blue line) has increased not only during the recent years but in fact more or less continuously for several decades. It roughly doubled from about 4 per cent in the early 1970s to about 8 per cent in the mid 2000s. The Figure also shows that the financial industry's share in total compensation paid to employees<sup>2</sup> increased at a similar rate as that in value added. What is

*Figure 1: Shares of the U.S. Financial Industry in Total Value Added, Compensation, and Employment 1970–2007*



Source: OECD (2008).

<sup>2</sup> Compensation of employees comprises of wages and salaries to employees paid by producers as well as supplements such as contributions to social security, private pensions, health insurance, life insurance and similar schemes.

striking is that its share in total employment did not grow in parallel to its shares in value added or compensation. It remained constant, or even decreased slightly from the late 1980s. This implies that the average wage per worker grew significantly faster in the financial industry than in other industries of the economy.<sup>3</sup>

In detailed studies of the financial industry in the U.S., Philippon (2008a) and Philippon and Reshef (2009)<sup>4</sup> argue that a substantial part of the faster growth of value added and wages of the financial industry up to 2001 can be explained as an efficient market response to demands created by the IT revolution. The IT revolution created vast opportunities for innovations in a variety of sectors, which were exploited and marketed to a good deal by young, innovative, fast growing but cash-poor firms. Microsoft or Google in their early years are just a few examples of these firms. In contrast to large incumbent firms that are able to cover much of their investment costs from their own cash flow or from accessing financial markets directly, these young firms need specialized, sophisticated external financial services. The financial industry supplied them with these services, thereby contributing to overall growth and prosperity.<sup>5</sup> To supply these sophisticated financial services, the industry had to significantly upgrade its staff's skills. Clerks and other low- and medium-skilled employees had to be substituted by high-skilled investment bankers and specialized financial experts who are able to create innovative, customized solutions to the financial problems faced by young, fast-growing companies. As a consequence, the share of university graduates in total employment increased by almost 13 percentage points since the early 1980s (to 42 per cent in the early 2000s) in the financial industry but only about 5 percentage points (to 25 per cent) in the whole U.S. economy.<sup>6</sup> This skill upgrading explains, however, only part of the faster growth of wages in the financial industry. The remaining part obviously consisted of "rents" accruing from highly profitable – still socially productive – services provided to the real economy. Philippon and Reshef (2009) show that these "rents" were particularly high for highly educated workers on the one hand, and in the subsector "other finance" on the other. "Other finance" includes venture capital funds, private equity, investment banking, hedge funds, trusts, securities, and commodities.<sup>7</sup>

The continuation of the faster growth of value added and wages of the financial industry after 2001, however, can not be explained by demand created by the IT revolution. Even though growth in demand for financial intermediation from the non-financial corporate sector decelerated, the financial industry managed to continue to increase its share in the economy by increasingly engaging in developing overly risky and fragile financial products that were highly profitable but proved ex post socially harmful (Philippon 2008b). This allowed the

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<sup>3</sup> The ratio between the compensation and employment figures depicted in Figure 1 can be interpreted as an average relative wage in the financial industry. It grew from 1.1 in the early 1970s to more than 1.8 in the mid-2000s (for more on this see Figure 3, below).

<sup>4</sup> For a summary and discussion of results also see Philippon (2008b) and Philippon (2009).

<sup>5</sup> Philippon and Reshef (2009) argue that the ability of the U.S. financial industry to serve the needs of such young and fast growing firms was greatly facilitated by the extensive deregulations of this industry during the 1980s and 1990s. We will return to the role of regulation for the capability of the financial industry for fuelling economic growth in the following subsection.

<sup>6</sup> Source: EU KLEMS Project (2008).

<sup>7</sup> The other two subsectors of the financial industry are "credit intermediation" and "insurance".



industry to further increase relative wages and to continue to attract high skilled workers. Both the skill upgrading and the increase in wages and rents was still concentrated in the subsector “other finance” (Philippon and Reshef 2009). In contrast to the previous decades, rents seem to have accrued increasingly from socially unproductive activities, however, including those of hiding financial risks of subprime mortgages.

In summary, while much of the faster growth of the U.S. financial industry over the 1980s and 1990s can be explained as part of an efficient market response to the increasing importance of young, cash-poor and innovative firms in the U.S. economy, the industry clearly grew oversized in the years preceding the current financial and economic crisis. The growth of the industry and the high wages paid in the industry made it attractive for a large number of highly qualified workers. It is still too early for predicting to what extent markets and regulation will force the financial industry and its wages to shrink during the current crisis. It is clear, however, that a correction of the overbanking of recent years holds the potential to increase future economic prosperity by redirecting bright minds to socially more beneficial activities in other industries in the U.S.

### **Overbanking in Europe**

Is the current situation of the financial industry in Europe comparable to that in the U.S.? The available data suggest that the employment, value added, and compensation shares of the European financial industries evolved in similar directions as those in the U.S. Like in the U.S., the shares of the financial industries in total employment tended to decrease, and those in value added and compensation to increase in Europe. There are, however, marked differences within Europe, in so far as the development in the United Kingdom (UK), the only European economy with a truly global financial centre (London), is more similar to that in the U.S. than that in continental Europe. Focusing on Germany and France as the two largest economies in continental Europe,<sup>8</sup> we observe, first, that the financial industry has been significantly smaller in continental Europe than in the UK and the U.S. (Figure 2).

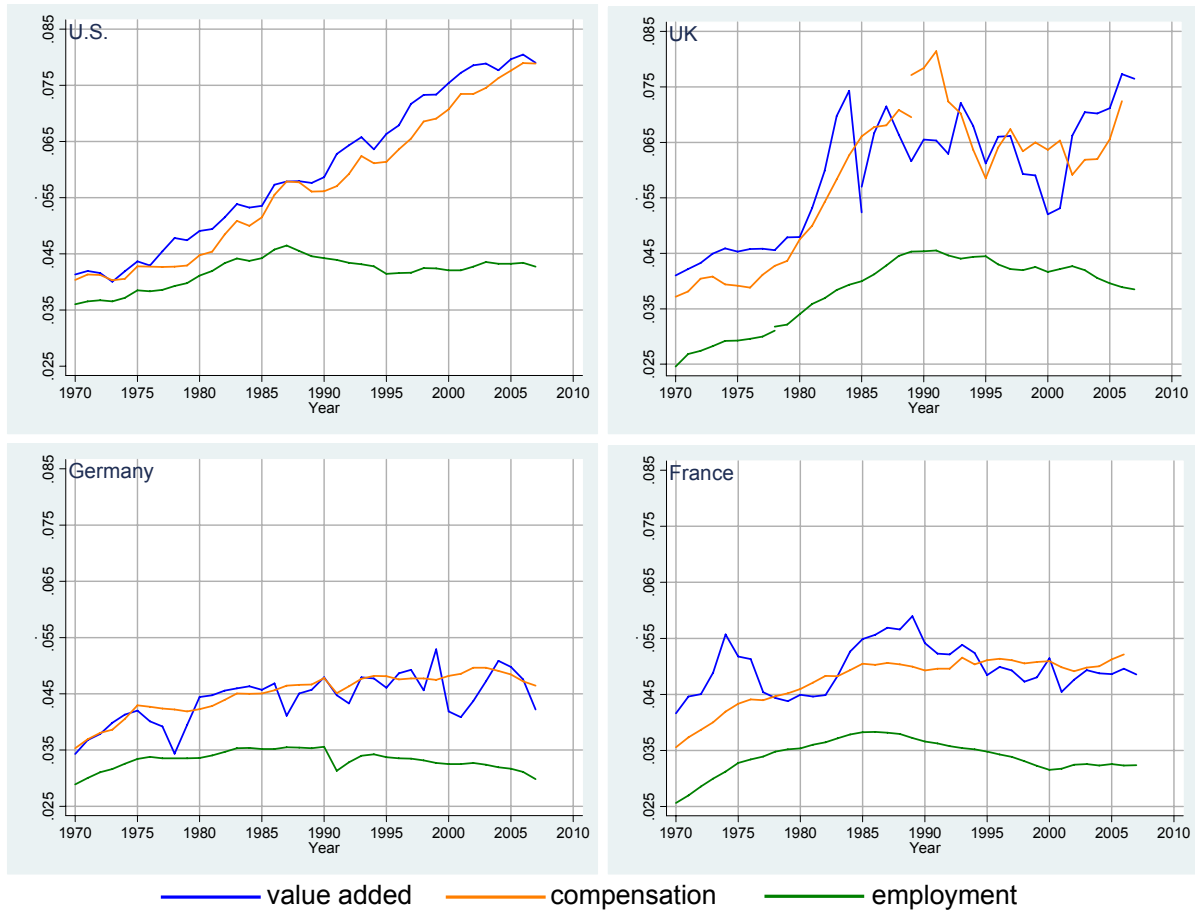
It accounted for roughly 3 per cent of total employment and 4.5 per cent of total value added in the mid-2000s, compared to roughly 4 per cent and 8 per cent in the UK and the U.S. Second, the value added and compensation shares grew much slower in continental Europe than in the UK and the U.S. since the early 1980s. They even stagnated in some of the continental European countries, including France.

In fact, the relative wages (compensation per worker) in the financial industry increased much slower in continental Europe than in the UK or the U.S. (Figure 3). In recent years, workers in the financial industry have been paid about 60 per cent more than workers in other industries in Germany and France but about 85 per cent more in the UK and the U.S.

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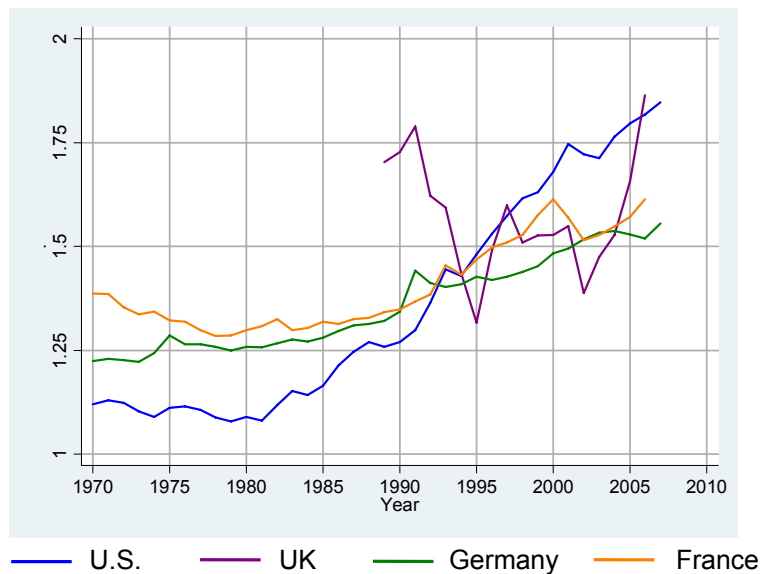
<sup>8</sup> Since comparable data is not available for all European countries, we focus on the three largest West European economies, Germany, France and the UK. These three countries currently account for about 52 per cent of total GDP in the EU 27. The data available for other European countries indicate that the evolutions of the financial industries in Italy, Denmark, Belgium, Austria, Finland fit pretty well into the general picture we are drawing here for continental Europe (Germany and France), while those in Ireland, Iceland and The Netherlands are more similar to those in the UK. Spain appears to be sort of an outlier. Its financial industry lost not only in terms of employment but also in terms of value added and compensation since the early 1990s.

Figure 2: Shares of the Financial Industry in Total Value Added, Compensation, and Employment in the U.S., United Kingdom, Germany, and France 1970–2007



Source: OECD (2008), EU KLEMS Project (2008).

Figure 3: Average Compensation per Worker in the Financial Industry Relative to that in all Industries in the U.S., United Kingdom, Germany, and France 1970–2007 (UK: 1988–2006, France: 1970–2006)



Source: OECD (2008).

These figures suggest that there is less evidence of overbanking for continental Europe than for the U.S. and the UK. The financial industry in continental Europe appears to have been less engaged, on aggregate, in those businesses that generated the high incomes and rents of the industry in the U.S. – both in the good, that is in the supply of sophisticated financial services to young, fast growing firms and in the bad, that is in the development of overly risky and fragile new financial products that proved ex post socially harmful. Even though skills upgrading was also higher in the financial industry than in other industries in virtually all European countries, including France and Germany (Table 1), this skills upgrading did not come along with similarly excessive increases of wages and rents in continental Europe as in the U.S.

*Table 1: Shares of University Graduates in Total Employment in the Financial Industry and in all Industries in Germany France, the United Kingdom and the U.S. 1980–2005*

Country	Year	Share (%) of university graduates in		Difference
		Financial industry	All industries	
Germany	1980	.	.	.
	1991	7.9	7.7	0.2
	2005	11.1	9.5	1.6
France	1980	8.0	6.0	2.0
	1991	14.0	9.0	5.0
	2005	26.0	15.0	11.0
United Kingdom	1980	8.7	5.1	3.6
	1991	15.8	9.4	6.4
	2005	27.0	18.9	8.1
U.S.	1980	24.8	20.2	4.6
	1991	36.6	26.4	10.2
	2005	44.3	31.7	12.6

*Source:* EU KLEMS Project (2008).

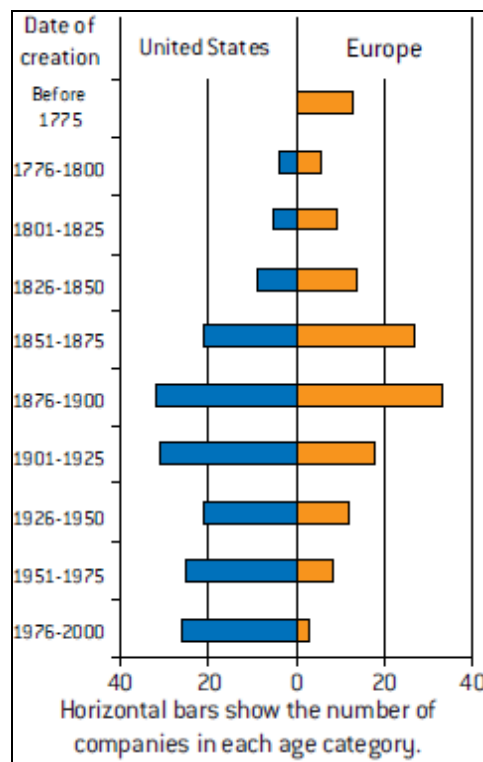
While this suggests that the need for the financial industry and its wages to shrink is less in continental Europe than in the U.S. or the UK, less overbanking also implies that fewer bright minds have been misallocated so far, and fewer gains can be expected from re-allocating them to socially more beneficial, possibly innovative or entrepreneurial, activities in other industries in the future.

### III The Availability of Finance for Emerging Firms

In the previous section we discussed the current patterns in the financial sector, with emphasis on comparison between the U.S. (and UK) on the one hand and continental Europe (Germany, France) on the other. In this section, we deal with implications of a potential financial sector shrinkage on the supply of finance to fast growing, technology rich, but asset and cash flow poor young firms.

It is a well known concern that Europe needs more young firms (Commission of the European Communities 2009c) – and this need is likely to become more urgent in the current crisis, which will increase the need for structural adjustment. Young firms, located at the technology frontier are often better poised to grow fast, create disproportionately more employment, and contribute high valued added and skilled jobs. Unfortunately, the league tables do not show a strong showing of emerging firms in Europe. Figure 4, which admittedly deals with data for listed companies and hence captures only some of the activity in the emerging market, highlights how old European firms are compared to their U.S. counterparts. Here we observe the aging distribution of European firms vis-à-vis their U.S. counterparts. This chart tells us that a significantly higher number of U.S. firms founded in the period since 1976 managed to grow such that they met the FT Global 500 ranking criteria. This is not seen for European firms. According to Philippon and Véron (2008: 8), “... young companies generally find it harder to emerge in Europe than in the U.S.. More specifically, many new firms are created in Europe, but thereafter they tend to grow less briskly than in other economies”. A key reason for the much weaker *post entry* growth performance of European emerging enterprises is the restricted availability of growth finance in Europe (cf. Aghion et al. 2007).

Figure 4: Population Pyramid for Largest U.S./European Companies

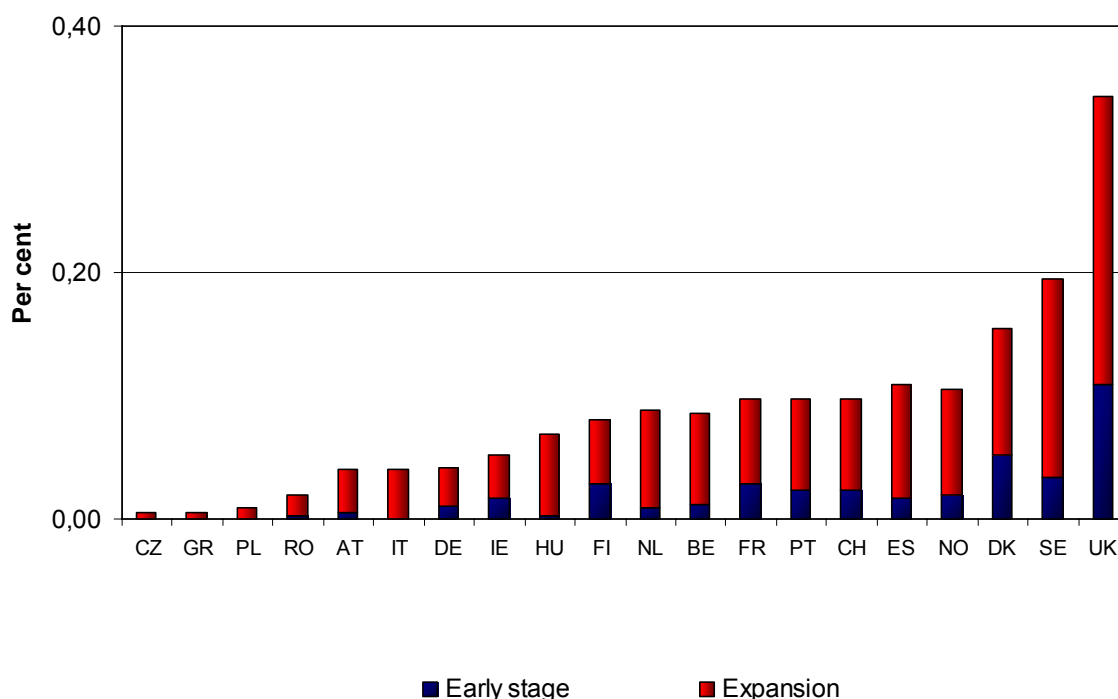


Source: Philippon and Véron (2008): calculations from the FT Global 500 Ranking of the world's listed companies. Horizontal bars show the number of companies in each age category.

To meet their development needs, emerging firms rely on financial instruments quite different from established firms. Established firms are often publicly listed and have access to the corporate bond market or they generate significant cash flows and are therefore less dependent on external funds for expansion. Emerging firms, by contrast, typically don't have enough cash flows to cover their investment needs. Therefore, their growth prospects depend heavily on alternative financial instruments such as high-yield bonds, mezzanine capital and private equity. If it is right that the crisis will lead to an acceleration of structural change and creative destruction, then private equity will become even more important after the crisis.

Unfortunately, however, financial services for emerging firms in Europe are clearly underdeveloped relative to the U.S. and have constituted a significant impediment to firm growth even before the crisis (Philippon and Véron 2008). The level of private-equity activity is particularly low in central Europe (less so in the UK and Scandinavia), even for European standards (Figure 5).

Figure 5: Private Equity Investment Flows (Per cent GDP), 2004–2006



Source: European Private Equity and Venture Capital Association (EVCA).

Moreover, the financial crisis has reached the private equity markets, meaning that the playing field for investment in innovation is getting smaller – at least in the short run. In the first quarter of 2009, the private equity market in Germany broke down dramatically. Total investment by German equity finance and venture capital firms shrunk to 335 million € as compared to 893 million € in the fourth quarter 2008 and 1.149 billion € a year before (BVK 2009a). The slump in total investment (which is the sum of early stage investment, later stage investment and buy-outs) is largely caused by the drastic diminution of buy-out transactions, whereas the decrease in later stage investment was far less dramatic and early

stage investment has so far been relatively stable in view of the crisis. However, given that capital shortage has been a problem for innovative German firms even in boom periods – Rammer (2009) argues that lack of capital has prevented 36 per cent of all firms from (further) investment in innovation in 2007 – the tense situation on the private equity market is likely to further depress the propensity to invest in innovation in Germany.

The U.S. venture capital and private equity market has seen a similar downturn in the first quarter of 2009.<sup>9</sup> However, the U.S. financial system was particularly strong in providing young, fast growing firms with private equity before the crisis (Gompers and Lerner 2004, Philippon and Véron 2008) and analysts expect a quick recovery of the U.S. private equity market after the crisis. Richard Addlestone, a private equity partner at Walkers was quoted saying that “... While further weakness can be expected in the short term, there are hopes for a return to pre-credit crunch levels of investment and returns within 18 months. The silver lining is that, with asset prices at current lows, 2009 could be a great year for acquisitions, but first banks need to start lending to each other and to businesses.”

### **Avoid a Disproportionate Regulation of Private Equity**

It has been argued above that before the current crisis, private equity in Europe (and in particular in Germany) was underdeveloped and in urgent need of expansion and that the crisis has made things even worse, at least in the short run. The medium and long-term prospects of private equity financing in Europe will in part depend on the policy reaction to the financial crisis. The crisis could, if it induces disproportionate regulation of private equity providers, further stifle growth in private equity provision and thereby feed through to emerging firms by lowering the supply of private equity finance available. Exacerbating the supply of private equity finance to emerging businesses by curtailing the amount of venture capital finance and private equity would carry a social cost to the European (and German) economy.

There is currently considerable discussion on the appropriate future regulation of private equity funds. In April 2009 the EU Commission has presented a proposal for a Directive on the (European-wide) regulation of the managers of so-called “Alternative Investment Funds” (AIFM Directive) (Commission of the European Union 2009a).<sup>10</sup> These include private equity funds alongside hedge funds, commodity funds and real estate funds and infrastructure funds. The Commission recognizes that different types of funds are associated with different types of risks to financial market participants (such as investors and counterparties) and to financial stability (macro-prudential or systemic risk). In particular, it explicitly states, that “private equity funds, due to their investment strategies and a different use of leverage than hedge funds, did not contribute to increase macro-prudential risks” (Commission of the European Union 2009a, p. 3). Despite these differences between the risks associated with differ-

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<sup>9</sup> According to PWC (2009) US venture capital and private equity investment in the first quarter of 2009 decreased to \$ 3.0 billion. It was down 47 per cent from the fourth quarter 2008 and 61 per cent from the year before.

<sup>10</sup> The regulation of private equity funds, hedges funds and other types of funds is also the subject of ongoing discussion at international level, for example through the work of the G20, IOSCO and the Financial Stability Forum.

ent types of funds the Commission proposes a regulatory framework that subjects (managers of) all types of AIF to the same set of basic regulatory rules (“horizontal approach”), which, however should be “designed to as to be proportionate and sensitive to the differences between business models” (see European Commission 2009b: 5).<sup>11</sup>

Despite the Commission’s avowal to the proportionality principle the proposed AIFM Directive is heavily criticized by the representatives of the private equity industry, such as the German Private Equity and Venture Capital Association (BVK). It considers the regulations proposed by Directive as disproportionate and inappropriate for private equity funds, as opposed to hedge funds, and suspects that the regulations proposed would increase the costs of private equity without providing additional benefits in terms of risk reduction (BVK 2009b). According to the BVK the Directive needs to be radically improved in order not to seriously impede the development of the European private equity sector.

This is certainly not the place for a detailed assessment of the merits and shortcomings of the proposed AIFM-Directive. Suffice it here to emphasize that given the importance of a well-functioning private equity market for the financing of young, innovative firms, special care should be exercised in designing a new regulatory framework for private equity funds in order not to ‘throw out the baby with the bathwater’. An undifferentiated approach to the regulation of alternative investment funds and overregulation of private equity could cripple this already underdeveloped sector even further.

When the European economy emerges from the current financial and economic crisis, there has got to be adequate and appropriate financial provision for young, fast growing firms in new sectors, including an increased not reduced role for private equity finance. It is not the core task of traditional banking to operate in such collateral poor, high risk sectors but rather the task of more specialist financial providers i.e. private equity providers and venture capitalists. Policy makers should be careful to legislate in a way that addresses the sensitivity of emerging businesses to the supply of equity from this sector.

#### **IV Exchange Rate Uncertainty, Export Dependence and Innovative Activity**

As mentioned in the introduction, the current world wide crisis is a Schumpeterian event which may, under favourable conditions, set free a significant amount of productive human and financial resources. At the same time, the crisis affects the incentives for R&D investment. Indeed, a recent literature has evolved which argues that uncertainty related to macro-economic volatility has lasting effects on innovation and growth (for an overview, see Loayza et al. 2007). Two main interrelated transmission channels can be distinguished – exchange rates and exports.

In a Schumpeterian growth model it is possible to show that uncertainty due to exchange rate volatility reduces innovative activity (Aghion et al. 2006). Basically, entrepreneurs in

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<sup>11</sup> The Commission justifies its preference for a “horizontal approach” with the difficulty of defining individual business models in a precise and legally robust way and with the opportunities for regulatory circumvention that any such definitions would create (European Commission 2009b: 5).

open economies faced with uncertain world market price due to exchange rate uncertainty reduce long-run risky investments such as in R&D because they lose more with falling prices than they may gain with rising prices because of increasing costs of production. This negative effect of exchange rate volatility might be mitigated by a well developed capital market which allows for hedging these risks. However, as argued above, the capacity of the financial system for smoothing R&D investment is undermined by the economic crisis or critically depends on appropriate regulation.

Moreover, exchange rate volatility and, therefore, uncertainty of exchange rate changes also affect economic growth via the trade channel. With increased competition among firms operating in monopolistic markets across countries, the uncertainty of exchange rates drives a wedge between the values of revenues earned by firms located in different markets. Hence, in the short run, stability of exchange rates is crucial to export oriented firms as they affect their profitability. Fluctuations in the exchange rates impact on the export oriented firms' real decisions in three ways.

As already argued by more traditional models, innovation and exports influence each other (see, e.g., Lachenmaier and Wößmann (2006)). Endogenous growth models recognize open-economy effects by endogenizing the rate of innovation and predicting dynamic effects of international trade on innovative activity. Product cycle models assume that developed countries export innovative goods and have to keep up their exports by continuous innovation. Hence, the more they innovate the larger are their exports.

An empirical test of these arguments with panel data for OECD countries comes to the following conclusions (Mahagaonkar et al. 2009):

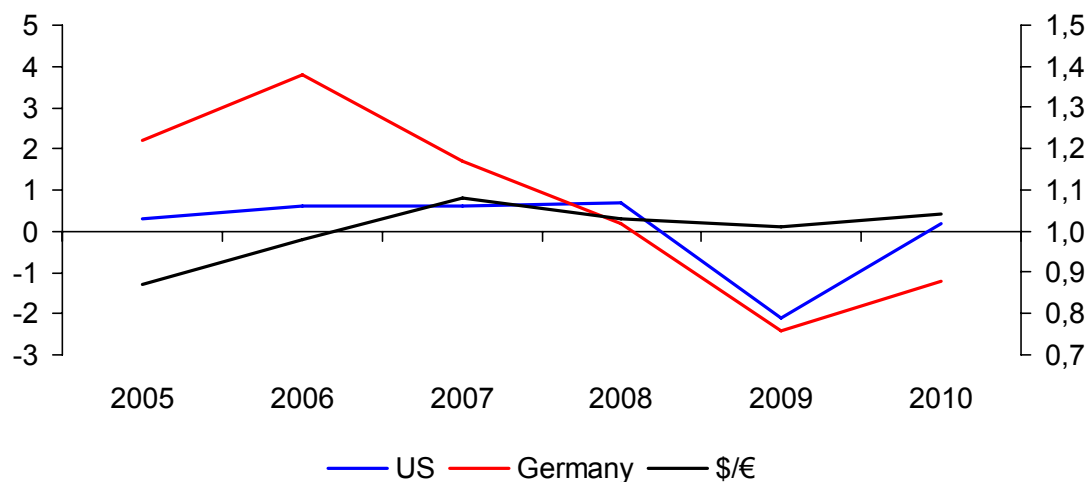
- Innovative activity in the manufacturing sector depends on openness and, more specifically, on the export performance of an economy or the export orientation of a sector *and vice versa*; the higher export intensity the higher is innovation activity.
- Innovation as well as export performance in manufacturing also depends on macro-economic volatility as measured by exchange rate volatility; the lower real exchange rate volatility, the higher innovation and export activity.

What are the implications of these findings for the impact of the economic crisis on innovative activity? Looking at the current situation and short-run forecasts (Figure 6), the U.S. and Germany are much more affected by declining export shares than by exchange rate fluctuations. The Euro-Dollar exchange rate is rather stable reflecting the homogenous nature of the shock. Export shares plunged in 2009 in both countries but volatility of export shares in GDP is much higher in the export dependent German economy and return to normality is expected much faster in the U.S. than in Germany.

The fact that the Euro-Dollar exchange rate is expected to stay rather stable in the near future does not exclude major uncertainties leading to expectations of rising volatility. Looking at quarterly data for GDP indicates that the downturn in the U.S. already attenuated in the second quarter of 2009 while the other OECD countries still faced a deepening of the recession (IfW 2009). To the extent that trajectories out of the crisis differ between major countries, exchange rates between these countries may become more volatile than during the initial shock period. Adding to this, oil prices are even more difficult to predict than before the



Figure 6: Export Shares (Year-on-year Changes; Percentage Points of GDP; Left Scale) and Exchange Rate (2004 = 1; Right Scale) for the U.S. and Germany, 2005–2010



Source: EIU (2009); own calculations.

crisis, the shapes of national and international financial markets after the crisis are largely unknown, and the massive injections of liquidity may or may not lead to an inflationary scenario. Hence, compared to the pre-crisis situation, macroeconomic uncertainties clearly increased.

In the end, innovative activity depends on the impact of the crisis on expectations about future volatility of exchange rates and export shares. It is reasonable to assume that the German economy is much more sensitive to these expectations. Export dependence implies that a depressed level of export activity might influence decisions on R&D investment negatively. Protectionist trade policies as a reaction to the export crisis as well as lack of finance for innovative SMEs due to inappropriate national regulation would increase the likelihood of such a negative scenario.

## V Conclusions

The growth of the financial industry in the U.S., the country of origin of the current financial crisis, during recent years has contributed to opinions that this industry has grown oversize, and that it must shrink back to “normal” size. President Barack Obama argues that “... Wall Street will remain a big, important part of our economy, just as it was in the '70s and the '80s. It just won't be half of our economy. And that means that more talent, more resources will be going to other sectors of the economy. And I actually think that's healthy.” (New York Times Magazine, April 28, 2009). Is Obama right? Can the U.S. expect a higher growth dynamics after the crisis due to better allocation of human capital? And does this – if true for the U.S. – also apply to (continental) Europe?

In this paper we have argued that the answer – for the U.S. as well as for Europe – depends on three critical factors: The supply of entrepreneurial talent from the banking sector, the availability of finance for emerging firms and the more general macroeconomic

environment. A core result of our analysis is that there are marked differences between the U.S. and (continental) Europe with respect to all three critical factors.

There is empirical evidence for overbanking in the U.S. In the years before the current crisis, both the value added share of the financial industry as well as the wages of financial sector employees (particularly of the high skilled) have grown stronger than what could be explained by the growth and the increasing complexity of the financing needs of the real (non-financial) sectors of the economy. Hence, expectations that the supply of high skilled entrepreneurial talent to the real sectors of the economy will rise may be justified for the U.S. Although the current crisis has also narrowed the playing field for venture capital and equity finance in the short run this should not pose a serious problem in the longer run: Significant deregulations of the U.S. financial sector in the 1980 and 1990 have put the sector in a position to supply young, innovative and fast growth firms effectively with the financial services they need. Moreover, the U.S. economy is less sensitive to expected exchange rate volatility and export fluctuations, such that the macroeconomic environment for innovation is less affected by the crisis in the U.S. than in Europe.

In continental Europe (Germany and France, in particular) there is no corresponding evidence for overbanking. While this suggests that the need for the financial industry and its wages to shrink is less pronounced in continental Europe than in the U.S. or the UK, less overbanking also implies that fewer bright minds have been misallocated so far, and fewer gains can be expected from re-allocating them to socially more beneficial, possibly innovative or entrepreneurial, activities in other industries in the future. What makes things even more complicated is that in much of continental Europe those parts of the financial sector that supply young, innovative firms with the financial services they need for a fast growth have traditionally been underrepresented, compared to the U.S. And there is a real danger that inappropriate regulation of alternative investment funds at the EU level may even aggravate the financing problems of young/emerging firms in (continental) Europe and further aggravate Europe's growth problem (relative to the U.S.).

In a nutshell: There are marked structural differences between continental Europe and the U.S., such that the prospects for a socially beneficial re-allocation of human capital and a resurrection of economic growth after the crisis appear much better in the U.S. than in continental Europe. As a corollary, structural differences between continental Europe and the U.S. require different policy responses to the crisis, in particular in the area of financial market regulation. In re-regulating the financial sector in Europe particular care should be given to the venture capital and private equity sector. A regulatory approach that does not appropriately differentiate private equity funds from other funds and the introduction of prohibitively large capital requirements on private equity providers could well lead to a choking off in the supply of private equity, which is desperately needed to bring Europe back on a higher growth path.

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# International Labor Migration and Remittances: Towards Development-friendly Migration Policies

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## **Abstract**

*The global recession has caused a sharp drop in remittances from labor migrants to their home countries. At the household level, declining incomes lower living standards; economy-wide, lower private consumption reduces demand not only for imports but also for domestic goods and services, worsening the recession. While many current migrants remain in their host countries for want of better employment prospects elsewhere, the number of new labor migrants has dropped off in many migration corridors. The initial policy response in many host countries was to tighten immigration rules further. We argue in this paper that protectionist policies that shift the burden of adjustment onto labor migrants and their home countries are inappropriate and ultimately self-defeating in an increasingly interdependent world. Rather, host country governments should adopt a long-term perspective and gradually expand opportunities for international labor migration. High-skilled immigration should be facilitated and governed by transparent rules. Temporary migration opportunities should be expanded for other migrants who meet demonstrated labor market needs. Host and origin countries should jointly improve international job placement procedures and protect labor migrants from exploitation.*

Over the last two decades, remittances by migrant workers to their families have become an important source of household incomes in many developing countries. At the economy-wide level, remittances have sustained demand for local goods and services and contributed to economic growth and poverty reduction. Unsurprisingly, in the current global recession, employment opportunities and earnings of migrant workers have suffered – not least because some important destination countries for migrant workers, including Russia, the United States, and Spain, have been hit particularly hard by the global crisis. Many destination countries have adopted policies to discourage further immigration and even push out those immigrants already in the country. Such protectionist policies threaten to undo the benefits that international labor migration has brought to both, home and destination countries.

In this paper, we assess the extent of the decline in remittances and its impact on developing countries and review initial policy responses. On this basis, we propose policies for destination and home countries that take into account the long-term benefits of international labor migration particularly for migrants and their home countries. We argue that protectionist policies that shift the burden of adjustment onto labor migrants and their home countries are inappropriate and ultimately self-defeating in an increasingly interdependent world. Rather, host country governments should adopt a long-term perspective and gradually expand opportunities for international labor migration, not limited to high-skilled workers.

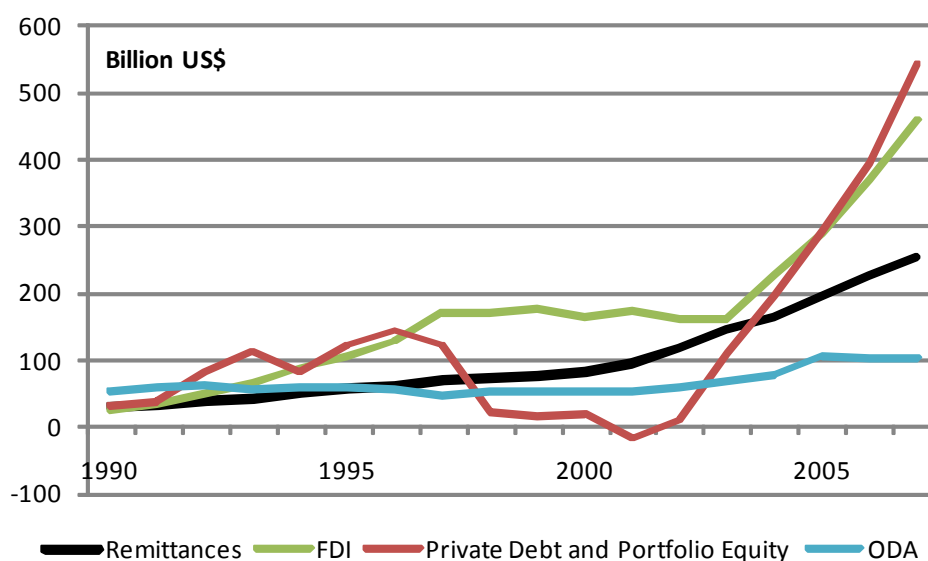
## Migrant Remittances and Economic Development

World-wide, remittances have become a key financial flow to developing countries, rising from US\$ 31 billion in 1990 to US\$ 251 billion in 2007 (Figure 1). Remittances are now more than twice as large as total official development assistance to developing countries and a much more stable source of external finance over the years than direct or portfolio investment.

In many developing countries, remittances have become a crucial source of income for many households (Figure 2). While large countries such as China and India top the list of recipients in terms of the value of remittances, small economies such as Tajikistan, Moldova, or Jordan display a particularly large ratio of remittances relative to GDP. Migrant remittances are difficult to estimate because a significant proportion is transmitted through informal channels like bus or lorry drivers or relatives, rather than through the banking system. Therefore, the data underlying Figures 1 and 2 probably represent the lower bound of plausible estimates of migrant remittances.

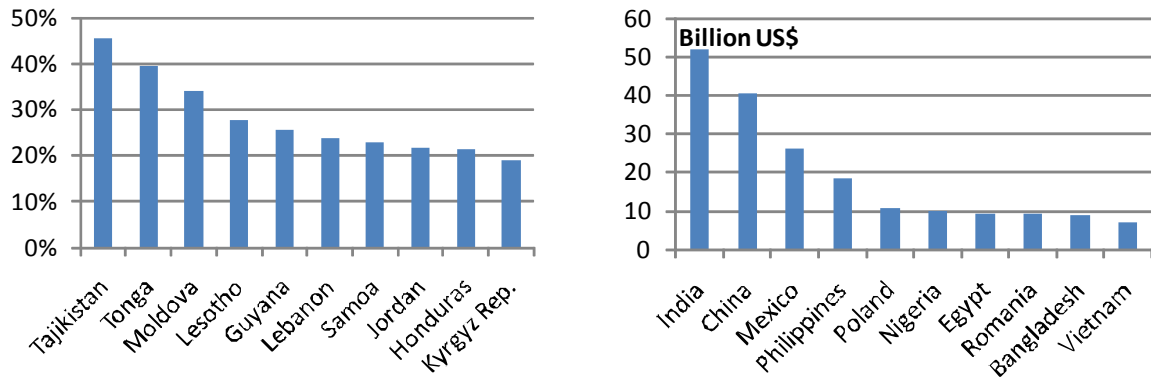
The main source countries of remittances (and destination countries for migrants) are high-income countries like the United States and several EU member states, along with Saudi Arabia and Russia (Figure 3). Although regionally disaggregated data on remittances are very limited, we can identify some important migration corridors. The United States is the main destination country for Mexican, other Central American, and many Indian migrants. Russia is temporary home to nearly all Tajik migrants as well as many Moldovans and Kyrgyz. Saudi Arabia and other Gulf countries host migrants from India, Pakistan and oil-poor Arab countries. Western Europe is a popular destination for migrants from North Africa and Turkey and increasingly from Eastern Europe.

Figure 1: Remittances and Capital Flows to Developing Countries, 1990–2007



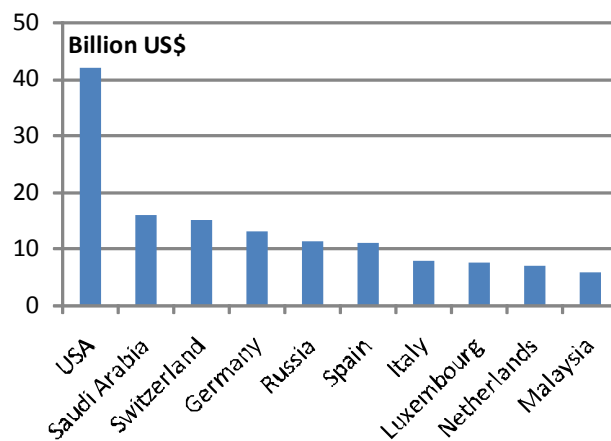
Source: Global Economic Prospects 2006 (World Bank), IMF Balance of Payments Statistics Yearbook 2008, World Development Indicators 2008, and Global Development Finance 2008.

Figure 2: Top Remittance-receiving Countries, 2007 (Per cent of GDP; Billion US\$)



Source: World Bank staff estimates based IMF Balance of Payments Statistics Yearbook 2008.

Figure 3: Top Remittance-sending Countries, 2007 (Billion US\$)



Source: World Bank, Global Development Finance 2008.

Research on the impact of international labor migration and remittances on migrants' home countries confirms the strong positive impact of remittances not only on recipient households, but also at the economy-wide level. International labor migration implies that workers move from an economy where their productivity is low to one where it is high. Clearly, therefore, migrant workers and those with whom they share their additional income will benefit. While it is difficult to identify how additional household income is spent, studies for several high-emigration countries document higher consumption of food and consumer durables as well as investments in family enterprises and in human capital, such as health care and education. When barriers to migration are not high and migration is therefore not too costly, it may also help to reduce poverty in migrants' countries of origin. When barriers are high, for example because migration is illegal and facilitated by organized groups, the poorest households may be excluded from the migration process.

Beyond household-level effects, migrant remittances and higher disposable incomes generate additional demand for local goods and services as well as for imports. In many high-emigration countries, therefore, GDP (i.e. local output) has grown even as labor migrants left and the labor force declined; the economic recovery in many countries of the former Soviet Union since 2000 is a prominent example. At the same time, rising imports have boosted tax revenues (mostly value added tax, but also import duties) and have thus helped to stabilize government expenditures, including on social transfers and services for the poor. Therefore, when migration is large enough, the beneficial effects extend far beyond remittance-receiving households.

There is some concern that emigration of high-skilled workers would deprive developing countries of human resources crucial for their economic development. While plausible, empirical evidence for negative brain-drain effects is limited. In some cases, high-skilled workers might not find appropriate employment at home; for example, health care may be particularly poor in the countryside, but without a functioning hospital infrastructure, physicians and nurses would not remain in the countryside in any case. Furthermore, if emigration opportunities are better for more skilled workers, that may create a powerful incentive for people to acquire more skills – which may ultimately improve the skill level even of those workers who remain in the country (Beine, Docquier, Rapoport 2008). Last but not least, remittances often pay for skill acquisition by family members, such as extended school attendance or further education.

While labor migration has clear economic benefits for migrants, their families, and their home countries, its effects on host country natives are more mixed. Local output will increase, but most of the extra output will go to immigrants themselves. Those groups of local workers who most resemble migrants in terms of skills and work experience are likely to lose because of greater competition in their labor market segments. Other workers with complementary skills may benefit, as may consumers who gain access to services (for example, long-term care at home) that they could not otherwise afford. Similarly, owners of scarce local resources like housing may enjoy higher incomes (Ortega, Peri 2009; Borjas, 2009; Ottaviano, Peri 2008). The fiscal effects of immigration may be positive if immigrants are mostly young, legally employed, pay taxes and social insurance contributions, and have few dependents; or negative if immigrants face high unemployment rates and have access to social services. In ageing societies, immigration may soften the trend towards a lower total population, higher average age, and higher dependency ratios. On the whole, the effects on host country natives tend to be small in relation both to host country GDP and to the clear benefits of migration for migrants and their countries of origin.

Therefore, the argument has recently gained ground that immigration policy in high-income countries should take into account its impact on (current and potential) migrants and on individuals in developing countries generally. At present, the coincidence of where a person happens to have been born (for example, in a high-income vs. a low-income country) has a much greater impact on their material well-being than factors such as gender, skin color or handicap, although possible discrimination against individuals based on the latter factors attracts much more attention (Clemens, Montenegro, Pritchett 2008). The current



global recession is hitting not only many important host countries of labor migrants, but also their countries of origin. If rich host countries were to attempt to shut out migrants, migrants and their families would face extra hardship because they would not easily find alternative employment opportunities at home. Arguably, also, even a cautious opening of rich-country labor markets to immigrants from developing countries would reduce poverty in developing countries more effectively than much current development assistance. Thus, immigration and development policies are closely intertwined and need to be considered in context, as we discuss further below in more detail.

## **The Impact of the Global Recession on Migration and Remittances**

The global financial crisis and the subsequent recession have simultaneously afflicted destination and home countries of labor migrants. Both deteriorating labor market conditions in destination countries and the economic slowdown in many home countries will shape migration flows in the short to medium run. However, the long-run drivers of migration flows are unlikely to be weakened by the crisis: The persisting wage differentials and demographic imbalances between destination and home countries are too large to be fundamentally affected (see Box 1).

So far, the economic slowdown has been particularly marked in developed countries, including several key destination countries of labor migrants. As a result, unemployment rates have increased sharply in several countries. Despite tentative signs that the downturn may be coming to an end, the lagged response of labor markets to GDP growth rates suggests that unemployment may increase yet further. The OECD (2009) reckons that the number of unemployed in the OECD will rise from 34 million in 2008 to more than 56 million in 2010.

The crisis is hitting migrants particularly hard. Compared to the native-born population, they have been experiencing more job losses both in absolute and relative terms. In the US, for instance, the number of immigrant workers has decreased by about 9 per cent since the third quarter of 2009, while the corresponding decline for native workers is about 4 per cent (Camarota, Jensenius 2009). Immigrants are more vulnerable than natives because they tend to work in sectors which are more responsive to the business cycle, above all construction and manufacturing, and typically have less permanent employment contracts. In addition, they are more likely to be disadvantaged through selective layoffs and hiring. At the same time, however, some immigrants hold jobs in sectors which are relatively resilient to the economic downturn. These activities include social services, food-processing, and cleaning (OECD 2009). Thus, a sizeable portion of migrant workers may not be severely affected by the crisis.

In most destination countries, decreasing demand for migrant labor has not yet resulted in a significant outflow of immigrants to their home countries. Depending on how long they expect the recession to last, some migrants may try to stay put, relying on savings or engaging in more irregular and temporary activities. Return migration is also unlikely to be an option for long-settled immigrants, especially for those who have already brought their families with them. In contrast, other migrants, above all temporary migrants, may find it a

**Box 1: Determinants of International Labor Migration and the Effects of the Global Recession**

The reasons behind labor movements between sectors and countries have long been discussed by economists. Neo-classical models of labor movements posit that people migrate due to wage differentials between sectors and predict that wage differentials would be eliminated over time (Ranis and Fei 1961). These models assume perfect markets and fail to explain persistent wage differentials and unemployment. Todaro’s extended model achieves this by assuming that the only determinant of migration decisions is expected income, however, it fails to account for the role of human capital in driving migration (Todaro 1969). The human capital theory of migration deals with this shortcoming by accounting for the role of individual’s skills in determining productivity, wages and costs of migration based on Mincerian wage models. Most of these models treat migration as an individual decision; therefore, they cannot explain the existence of continuing interactions of migrants with their origins and the flow of remittances that play an important role in poverty reduction and rural development (Taylor and Martin 2001). The New Economics of Labor Migration (NELM) posits that the migration decision is part of a household strategy rather than being purely individual and that multiple market failures – in particular capital and insurance – drive migration (Stark and Bloom 1985; Stark 1991). Under imperfect credit markets, remittances may relax the capital constraint and allow households to invest in their farms or businesses. If insurance markets are also missing and there is income uncertainty as is common in agriculture, migration may also serve as an income diversification strategy for the household.

<b>Push Factors</b>	<b>Pull Factors</b>
<ul style="list-style-type: none"> <li>• Wage differentials between countries</li> <li>• Lack of employment opportunities</li> <li>• Imperfect credit and/or insurance markets</li> <li>• Demographic factors</li> <li>• Political/religious prosecution</li> <li>• Natural disasters</li> <li>• Natural resource degradation</li> </ul>	<ul style="list-style-type: none"> <li>• Demand for labor</li> <li>• Education</li> <li>• Lax anti-immigration laws</li> <li>• Demographic factors</li> <li>• More political/economic freedoms</li> <li>• Better public services</li> <li>• Family reunion</li> </ul>

These factors can be grouped under “push” and “pull” factors, which are, respectively, unfavorable conditions in the origin location and favorable conditions in the destination location (Ravenstein 1889). The financial crisis affects some of these factors in different ways, while leaving most of them unaffected. The most important and direct effect of the crisis is through its effects on the demand for labor. As the global economy slows, the demand for labor decreases in the short run especially in sectors that employ most migrants, such as construction and manufacturing. Contracting budgets in host countries that are hit by the crisis may also affect the funds available for education, increasing the costs of education for potential migrants. Another pull factor affected by the crisis is the anti-immigration laws. The increasing protectionist sentiment in destination countries is likely to decrease migration flows marginally in the short run.

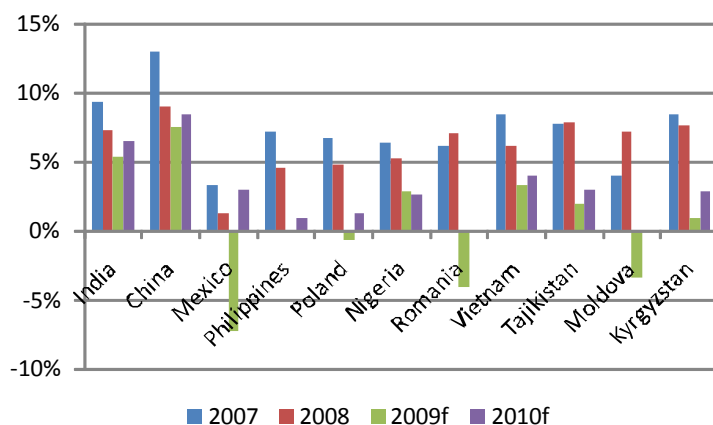
The push factors, however, are mostly not affected by the crisis and some may even be exacerbated. Large wage differentials, scarce employment opportunities and imperfections in financial markets are likely to persist, if not worsen, in origin countries. When economic growth in host countries resumes after the financial crisis, the pull factors will once again come into play adding to the already strong push factors. In light of these considerations, we predict that short sighted nationalist policies to stop migration flows are unlikely to make a significant effect on the global migration patterns in the long run.

more viable strategy to return to their families. It remains to be seen, however, whether labor markets in origin countries can absorb significant numbers of returnees. After all, economic activities are also slowing down in many major origin countries (Figure 4), such as Mexico or Romania. Under such circumstances, return migrants might even hamper the economic recovery of their home countries.

While the crisis may induce only a limited amount of return migration, dire job prospects abroad will almost certainly delay or halt outmigration plans of many potential migrants. Thus, the level of the migrant population may stabilize in the short to medium run. Once the global economy picks up again, outmigration rates will follow suit.

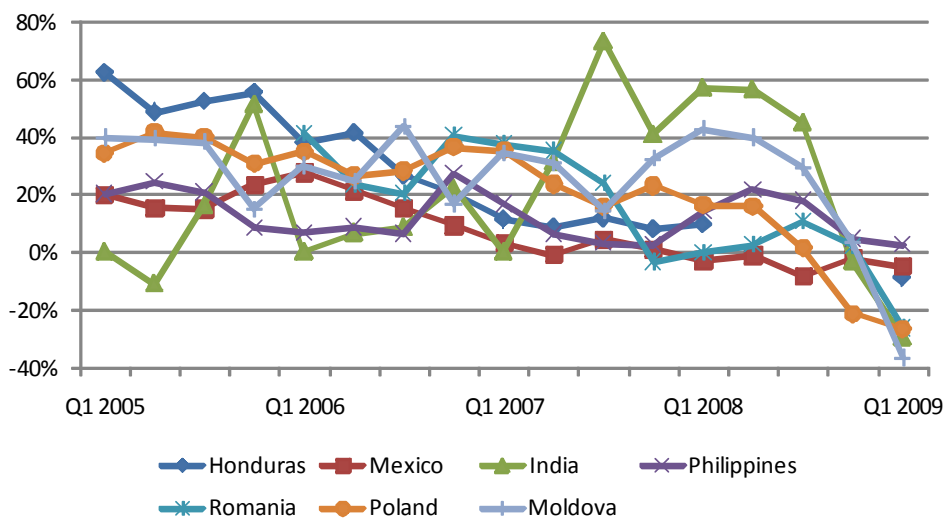
The effects of the severe economic crisis in destination countries are felt not only by (potential) migrants, but also by their families back home. Reduced and uncertain employment and earning opportunities have already caused a sharp reduction in remittance flows to many origin countries of migrants (Figure 5). Countries like India, Poland and Moldova have

Figure 4: GDP Growth in Major Origin Countries



Source: IMF (2009).

Figure 5: Year-on-year Growth of Remittances in Major Origin Countries (Per cent)

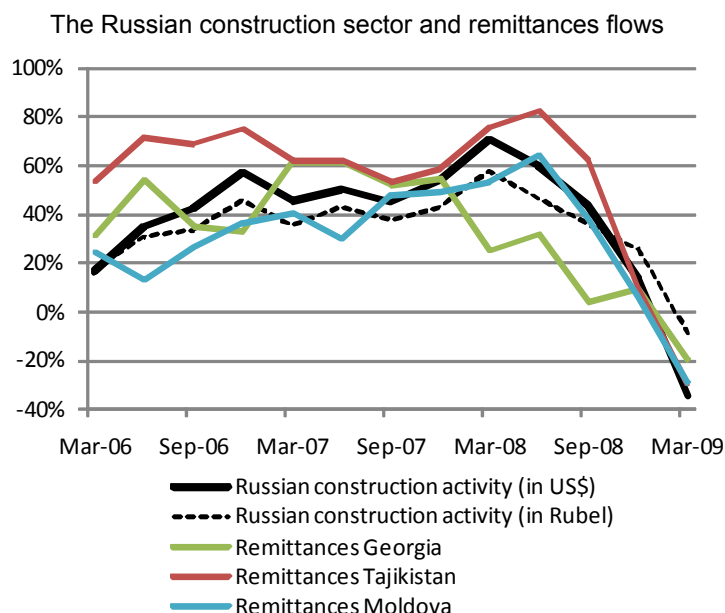


Source: IMF Balance of Payments Statistics and national central bank websites.

seen their remittances fall by more than 20 per cent. The World Bank (2009) predicts that total remittances to developing countries will decline by 7–10 per cent in 2009 and may stabilize in 2010. With the likely return of many of their temporary migrants from Russia, Eastern Europe and Central Asia are expecting the largest decrease in remittances among all developing regions (see Box 2).

### Box 2: The Economic Crisis and Migrants in Russia

After the United States, Russia is the second biggest immigrant destination in the world and the most important destination for migrants from countries of the Commonwealth of Independent States (CIS), such as Tajikistan or Moldova. Many migrants move to Russia to escape unemployment and support their family back home, often taking seasonal jobs for many years in a row (Human Rights Watch 2009). Because of the global recession, Russia's economic outlook is deteriorating, along with the job prospects for foreign workers. The IMF (2009) forecasts that Russia's GDP will contract by 6.5 per cent this year. The unemployment rate increased from 5.3 per cent in September 2008 to 9.9 per cent in May 2009 (ILO 2009a) and may increase further to 12 per cent by the end of the year (ILO 2009b). The construction sector, which alone employs approximately 40 per cent of Russia's migrant workers (Human Rights Watch, 2009), has declined by close to 40 per cent. As a result, many migrants have already been laid-off or have not been paid their wages for several months.



Source: World Bank (forthcoming).

In order to fully account for the consequences of unemployment among foreign workers, it is important to also focus on migrants' families back home. Remittances received from relatives working in Russia are an important income source for many countries of the former Soviet Union. As an example, for 60 per cent of remittance-receiving households in Moldova, these money transfers finance more than half of their current expenditure (Lücke, Omar Mahmoud, Pinger 2007). While most of the additional income is spent on daily needs, some amount is also allocated to consumer durables and larger household investments.

With the decline in economic activity and rising migrant unemployment in Russia, remittances have fallen. In the first quarter of 2009, total outflows from Russia to CIS countries declined by 31 per cent year-on-year (World Bank, forthcoming). During the same period, incoming remittances declined by 39 per cent in Tajikistan and by 35 per cent in Moldova, tracking closely the worsening situation of the Russian construction sector.

Remittances are large in relation to GDP in many CIS countries; for example, inflows in 2007 amounted to 46 per cent of GDP in Tajikistan and 34 per cent in Moldova in 2007 (World Bank 2009). Therefore, the decline in remittances tends to affect economic welfare substantially. As estimated by the World Bank (forthcoming), a 50 per cent decline in remittances would increase the poverty rate of Tajikistan by up to 7 percentage points.

Migrants in Russia are not only losing their jobs, but are also facing an growing anti-migration sentiment. To protect national workers, the Russian government cut its quota for new migrants in 2009 (IOM 2009). Moreover, some employers abuse foreign workers by not paying them their salaries (ILO 2009c). Immigrants also seem to suffer from increased violence and xenophobia since the beginning of the financial crisis; twice as many migrants were murdered in 2008 compared with the previous year (ILO 2009c).

Less income from remittances and in some cases the reintegration of former family members may significantly diminish migrant families' welfare, pushing some of them below the poverty line. The resulting decline in remittances-driven consumption will also have macroeconomic repercussions. This puts additional strain on many developing countries, where the economic crisis is already expected to add 64 million people to the population living under US\$ 2 a day (Chen, Ravallion 2009). Such unfavorable conditions in origin countries may ultimately even strengthen the push factors of migration to seek better opportunities abroad (Box 1).

As the global recession weakens pull factors while strengthening push factors, it is difficult to predict how migration flows will change on balance. In the case of the US-Mexico migration corridor, underlying demographic factors, particularly the difference in labor supply between Mexico and the US, have been shown to play a dominant role (Hanson and McIntosh 2009). The predominance of demographic factors, which are unaffected by the recession, leads to an inertia in migration dynamics such that the GDP contraction in the US and Mexico will probably not affect migration rates significantly (Taylor 2008; Richter et al. 2006).

These insights demonstrate that the economic crisis will probably have only limited and temporary effects on international migration flows. Therefore, a hasty reorientation of migration policies in response to the crisis would not be appropriate. Even in times of economic slowdown, policies should adopt a long-run view to successfully manage labor migration.

## **Policies for International Labor Migration**

In many host countries, the immediate response of immigration policy to the global economic crisis has been defensive, further tightening access to host country labor markets. Borders have been fortified further (US-Mexico), issuance of visas and work permits has been stopped or restricted (Malaysia, Thailand), quotas for skilled migrants have been limited (Australia, Italy, Kazakhstan, Russia), and migrants have been offered financial incentives to return home, on the condition that they would not return to the host country for a given period (Spain, Czech Republic, Japan; IOM 2009b).

Many such immediate responses are perceived as less than successful. The number of illegal immigrants residing in the US has reportedly declined by 13 per cent since 2007, mainly because of increased enforcement that started even before the crisis (Camarota, Jensenius 2009). However, this decline may be short-lived. Tighter border controls coupled with increasing unemployment both in the US and Mexico may cause illegal immigrants already in the US to stay put, rather than return home for extended stays (as they did in the past). Similarly, few immigrants have taken up financial incentives on offer in several countries that would oblige them to return home for an indefinite (or at least prolonged) period. The program in the Czech Republic has been relatively successful in enticing workers to go home; 1,345 (mainly Mongolian) workers applied compared with the targeted 2,000.<sup>1</sup>

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<sup>1</sup> The Czech Republic Pays for Immigrants to Go Home, *The Wall Street Journal*: <http://online.wsj.com/article/SB124087660297361511.html>

However, similar programs in Spain and Japan had scant uptake: these countries aimed to have 100,000 and 200,000 applications, but only had 4,000 and 360 applicants as of April, respectively.

More fundamentally, it is apparent in many areas, from international trade policy to financial services regulation, that national responses to a global crisis are ineffective unless they are at least carefully coordinated. Pushing labor migrants to return home under current conditions would not only create hardship for many migrants and their families, but would also deprive their home countries of a crucial inflow of capital and source of domestic demand. Protectionist responses in immigration policy essentially seek to shift adjustment costs to individuals and countries that are even less well placed to shoulder the burden. This approach not only contradicts global development goals such as poverty reduction that all UN member states have agreed to in the 2001 United Nations Millennium Declaration. Protectionism is also shortsighted because in a globalizing world one country cannot lastingly enhance its own wellbeing through policies that impair the welfare of others.

Therefore, immigration policy, even during a global recession, should follow a long-term strategic focus on the potential contribution of international labor migration to poverty reduction and economic growth in the developing world. This approach calls for policies that (i) create additional opportunities for labor migration, not limited to high-skilled individuals; and (ii) are politically feasible in high-income host countries because they demonstrably generate positive net benefits for host-country natives. While the circumstances of individual host countries differ, the general thrust should be clear: International labor migration is already a key element in the ongoing integration of national economies. It benefits individuals in developing countries of origin without serious negative side-effects in host countries. Its expansion would not only be in line with global development policy goals, but also with the properly understood self-interest of high-income host countries in growing prosperity in their global neighborhood.

The following guidelines may be helpful in designing appropriate policies:

*1. Expand temporary work programs for low-to-medium skilled workers.*

Programs could be targeted to occupations or labor market segments where immigrants will compete less intensely with host country residents. Migrants would be obliged to return home after a set period; therefore, their access to host country social transfers could be limited and their social security contributions (except for health insurance) could be channeled to home country social security systems. Temporary work programs would typically be based on bilateral agreements between home and host countries. While such programs have not been trouble-free in the past, they would expand legal migration without running into the sort of political resistance that permanent immigration faces, especially during a pronounced economic downturn.

*2. Improve integration of immigrants in all spheres of host countries' societies.*

In many host country labor markets, immigrants still face outright discrimination and school achievements for immigrant children also lag behind natives. As a result, many immigrant children are growing up in relative deprivation and without positive role models

of adults who are economically successful and socially integrated. Better integration of immigrants in labor markets and education systems would reduce the fiscal cost of immigration in terms of current and future social transfers. Efforts by a wide variety of actors would be helpful, from business associations promoting equal-opportunity hiring practices to NGOs facilitating migrants' access to public healthcare and schools offering language training to ensure that migrant children are literate in both their native and host country languages. At the same time, it is appropriate for host countries to require new immigrants to make an up-front effort towards integration, for example by learning the language of the host country.

3. *Offer continuous regularization for long-term irregular immigrants.*

Some host countries have long tolerated a large amount of illegal immigration, to the point where irregular migrants have access to public services like health care and schooling without fear of deportation. While this approach is admirable on humanitarian grounds, such irregular immigrants are still unable to obtain legal employment and are thus susceptible to exploitative work practices and de-facto travel restrictions which make it difficult for them to maintain contact with their families at home. Where irregular migration is widely tolerated, the current practice of large, but infrequent and politically controversial regularization campaigns should be replaced with a continuous regularization process for long-term irregular immigrants with clean criminal records and employment histories.

4. *Manage high-skilled migration.*

Many high-income countries allow permanent immigration by high-skilled workers from anywhere in the world, based on a minimum salary to be guaranteed by the prospective employer, previous study at a host country university, or a points system that takes into account a large number of skills and family characteristics. Such transparent provisions should be encouraged and extended. High-skilled immigrants may increase the productivity of resident workers while creating only limited distributional conflicts and can improve the net impact of immigration on the skill level of the host country labor force. At the same time, however, selective immigration policies may lead to brain drain in some emigration countries. To cushion these adverse effects, an international and flexible code of conduct should be implemented to control the active international recruitment of skilled workers in critical sectors such as health care. In addition, social security contributions in host countries should be made portable so that high-skilled emigrants are not discouraged from taking up economic opportunities in their home countries.

5. *Support migrants through information, job placement, training, and protection from abuse.*

International migration involves a variety of risks related to travel, residence in the host country, and employment. These risks may be compounded in the case of irregular migration which is wide-spread in many migration corridors. Home and host countries should cooperate to provide full information to potential migrants about migration options and where to obtain assistance in cases of abuse, etc. Home countries should facilitate job placement for work abroad, be it through governmental or private agencies, and ensure that education systems provide necessary skills for work abroad, such as foreign

languages. When the departure of high-skilled individuals threatens to lead to a brain drain from the home country, home countries and donors may cooperate to provide vocational training to replenish the pool of skilled workers.

6. *Systematically integrate Diasporas in the development process of their home countries.*

Many migrants maintain close links to their home countries by sending remittances, travelling, voting in elections, etc. These links should be supported and harnessed for home countries' economic development. Such policies are especially relevant for (temporary) migrants who reside in the host countries for economic reasons, but ultimately plan to return to their home countries. For example, existing social investment funds demonstrate how migrants can be encouraged to contribute to communal development at home, with funds from the government or donors matching the contributions of migrants.

7. *Facilitate return migration where appropriate.*

Some countries with historically large out-migration have subsequently experienced rapid economic development. Over time, higher incomes have slowed out-migration and even led to substantial return migration (e.g. Ireland, Poland). If such return migration is accelerated by the current recession, some support for re-integration into the labor market at home may be appropriate, for example through job placement offers that target labor migrants abroad. Elsewhere, the jobs held by labor migrants abroad may simply have disappeared (as in the construction industry in Russia) and return migration may be a necessity rather than a choice. For such countries, short-term employment programs funded by the government or donors may be appropriate, particularly if migrants have acquired skills (for example, in the construction industry) that can be used productively in public works.

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# No Money Left for Climate Protection?

*Menusch Khadjavi, Sonja Peterson, Sebastian Petrick, Wilfried Rickels*

## **Abstract**

*We discuss how the present economic and financial crisis affects climate change and climate policy. We focus on the impact of potentially climate protective contents of worldwide stimulus packages as well as changes in the governments' willingness to advance in climate policy. On the one hand, there are indeed some signs that the crisis is increasing the national funds that are made available for climate protection, especially as parts of stimulus packages. Nevertheless, yielded yearly emissions savings still amount for less than 0.5 per cent of the actual global emissions, and the expenses for only about half of the 25 per cent share that the UNEP proposed in its "Global Green New Deal". In addition, the measures that are financed with this money are not necessarily those that are most effective for quickly stimulating the economies and for saving emissions. To significantly increase the amount of annually saved emissions, we propose to cut counterproductive measures offsetting the saved emissions by "green" measures" and to earmark the still "free" share of the stimulus packages for climate investment. We highlight that even in the best case increasing green funds cannot replace a long term sustainable climate policy. In this respect we find evidence that the crisis is on occasion taken as an excuse to postpone necessary structural change and to fail to generate reasonable funding for climate mitigation and adaptation measures especially in the developing world. We point out the danger that this diffidence sets a bad example for future negotiations on the multilateral level.*

## **1 Introduction**

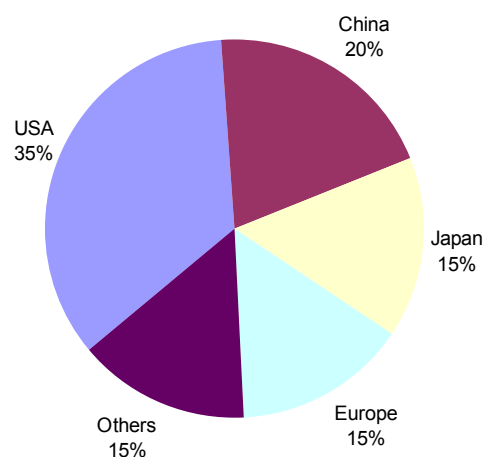
While possibilities to overcome the global financial and economic crisis and to mitigate its negative impacts are dominating the political and scientific agendas, there are also voices that stress that we are actually facing a "double crisis" and that "dangerous climate change poses a permanent and far more serious threat to human development and prosperity" (Edenhofer & Stern 2009). Heat waves like those in Europe in 2003 and hurricanes like hurricane Katrina that destroyed New Orleans in 2007 give us first impressions of what the effects of rising global temperatures could result in. The IPCC report from 2007 has stressed again the necessity for global emissions to peak within the next few years and for emission reductions of 50 per cent relative to today by mid-century in order to stay within manageable temperature increases. As a result of the economic crisis and decreasing industrial production global greenhouse gas (GHG) emissions are projected to decline by 2 to 5 per cent. Yet, to reach the 50-per-cent-target that has also been acknowledged by the G8-Summit in Heiligendamm in 2007 and was on the table at the recent G20 summit in London in April 2009, global emissions need to decrease by around 1.5 per cent annually for the next 40 years. A few years of reduced emission growth will thus only contribute little to solving the

global climate problem if we return to business as usual after the crisis. Whether or not the impacts of climate change soon supersede the financial crisis with respect to its economic and social dimension will depend crucially on whether the 50 per cent reduction of global GHG emissions until 2050 will be successful. This implies that the current emission reductions caused by the economic recession need to be put on a permanent basis – however, without the huge macro-economic costs of the economic crisis.

There is some hope that the current crisis gives us the possibility to rethink our current economic system, the global imbalances and, not less relevant, its dependency on fossil fuels. The eventual challenge is the necessary initiation of structural changes to reach an economic and environmental sustainable growth path after the crisis. Inspired by the “New Deal” of US President Franklin D. Roosevelt that was an answer to the great depression of the 1930s the UN envisages the economy to react to the current global crisis with a “Global Green New Deal” (UNEP 2009). One chance for a “green global recovery” (Edenhofer & Stern 2009) lies in the large economic stimulus packages that have been passed in the major economies.

Worldwide, approximately \$ 2.7 trillion have been earmarked by governments for these packages aimed at remedying the global economic downturn. This sum, which amounts to 4.7 per cent of world income, is intended primarily to stop the downward spiral of cancelled investment plans and cuts in production and employment, as well the shrinking income and demand caused by such cancellations and cuts. In addition, it is also explicitly intended to put the world economy on a new and sustainable growth path. The sizes and the nature of the stimulus packages vary considerably from country to country. Figure 1 shows that in absolute monetary terms, China and the United States have the largest stimulus packages. Stimulus packages in the EU member states amount to only 15 per cent of the packages worldwide. In relative economic terms also, the EU member states spend only 1.6 per cent of EU GDP on stimulus packages, whereas the United States are spending approximately 7 per cent and China is spending approximately 14 per cent. The United States and China are, however, also the largest emitters of CO<sub>2</sub>. Consequently, especially the “green” focus of their stimulus packages is very important for the sustainability of the new growth path.

Figure 1: World Wide Stimulus Packages



Altogether, the stimulus packages provide opportunities to invest heavily in emission-saving measures and structural adjustments, and to initiate climate friendly growth. The question is whether these opportunities are actually taken advantage of, to what extent the funds are likely to be used for green measures and how many GHG savings these imply. In their "Green New Deal Proposal" the United Nations Environment Programme (UNEP) estimated that \$ 750 billion or roughly a quarter of the worldwide stimulus packages are necessary to reach a "green" growth path (UNEP 2009). In Section 2 we will assess whether the major stimulus packages can reach this tentative target, give an overview about the planned green measures and evaluate their contribution to economic and ecological sustainable growth.

Beside this positive impact of the economic crisis on climate change mitigation there is also the danger that lobbying against climate policies especially from energy producers as well as energy-intensive industries has higher chances of being successful in times of recession. Assumably, the economic crisis will be used as an excuse to postpone stringent climate policy measures which are costly in the short term. Australia, for example has already announced that it will delay its anticipated Carbon Pollution Reduction Scheme (CPRS) by one year explicitly mentioning the global economic crisis as the reason. Section 3 addresses the question whether there is major evidence that the global financial and economic crisis effects national climate protection legislation.

In the worst case the attitude that there are currently other priorities and neither scope nor funds for climate protection will also negatively influence the ongoing negotiations of a follow-up treaty of the Kyoto Protocol that expires in 2012. The main issue in this context is the inclusion of major developing and emerging countries, which are estimated to contribute more than 50 per cent to overall annual global GHG emissions by 2030, into a post-Kyoto treaty. These countries argue with some justification that the developed countries are responsible for almost 80 per cent of anthropogenic GHG emissions since the industrial revolution and have much higher per capita emissions than the developing countries. Hence, they argue that the developed countries should carry most of the reduction costs. There are different possibilities for burden sharing including the allocation of emission rights in an international emission trading system or direct transfers. One option that is currently discussed is an adaptation fund to which mainly developed countries could contribute. This fund could be used to alleviate the adverse effects of global warming which will mostly occur in developing countries. Finding an agreement on a global level at the United Nations Climate Change Conference in December in Copenhagen, Denmark has thus become more difficult. The prospects for the post-Kyoto negotiations in the light of the current global financial and economic crisis are addressed in more detail in Section 4.

Altogether, the aim of this paper is to summarize the main positive and negative effects of the global crisis for reaching global emission reductions. Will the world use the opportunity to initiate necessary structural adjustment in the current way of producing and consuming energy, or will there be "no money left for climate protection?" We hope that this paper contributes to making the right choices.

## 2 A Climate of Recovery?

As mentioned above, worldwide, roughly \$ 2.7 trillion or 4.7 per cent of world income have been allocated by governments for stimulus packages aimed at remedying the global economic downturn. Part of the money is also intended to put the world economy on a new and sustainable growth path. According to the UNEP roughly \$ 750 billion or 25 per cent of the world wide stimulus packages should be invested in so called “green” investments to achieve long-term, sustainable economic growth (UNEP 2009) and to initiate a “Global Green New Deal”. These “green” investments include in particular investments for improving the insulation of public and private buildings, for extending the usage of renewable energies, for improving non-polluting transport, and for generating sustainable agriculture and water management.

All these different measures have of course different impacts on the environment, and are also differently suitable to promote economic growth and employment sufficiently fast. While measures including large investment in the construction sector can possibly yield a high multiplier and also be sustainable from an ecological point of view, they may also take a long time to be approved. On the other hand, direct transfer payments like scrappage bonuses may be implemented fast, but have limited effects on growth and ambiguous environmental impacts. Measures that are considered well suited both from an economic and ecological perspective and are implementable within a short time span are improvements in grid managements (e.g. “smart grids”), speeding-up of already planned investments in railroad and other public transportation systems and investments in building insulation.<sup>1</sup> Apart from measures that promote climate protection, stimulus packages may also include possibly harmful measures, e.g. expanded road construction. Generally, a proper mix of measures is preferable towards the concentration on individual measures, since capacities are limited, private investments may be crowded-out and the economic and ecological impact of each individual measure is subject to considerable uncertainty.

In practice, the stimulus packages vary considerably from country to country regarding relative and absolute size and composition (again Figure 1). These differences can be explained to some extent by different forecasted economic development in the downturn and fiscal potential to stimulate their economies. As the various countries vary by their initial economic situation at the beginning of the downturn, so do they in their efforts to mitigate climatic change so far. In particular the “green” shares of the United States and China matter with respect to the sustainability of the new growth path, because these two countries are the largest emitters of CO<sub>2</sub> in absolute terms and both showed limited willingness to mitigate climate change in the past. Whereas the European Union (EU) already established an emission trading scheme in 2005 that constantly reduced the assigned allowances to the companies, the United States just recently seem to be increasingly willing to mitigate climate change.

Table 1 presents the “green” share of the worldwide stimulus packages. It shows that 13 per cent of the stimulus packages will be used directly or indirectly for climate protection

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<sup>1</sup> Own appraisal based on Houser et al. 2009. See Klepper et al. 2009 for details.

**Table 1: Green Shares of the Stimulus Packages Worldwide**

		Volume of the stimulus package	“Green” share for climate protection	Additional “green” share without climate protection	Annual emission saving
		in billion USD	in %	in %	in Mio. t CO <sub>2</sub> <sup>a</sup>
America		1019.2	9.8	1.5	46.9
	United States	972.0	9.9	1.6	45.7
	Rest	47.2	6.9	0.3	1.2
Pacific Asia		1286.5	15.7	4.2	41.6
	China	586.1	29.0	5.2	24.8
	Japan	485.9	2.6	0.0	7.8
	Rest	214.5	9.0	10.9	9.0
Europe		382.1	13.0	0.3	22.4
Africa		7.5	9.5	0.0	0.1
Sum		2695.3	13.4	2.63	111.0

<sup>a</sup>The annual emissions savings were calculated by allocating the measures within the green share to the measures of the study by the World Resource Institute and by multiplying the annual emission saving potential with the actual volume.

*Sources:* Robins et al. (2009); Houser et al. (2009); own calculations.

purposes and approximately another 2.5 per cent will be used for other types of environmental protection. This will save an estimated 111 million tonnes of CO<sub>2</sub> annually.<sup>2</sup> Yet, this amount is less than 0.5 per cent of the actual annual world emissions. Furthermore, even though a significant share of the worldwide stimulus packages is spent for climate protection, the proposed 25 per cent share of the “Global Green New Deal” is missed.

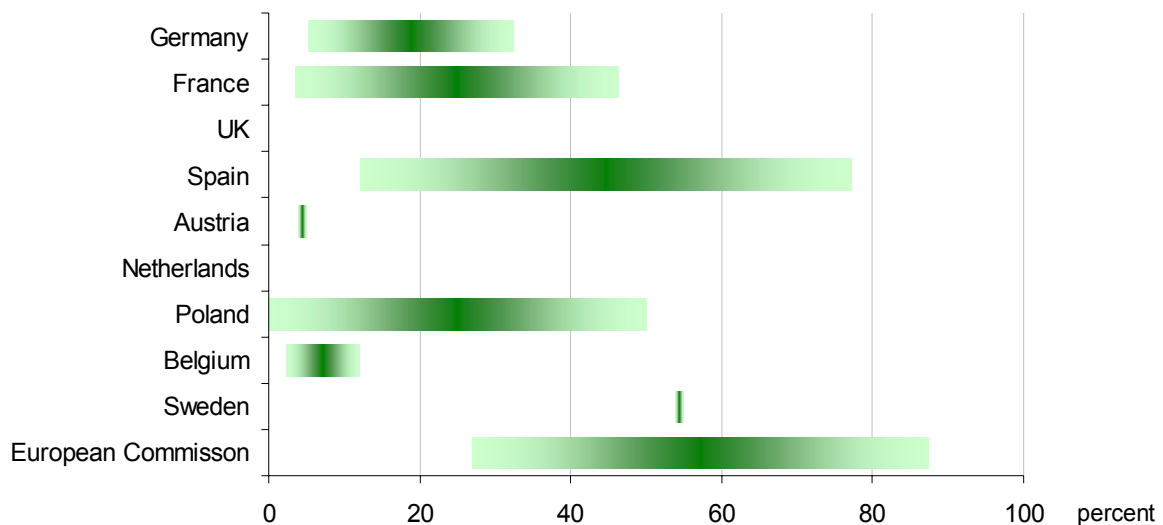
Of the countries listed only China surpasses the required share, spending 29 per cent on climate change mitigation projects and 5 per cent on other environmental friendly projects. This relative large “green” share has to be considered together with the resulting annual CO<sub>2</sub> emission reductions, though. China invests roughly \$ 170 billion in climate protection, achieving estimated annual emission reductions of 25 million tonnes of CO<sub>2</sub>. This seems rather low at the first glance, e.g. compared to the United States, which invest roughly \$ 67 billion in climate change mitigation projects, but achieve annual emission reductions of 46 million tonnes CO<sub>2</sub>. Taking into account the high CO<sub>2</sub> abatement potential in China due to its low energy efficiency, the reversed effect would have been expected. However, these estimations do not take into account lots of China’s peculiarities and are thus immensely uncertain. Nevertheless, most of the “green” share in the Chinese stimulus package is spent on improving and expanding the railroad networks and electrical grids. In this context, it is to be expected that this measure will increase capacities rather than efficiency, thus causing emissions to rise rather than fall. Also secondary effects like a possible increase in the burning of coal for electricity generation caused by eased transportation restrictions have to be taken into account. This example shows that the savings could be higher, but that many of the stimulus programmes have considerable potential to save more.

<sup>2</sup> Estimation based on Houser et al. 2009. See Klepper et al. 2009 for details.

The stimulus packages in the EU are expected to save 22 million tonnes of CO<sub>2</sub> annually, which amounts to approximately 2.5 per cent of the EU's reduction target for 2020. The reduction in current emissions is expected to amount to about 0.44 per cent, which is about the same reduction that stimulus packages elsewhere will bring about. Almost half of the reductions in the EU (9.5 million tonnes) are expected to be brought about by the EU Commission's stimulus packages. Another 35 per cent of the reductions (7.6 million tonnes) are expected to be brought about by the German stimulus packages.

The expected emission reductions are, however, subject to a great deal of uncertainty. In many cases, the stimulus packages have not been defined very well yet. Even more, there is often also a certain share of climate-harming measures in the stimulus packages, e.g. energy vouchers, increased spending on road construction or suspension of tolls. Consequently, it is difficult to estimate the effect the stimulus packages will have on energy use and emissions. Additionally, the estimated range of the "green" shares in the stimulus packages varies considerably depending on the final design. Figure 2 shows the variations and possible range of the most important stimulus packages in the EU.

Figure 2: Potential green share of the stimulus packages in Europe



Due to the large estimated range of the "green" share in the stimulus packages, there is still the opportunity to make them "greener." The measures financed by the stimulus packages are still in the process of being formulated in detail. Thus it would be possible to increase the "green component" of the packages in the EU that have already been approved to 35 per cent. If all of the stimulus packages in Germany were to be designed to be "green", 32 per cent of the appropriated funds could be used for climate protection purposes this year. If, on the other hand, climate protection was not to be given priority, the amount available for climate protection purposes could fall to 5 per cent. These figures show the great extent of uncertainty in the evaluation of the stimulus packages' impacts. However, what is certain is that stimulus packages alone, however good they might be designed, are not the "magic silver bullet" that cures the world from the multiple threats of climate change and economic



downturn. In the medium and long run, only a significant change of the world economy's structure, induced by severe GHG-mitigation and adaptation efforts, will prevent the climate crises.

### **3 No Power Left for Climate Protection?**

After the previous section analysed the environmental impacts of the national stimulus packages, we now take a broader look at current national and transnational climate protection legislation in the face of the global financial and economic crisis.

One example where the global financial and economic crisis is explicitly taken as an excuse to postpone climate policies is Australia. With a reference to the global recession, the installation of a market-based cap-and-trade programme was postponed for 12 months in May 2009 (Reklev 2009a) and the carbon pollution permit cost was fixed to A\$ 10 in the first year (from 1 July 2011 to 30 June 2012). In August, the Senate voted against the carbon trading bill but the government may submit a revised form of the bill to parliament later in the year (McGarrity 2009a). Finally, energy-intensive industries benefit from a global recession assistant package so that altogether there are now several breaks for these industries. Yet, there are also positive signs and the Australian government, led by centre-left Prime Minister Kevin Rudd, announced on May, 18<sup>th</sup> 2009 that it planned to build the world's largest solar energy plant with an output of 1000 megawatts at the cost of A\$ 1.4 billion as part of a A\$ 4.65 billion clean energy initiative (Fox 2009) and the parliament voted in August in favour of a 20 percent target for electricity from renewable sources by 2020 (McGarrity 2009a). Altogether the current Rudd Administration still seems to be more determined to achieve a meaningful post-Kyoto document at the Climate Change Conference in Copenhagen compared to the former Howard Administration that did not agree to ratify the Kyoto Protocol (Aldy and Stavins 2007, p. 10) and refused to install an emission trading scheme in 2007, even when the Australia's states voted to cut carbon dioxide emissions and fight global warming.

In other countries the effects of the global financial and economic crisis on climate policy are less explicit. In the United States, the world's largest emitter of carbon dioxide per capita, the 2008 US-American presidential elections of Barack Obama were possibly a cornerstone in the global fight against climate change. In his campaign Obama promised to turn around the lax environmental policy of his predecessor, former US President George W. Bush who, like Australian former Prime Minister Howard, did not agree to ratify the Kyoto Protocol (Aldy and Stavins 2007, p. 10). Today though, after the outbreak of the crisis and updated prospects of a global recession, the outcome of a firm and determined environmental policy, including an effective and efficient emission trading scheme, is uncertain. President Obama's proposed plan to fully auction the permits of the future cap-and-trade scheme (Zabarenko 2009) is opposed by Republican representatives and seems to get watered down by Democrats who represent heavily affected states. Representatives amended the hundred per cent auctioning clause in the Waxman-Markey bill and it was also included to give away permits to energy-intensive industries for free. The overall target of a 20 per cent emission reduction

relative to 2005 was reduced to 17 per cent and means almost no reductions relative to 1990 (Carroll 2009). Still, the Obama Administration seems to have generally convinced Congress of the importance of stricter environmental policy. Likewise, President Obama promised more cooperation in international negotiations for a post-Kyoto climate change treaty, which is essential for a successful outcome of the Copenhagen negotiations as a whole due to the leadership role of the United States and its position as largest per capita contributor to climate change.

In the EU the so-called “climate package” that defines rather ambitious climate policies is under discussion already since 2007/2008. It includes a reduction of GHG emissions of at least 20 per cent (relative to 1990) until the year 2020 that is increased to 30 per cent if other developed countries undertake comparable reduction efforts. Furthermore, the EU’s climate package includes a 20 per cent share of renewable energies in the EU’s energy consumption by 2020, a 10 per cent minimum target for the market share of renewable transport fuels and improved rules for the European Emissions Trading Scheme (ETS). The aim is in particular to decrease the number of emission allowances and to make the carbon dioxide emission market more competitive. The global financial and economic crisis has fortunately not delayed the legislation and the climate package was ultimately adopted by the European Council in April 2009 (European Union, 2009a and 2009b) and entered into force in June 2009. Yet, the final adopted text contains some concessions for European industries and it is not unlikely that the success of industry lobbying was influenced by the global recession. The main concession was the reduced auctioning of allowance where the European Council as well as a majority of parties in the European Parliament did not follow the Commission’s proposal for full auctioning. Moreover, coal industry lobbying achieved that coal-fired power plants do not need to obey maximum carbon dioxide emission standards (EurActiv 2009a). This policy is particularly favourable to Eastern European member states like Poland which produces 90 per cent of its electricity by coal-fired power plants and leaves space for the construction of high emitting coal-fired power plants in the future (EurActiv 2009a).

Evidence of impacts of the global recession on climate policy in other countries and regions is even more speculative. Japan decided in June 2009 to reduce its emissions by 8 per cent compared to 1990 levels by 2020 (Tabuchi, Hiroko et al. 2009) which is only slightly more than the 6 per cent reduction by 2012 of the Kyoto Protocol. The same is true for Russia that also declared a new “goal” on climate protection in June 2009 and aims at a 10 to 15 per cent reduction after 2012 compared to 1990 levels (McGarrity 2009b). Since in 2007 Russia in fact emitted 34 per cent less compared to 1990 levels this so-called climate protection “goal” is simply meant to state that Russia regards the development of further energy-intensive industries and power plants as its historical right, since the collapse of the former Soviet industries was the main reason for the great reduction after 1990. Russia’s weak “goals” by themselves probably did not change due to the global financial and economic crisis, yet it is assumable that the crisis and the little leeway for investment reinforced Russia’s determination not to share the costs of climate protection.

China, which is meanwhile the greatest emitter of CO<sub>2</sub> in absolute terms, has generally recognised the importance of emission reductions and demonstrates willingness to control

GHG emissions and to invest in more environmental-friendly technology. Partly this willingness is driven by the clear signs of environmental degradation in Chinese cities and the agricultural sector, and by the fear of social unrest against the regime's current environmental policy. A main reason is also China's position in the global race for green technology production. Policies include a subsidy for solar capacity installed in 2009 by \$ 3 per watt, subsidies for the infant Chinese electric car industry, and cooperation on green technology with US-American and European companies. The Chinese government moreover aims to increase the share of renewable energy from 16 per cent today to 23 per cent in 2020 (Aston 2009). A good sign is also that in April 2009 the Chinese government considered for the first time to set a reduction target for GHG emissions (CO<sub>2</sub>-Handel, 2009a).

Positive news in terms of national climate policies include the legislations in Mexico and South Korea. In June 2009 Mexican President Felipe Calderon announced that Mexico aims at a 50 per cent reduction of carbon dioxide in 2050 compared to 2000 levels (Volcovici 2009a). To begin such an ambitious path, Mexico aims at an 8 to 16 per cent reduction of carbon dioxide until 2012 and increases its investment in restoring deforested land. Meanwhile South Korea which is part of the Four Asian Tigers, member of the G20 and thus can be considered a young developed country plans to pass legislation for a national ETS soon (Reklev 2009b). The planned bill would also include the investment of billions of Euros in energy efficiency over the next ten years. During the last decades South Korea has grown to be one of the ten largest emitters of GHGs on the planet. Its current legislation is a good beginning for future climate negotiations.

Altogether, even though the direct effects of the global financial and economic crisis on climate policies are often rather speculative, we thus find at least tendencies to alter or postpone climate protection legislation in different important countries and regions, although there are also small positive news and although in principle the urgency to combat climate change remains acknowledged everywhere.

#### **4 Prospects for the post-Kyoto Negotiations**

Even more important than the effect of the global financial and economic crisis on national climate policies is the question whether the crisis will have an impact on the international climate regime negotiations. As was mentioned already in the introduction it is necessary for global emissions to peak within in the next few years and an international follow up-agreement of the Kyoto-Protocol with stringent emissions reductions is urgently needed. The decisive negotiations take place in December 2009 in Copenhagen and since it can be expected that developed as well as developing countries are far from full recovery from the global financial and economic crisis at the end of 2009, this might indeed be a bad timing.

Generally, the difficulty to agree on an international climate regime is not only due to the public goods property of the atmosphere but also due to large international asymmetries. Industrial countries on the one side are responsible for almost 80 per cent of cumulated industrial GHG emissions up to date and have per capita emissions that are 5 to 200 times larger than those in many developing countries. For example, per capita emissions of ca.

20 tCO<sub>2</sub> in the USA and ca. 10 tCO<sub>2</sub> in Germany stand in contrast to ca. 4 tCO<sub>2</sub> per capita emissions in China, ca. 1.2 tCO<sub>2</sub> in India and less than 0.1 tCO<sub>2</sub> in many African countries. The developing countries on the other side will suffer most from the adverse effects of climate change. Against this background it is comprehensible that representatives from the developing countries argue that mainly the developed countries should pay for climate policy and reduce their high per capita emissions. The developing countries themselves are not willing to endanger their development process by strict emission targets. Yet, stringent emission targets can only be achieved if the developing countries, that are expected to contribute to more than two thirds of GHG emission growth in the next 30 years, also control their emissions. In addition, abatement costs are less in these countries. A final important issue is technology. Even if per capita emissions are low in developing countries energy is often used very inefficiently. The same global production could be produced with only half the GHG emissions if all economies would have the same low energy intensity (the amount of energy to produce e.g. a good or service worth \$ 1) as e.g. Germany. The potential for emission saving technologies and the potential for innovation exist mainly in the developing countries. A potential international agreement thus needs to have a least three main components: (1) emission targets, (2) mechanisms for and finance of technology transfer and (3) funds for adaptation measures in developing countries.

Concerning emission targets the result of the negotiations in 2007 in Bali that have been acknowledged several times envisage global reduction targets of 25 to 40 per cent (relative to 1990) by 2020 and reductions of 50 per cent by 2050 (see e.g. Oxfam 2009). The group of developing countries (G77, China) demands at least 40 per cent reductions from developed countries as they hold historical responsibilities (EurActiv 2009, Oxfam 2009). Representatives from Small Island States fear that their territories will disappear due to rising sea level and demand even 45 per cent reductions. Compared to these targets, the existing national targets (as mentioned also in Section 3) are far from ambitious. The EU aims at an overall 20 or 30 per cent reduction, the US aim at virtually no change compared to 1990, Japan aims at 8 per cent reductions, Russia aims at 10 to 15 per cent reduction, Australia aims at 2 to 24 per cent reductions, and Canada aims at a 2 per cent increase (Oxfam 2009, McGarrity 2009b).

The Bali Action Plan also introduces the term of “common but differentiated responsibilities” that not only included “measurable, reportable and verifiable nationally appropriate mitigation commitments or actions, including quantified emission limitation and reduction objectives, by all *developed country Parties*”, but also “measurable, reportable and verifiable nationally appropriate mitigation actions by *developing country Parties* in the context of sustainable development” (UNFCCC 2007). The EU demands that the developing countries reduce their emission by 15 to 30 per cent by 2020 compared to a business as usual path that has yet to be defined. This is rejected by the developing countries, even though these reductions are physically necessary to reach the overall targets. It is still open, what kind of targets the major developing countries including China, India and Brazil are willing to accept. In any case this will depend crucially on the other two issues and the willingness of the developed

countries to provide financial funds for technology transfer, adaptation measures and emission reductions.

In this context Mexico is promoting a plan to create a global climate fund which is financed by all countries (except the poorest) based on GDP, population and level of emissions. Representatives from developed as well as developing countries already signalled that such a fund could be a feasible solution in the negotiations (Volcovici 2009b and Harrison 2009a). Still representatives from India, China and other developing countries underline the “common, but differentiated responsibilities” of developed and developing countries (Kruppa 2009 and EurActiv 2009b) and demand that the developed world pays “the full cost” (Kruppa 2009) of adaptation of the developing world. Current budget estimations for a global climate fund are about \$ 10 billion annually (Volcovici 2009b). This seems to be a rather low estimate, compared e.g. to the draft report by the finance ministers of the European Union (Harrison 2009b). The finance ministers estimate that annually € 100 billion (≈ \$ 142 billion) are needed from 2020 on to reduce emissions by 30 per cent below business as usual levels in the developing countries. Additionally they conclude that € 20 to € 50 billion are necessary for adaptation measures (Stabroek News 2009). Following some criteria on burden sharing the NGOs Oxfam Germany and BUND (Friends of the Earth Germany) argue that the developed countries should pay 75 per cent of the emission reductions in the developing countries or ca. € 70 billion (≈ \$ 100 billion) annually (Oxfam Germany, Friends of the Earth Germany 2009, p. 8). They also demand that additionally and additional also to existing development aid € 40 billion (≈ \$ 57 billion) are needed annually for adaptation measures.

Whether developed countries will commit themselves to such large payments over several decades becomes especially questionable in times of the global economic and financial crisis. Even the EU that always aims to show leadership in climate policy has postponed a decision on the funds they are willing to provide until October 2009. What is very illustrative in this context is to compare the green shares of the stimulus packages described in Section 2 to the estimates of the EU and Oxfam. As described above of the altogether \$ 2.7 trillion that have been earmarked globally for stimulus packages ca. 13.4 per cent or \$ 361 billion are likely to go to climate friendly measures. Out of these ca. \$ 160 billion originate from developed countries. Thus, with the help of the stimulus packages the developed countries managed to mobilize for on one-time the sum that has to be transferred to developing countries annually for several years. And not only is the money from the stimulus packages a one-time investment, it is also intended for measures in the national economies of *developed countries* while for an international climate treaty reoccurring expenditures for *developing countries* are needed.

Concluding, mitigation of the effects of the global financial and economic crisis demands resources unimaginable before the crisis. As a result, it is doubtful whether world leaders will set ambitious targets for a post-Kyoto agreement in Copenhagen in December 2009, since reaching ambitious targets entails costs that are likely to be beyond the current willingness to pay of both developed and developing countries. Still, the future costs of not coming to an agreement might go far beyond the negative effects of the global recession and even though

the sums seem and are large, \$ 160 billion is only 0.004 per cent of the annual GDP of the high income countries (in 2006 numbers) (World Bank 2008).

## **5 Summary and Conclusions**

There is some danger that the current global financial and economic crisis will delay necessary climate policies worldwide even though the adverse effects of climate change are likely to be much more far reaching for the economic well-being, human development and prosperity than the current economic downturn. To avoid dangerous anthropogenic climate change (article 2 of the United Nations Convention on Climate Change) GHG emissions have to peak within the next few years and decline to about 50 per cent compared to 1990 levels by mid-century. This requires that immediate action to decarbonise our societies is undertaken. This urgency does not vanish, because the global recession slows down emission growth for one or two years. Long term sustainable economic growth requires that we restructure our economies towards a more sustainable way of producing and consuming energy. There are a number of voices that call for increased climate action as an answer to the double crisis of economic recession and dangerous climate change.

Indeed there are some signs that the crisis is increasing the national funds that are made available for climate protection. But there are also signs that the crisis is taken as an excuse to postpone necessary structural change and to fail to generate reasonable funding for climate mitigation and adaptation measures especially in the developing world.

The positive signs are mainly the large economic stimulus packages of altogether \$ 2.7 trillion or 4.7 per cent of global GDP that are allocated to remedy the global economic downturn by governments all around the world. Around 13 per cent or \$ 361 billion of this money is spent for “climate friendly” investments which saves around 111 tonnes of CO<sub>2</sub> annually. Yet, this amount is less than 0.5 per cent of the actual global emissions. And not only is the share of 13 per cent for green measures only about half of the 25 per cent share that the UNEP proposed in its “Global Green New Deal”, also the measures that are financed with this money are not necessarily those that are most effective for quickly stimulating the economies and for saving emissions. These would be mainly improvements in energy efficiency of public and private buildings and improvements in grid management. While for example the EU and the United States are at least investing large parts of their “green” funds into these measures, China mainly invests in the railway network capacity extension which saves relatively few emissions per dollar. Additionally, counterproductive measures like fuel subsidies or heating vouchers offset the saved emissions by “green” measures”. However, by earmarking the still “free” share of the stimulus packages for climate investment can significantly increase the amount of annually saved emissions.

Even in the best case though, the green funds cannot replace a long term sustainable climate policy. If we look at current national efforts, we will also get a mixed picture. There are at least some positive news even in times of global recession. For example China considers explicit emission targets for the first time, the EU passed its climate package that aims at reducing its GHG emissions by at least 20 per cent (compared to 1990) by 2020 and

the United States are likely to agree on concrete reduction targets. Yet, there are also clear negative developments where climate policies have been postponed – such as the Australian emissions trading scheme – or watered down at least partially – such as the new rules for permit allocation in the EU emissions trading scheme and the US reduction targets. In Australia the global financial and economic crisis has served as an explicit argument for the delayed trading scheme, while in the other countries it is also likely that the crisis has increased the credibility of industry lobbying for less stringent policies.

While national action including national funds for climate mitigation from the stimulus packages and national legislation is clearly important for reaching ambitious climate targets, the most important step is an agreement on a new international climate regime as a follow up of the Kyoto Protocol that expires in 2012. This agreement needs to include at least the major emitters also from the developing world. The Bali Action Plan from 2007 sets the path by asking for “measurable, reportable and verifiable nationally appropriate mitigation commitments or actions, including quantified emission limitation and reduction objectives, by all *developed country Parties*” (UNFCCC 2007). Yet it also states that “measurable, reportable and verifiable nationally appropriate mitigation actions by *developing country Parties* in the context of sustainable development” (UNFCCC 2007) are necessary.

Developed countries are responsible for the major share of past GHG emissions, have the highest per capita emissions and the highest welfare. Developing countries have low per capita emissions and suffer most from the adverse effects of climate change. Fairness requires that developed countries bear the largest burden of emission reductions and also partly pay for emission reductions in the developing countries. In this context an international climate fund has been proposed to which especially the developed countries should contribute and which will be used for climate protection and adaptation measures in developing countries. Representatives from developed as well as developing countries already signaled that such a fund could become a feasible solution in the negotiations and many experts stress the importance of large monetary transfers from developed to developing countries for an agreement. Estimates of the necessary size for such a fund vary. The EU estimates that annually ca. € 100 billion are necessary to sufficiently reduce emissions in developing countries. Additionally, ca. € 20 to € 50 billion are needed for adaptation measures. Approximately, this implies that the developed countries would have to annually transfer as many resources to developing countries as the green shares of their current stimulus packages. These are clearly large sums and there is the real danger that the global economic and financial crisis comes at the wrong time for the negotiations in Copenhagen in December 2009.

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# Psychological Pitfalls and the Next Financial Crisis<sup>1</sup>

Henning Klodt

## Abstract

*Traditional economic theory has tried to explain speculative bubbles as the result of rational economic behavior – and has failed. This calls for the integration of socio-psychological patterns, which allow capturing irrational behavior in economic analyses. The paper suggests four fundamental psychological pitfalls derived from the theory of cognitive dissonance, which might be at the roots of the present financial crisis and which should better not be ignored by monetary policy makers.*

## Introduction

If investors had followed Egon Sohmen (1930–1977), the current financial crisis would never have happened. He was deeply convinced that financial markets are inherently stable and that speculation has a fundamentally stabilizing effect on markets. In his opinion, speculative bubbles like we have seen recently first in real estate markets and then in stock and commodity markets are disturbances that automatically and quietly rectify themselves.

His line of argumentation still sounds convincing today: When the market value of an investment tends to fluctuate around its fundamental value in long-term average, then it is more probable that price changes will move the market value closer to the fundamental value than away from it. Speculators who wait for increasing gaps between market value and fundamental value will, on average, take a loss. However, speculators who wait for decreasing gaps between market value and fundamental value will earn a profit, and their purchases will support the movement of the market value towards the fundamental value. The upshot of this line of argumentation is that speculators who earn a profit tend to stabilize market values, whereas speculators who take a loss tend to automatically disappear from the market because they run out of money.

How can economists contribute to explaining phenomena such as the current financial crisis when economic theory clearly maintains that such phenomena are impossible to occur? To foreclose the answer: this paper argues that traditional economic theory needs to be supplemented by insights derived from social psychology – insights that explain human behavior much more realistically than economic theory does. This paper thus moves into the territory of behavioral economics, which has developed very dynamically in recent years, but which has probably been given too little attention when analyzing the current financial crisis.

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<sup>1</sup> Translated by Paul Kramer.

## Are Financial Markets Rational?

The line of argumentation that speculation stabilizes markets is known in the literature on financial markets as the efficient market hypothesis. However, its foundation is not considered to have been laid by the Austrian Egon Sohmen in his book published in 1981, but by the American Eugene Fama in his seminal article published in 1970. The literature that builds on this hypothesis differentiates between three different versions:

- The weak version, in which past price movements do not allow conclusions about future price movements to be drawn. Thus, speculation based on chart analysis is ineffective.
- The middle version, in which current prices reflect all publicly available information about a certain investment. Thus, fundamental analysis is also ineffective.
- The strong version, in which prices reflect not only publicly available, but also any other information of all market participants. Thus, not only are chart and fundamental value analyses ineffective, so is insider trading.

All three versions have in common that they stand on a weak empirical footing. Many different pieces of evidence could be cited here. But, above all, the efficient market hypothesis posits that speculative bubbles cannot occur, which nobody believes any more after the new economy boom of 1999–2001 and the real estate and stock market bubble that burst in 2008.

Economists have a difficult time abandoning the efficient market hypothesis because this would imply to abandon the core hypothesis of all modern economic theory, namely, that economic agents behave rationally, at least on average over time and across various agents. Ultimately, this means “Homo economicus” would have to be retired, which would question the theoretical foundations of both microeconomics and neoclassical macroeconomics.

Thus, there have been several attempts to save the efficient market hypothesis by positing the existence of “rational bubbles.” Rational bubble models themselves are, however, not really convincing, especially since they all assume that the probability that a bubble will burst does not depend on its size, that is, does not depend on the divergence between market value and fundamental value. They further assume an infinite time horizon, as bubbles would otherwise collapse as a result of backward induction (see LeRoy, 2004).

At best, one might hypothesize that the performance and remuneration of funds managers is not determined by the absolute performance of their funds, but rather by the performance of their funds relative to a general index (“beating the index”). Then, it could be profitable for them to “ride the bubble,” that is, to not pull out of the market before other market participants when a bubble starts occurring. When the bubble bursts, their losses would not exceed the losses of their competitors and they would still have a chance of beating the index. In this version of rational bubbles, the funds managers would, after all, behave rationally. However, the question would remain why rational investors could entrust their money to funds managers who are only interested in relative performance, and not in absolute performance. Thus, even this version of rational bubbles cannot dispense with irrational behavior. It is merely shifts irrationality from funds managers to investors.

## **Homo Economicus and Homo Sapiens**

The discrepancies between the assumption of rational behavior upon which the predictions of traditional economic theory build and what actually happens in financial markets are so glaring that economists are increasingly willing to retire Homo economicus, at least partially. Thus, behavioral finance attempts to take into account the fundamental insights derived by psychology in order to predict human economic behavior. This expansion of the economic horizon has not been restricted to financial market analyses. It has also served as the basis for the relatively young discipline of behavioral economics (Rabin, 1998). The pioneering work in this regard was done by David Kahneman and Amos Tversky, who developed the so-called prospect theory, for which Kahneman was awarded the Nobel Prize in 2002. This theory is based on a new utility function that assumes that consumer's utility does not depend on the absolute quantity of available consumer goods, but rather on changes in quantity. In addition, it assumes that negative changes (losses) are weighted more heavily than positive changes (profits). As Kahneman and Tversky (1979) have demonstrated, these assumptions are well founded by empirical socio-psychology (for a critique of prospect theory through the eyes of a psychologist, see Schmook et al. 2002).

The popularity of behavioral economics was strongly promoted by the book of Akerlof and Shiller (2009), which emphasizes the importance of "animal spirits" for understanding economics. They chose this term, which they borrowed from John Maynard Keynes, to illustrate that human behavior is to a great extent driven by animalistic instincts rather than by rationality. Behavioral economics is, however, still far from having an empirically firm micro fundament. Up to now, measurable success has been confined to behavioral finance, where socio-psychology has contributed to the revival of chart analysis.

The problem with integrating socio-psychology into traditional economics is that progress in economics is all too often considered as progress in modeling economic processes consistently. "Consistently" in this respect means to avoid any inconsistencies in each analytical step, which, in turn, are all based on the assumption of rational behavior. Economic models are thus not able at all to cope with irrational behavior. "Economics has thus, by its methodology, tied its own hands" (Lux and Westerhoff 2009).

To solve this problem, it will not suffice to arbitrarily replace the "rational agents" of current economic models by "irrational agents," as this would make the models arbitrary and meaningless. Thus, there still are many respectable economists who view behavioral economics very skeptically, and advocate remaining faithful to the tried and tested Homo economicus in spite of the fact that he obviously does not reflect reality well. Eugene Rama, for example, calls behavioral economics a crowd of anomalies that has nothing in common with a scientific theory.

## **Pitfalls**

Criticism of the shortcomings of behavioral economics is without doubt justified. However, it cannot be denied that extensive experimental research and the opening up of economics to socio-psychology have revealed certain patterns that make the irrational behaviors frequently

involved in economic decision-making at least somewhat predictable. In the far future, these patterns might well form the basis of a new theory that could be as consistent in itself as neoclassical utility theory (see, for example, Ariely 2008). Since irrational behavior runs counter to the individual economic agent's own interests, they can be considered "pitfalls" – pitfalls that would not happen to *Homo economicus*. For a better understanding of speculative bubbles in general and the current financial crisis in particular, four such pitfalls seem to be especially important:

*Pitfall 1:* We tend to overestimate our own skills. Thaler (2000) relates how almost all of his students expect to do better than the average at the beginning of a semester and how approximately half of them are disappointed at the end of the semester.

*Pitfall 2:* Once we have made a decision, we tend to pay greater attention to information that supports the decision than to information that questions it. This pitfall, which was first described by Brehm (1956), is called *post-decisional dissonance* by socio-psychologists. It causes us to correct mistakes too late.

*Pitfall 3:* As the above-mentioned prospect theory emphasizes, we tend to give losses greater weight than gains. This *loss aversion* is much more pronounced than would be consistent with rational risk aversion. According to Kahneman and Tverski (1979), the asymmetry is even 3:1, which means that it takes a gain of 300 dollars to cancel out the dissatisfaction caused by a loss of 100 dollars. As a direct consequence of this pitfall, we want to keep goods we have bought, selling them only if we can get a much better price than the one we originally paid. Therefore, this effect is also known as *endowment effect* (Knetsch 1989).

*Pitfall 4:* After a certain event, we often have the feeling that we knew it was going to happen even though we cannot possibly have known it was going to happen. This effect is labeled as the *curse of knowledge* by Thaler (2000). Socio-psychologists call it the *hindsight effect* or the *knew-it-all-along effect* (Fischhoff and Beyth 1975). It not only causes us to overestimate our ability to predict events, but also prevents us from learning from previous false predictions because we convince ourselves that our previous predictions were correct.

A common denominator for these pitfalls is provided by the *theory of cognitive dissonance*, which was developed by Leon Festinger (1957) and which Frey and Gaska (2002) justifiably call one of the most influential of all socio-psychological theories. It states that we try to avoid contradictory cognitions (of ourselves and/or our environment) or at least to reduce the dissonance between contradictory cognitions. In *Pitfall 1*, we reduce the dissonance between our own idealized cognition of our abilities and our actual abilities by overestimating these abilities. In *Pitfall 2*, dissonant information is filtered out, while consonant information is given greater cognitive attention. In *Pitfall 3*, the value we attach to things we have bought confirms the soundness of our decision to buy them, thus preventing a dissonance between the value we attach to these things before and after we buy them. In *Pitfall 4*, we reduce the dissonance between our expectations and actual events by changing our expectations retroactively to conform to reality.

All in all, it could be imagined that the theory of cognitive dissonance will once become as important for behavioral economics as it is already today for socio-psychology. (But, of course, this prediction rests upon the assumption that behavioral economics itself is more than just a speculative bubble.)

## **The Financial Crisis**

For the purpose of this paper, the origins and course of the global financial crisis can be outlined as follows:

- The starting point was an extremely expansive monetary policy that began in the United States in the late 1990s and continued in the wake of the dotcom bubble on into the early 2000s, also spreading to Europe.
- Monetary expansion was followed by a surge in inflation, albeit not in goods markets but in asset markets. The first of these markets to be affected were real estate markets (although not in all countries), then stock markets followed, and finally commodity markets were affected.
- Additional liquidity was infused into financial markets by the explosion in the supply of derivatives, which was fostered by a far too permissive regulation of financial markets. This pumped up the speculative bubbles even more.
- The real estate bubble burst first. It burst because ever riskier financing models caused private real estate owners to default on their real estate loans. As a result, the solidity of other asset-backed securities and other derivatives began to be doubted, which caused the speculative bubbles in the stock and commodity markets to burst too, and ultimately threw the global financial economy into a spin.

In the katzenjammer that followed, the blame for the crisis was placed primarily on the deregulation of financial markets and on rating agencies, whereby the agencies were accused of giving euphorically high ratings to extremely risky derivatives.

On a descriptive level, these accusations are quite convincing. But they ignore several fundamental issues: Why were banks and investors far too willing to accept adventurous derivative securitization schemes and buy products they did not really understand? Was, concomitant to deregulation, the lifting of the restrictions on dealing in extremely risky “credit substitutes” sufficient reason to actually accept such risks? Why were investors so willing to believe the hype of the rating agencies although it was well known that these agencies were on the payroll of the issuers of derivatives. Why did banks ignore their own early warning systems in order to participate in spinning the gambling wheel of speculation? Those who blame deregulation and rating agencies as the major originators of the financial crisis are making things too easy for themselves.

To state it differently: Homo economicus would never have made all these mistakes. He would have become highly suspicious when real estate prices skyrocketed; he would have realized that excessive expansion of money supply can only generate profits on paper; he would have been skeptical of ratings given by rating agencies that rate their own, paying

customers; and he would have seen no reason to stop using his own tried and true methods of analyzing and assessing risk. He would perhaps have been glad about all the additional opportunities resulting from the deregulation of financial markets and related financial innovations. But he would not have blindly and recklessly jumped at all of these opportunities.

Homo sapiens, however, ticks differently:

- When a speculative bubble begins to build up, *Pitfall 1* causes her to believe that she will be able to make money on the bubble and then pull out before everyone else, before the bubble bursts.
- After investing in speculative markets, he only takes notice, because of *Pitfall 2*, of information that justifies his decision to invest, even becoming susceptible to the siren songs of the rating agencies, although he would otherwise have plugged his ears to such songs.
- Even when a bubble starts to deflate and prices start falling, she does not, because of *Pitfall 3*, quickly pull out of the market, because she considers her own assets to be particularly valuable.
- And after all the bubbles have burst, and everything is all over, he does not, because of *Pitfall 4*, learn from his mistakes, because he convinces himself that he saw the bursting of the bubbles coming all along and thus will have everything under control when new bubbles occur.

Those who are willing to take Homo sapiens seriously and who do not let themselves be fettered analytically by the rationality postulate do not at all consider the occurrence of gigantic speculative bubbles and the financial crisis triggered by their bursting to be inexplicable. They also have the unpleasant feeling that this crisis will most likely not be the last one, and that the whole game of riding the bubble will begin anew in the foreseeable future.

## Conclusions

The main consequence of the line of argumentation put forward in this paper is that it will not be easy to prevent a repeat of global financial crises through economic policy. Better global governance and internationally coordinated regulation could of course help to prevent excesses in the markets for derivatives, but neither will diminish people's willingness to fall for speculative bubbles. The only preventative measure that will work seems to be to deprive bubbles of inflationary gases from the very beginning by controlling the supply of liquidity better than has hitherto been the case.

Apparently, central banks, when implementing their monetary policies, have been too focused on price trends in goods markets, while paying less attention to asset price bubbles. To prevent future financial crises, they will have to take better responsibility for inflationary developments in asset markets by implementing monetary policy instruments of all types to nip bubbles in the bud.

For an economist, the consequences for the future of economic theory are at least as exiting. First, there should be no doubt any more that speculative bubbles can only be understood by taking recourse to socio-psychological insights. The speculative excesses in asset markets were simply too large to be explained by using rational bubble models. The most adamant advocates of Homo economicus still manage to fit these excesses into their rational models somehow, but their models are reminiscent of the Ptolemaic system of the universe, which was still using complicated formulas during the Renaissance to fit the orbits of the planets into a geocentric system although Copernicus, Kepler, and Galileo had already greatly simplified things by using the heliocentric system.

Second, behavioral economics has evolved into more than just an anecdotal collection of behavioral anomalies, even if it is still far from being able to provide stringent micro-based models. However, the theory of cognitive dissonance could play a key role in developing such models. It is theoretically rigorous and it seems powerful enough to provide a theoretical framework for capturing patterns of irrational behavior such as the ones outlined in this paper.

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