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The International Banking Crisis:

Lessons and EU Reforms

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Summary: The key dynamics of the transatlantic banking crisis are analyzed – with emphasis on the fact that the banking disaster of 2007/08 was not really a surprise –, and the five key requirements for restoring stability and efficiency in the EU/OECD banking sector are highlighted: Hedge funds should be regulated and be required to register with the Bank of International Settlements, which should have the right to tighten equity capital requirements if deemed necessary. The quality and comprehensiveness of banks' balance sheets must be radically improved and all off-balance sheet activities must be included in future total balance sheets (TBS). Securitization is a useful financial innovation, yet asset backed securities (ABS) should become more standardized and every bank selling ABS should declare its willingness to buy back this package at any point of time at a minimum of 50% of the initial transaction price. All credit default swaps (CDS) must be registered in a global database, and future transaction should go through a clearing house. Previous CDS transactions must also be re-corded, since a critical veil of ignorance of counterparty risk would otherwise continue and hence the uncertainty about the valuation of large portfolio positions of banks, funds and in-surance companies would continue. Financing of rating should be indirect, namely every country or company planning to place bonds in the market should pay fees into a pool, and this pool then finances the respective rating on a competitive basis. This two-stage approach of financing ratings would most likely eliminate the existing conflicts of interest in the present regime. Most important, however, is the introduction of a new tax regime designed to encour-age bankers to take a more long term time horizon in decision-making and to reduce excessive risk-taking. Banks and funds should be taxed not only on the basis of profits but also on the basis of the variability – read variance – of the rate of return on equity: the higher the variabil-ity over time the higher the tax to be paid (a simple calculation for Germany shows that based on historical data the large private banks would have paid the highest overall tax rate). As regards Basel III one should note that Basel I/II rules are flawed in the sense that raising the equity-loan ratio is assumed – in the logic of the existing Basel arrangements – to create a better cushion against risk and adverse shocks to profitability, respectively. However, theo-retical analysis clearly shows that raising the equity ratio implies in an aggregate perspective that the (relative) credit multiplier is increased which in turn could bring about a rise of vola-tility and risk, respectively.

Zusammenfassung: Diskutiert werden die Hauptaspekte der transatlantischen Bankenkrise, zudem werden fünf unerlässliche Vorschläge zur Wiederherstellung der Stabilität und Effi-zienz des Bankensektors in der EU/OECD präsentiert: Hedgefonds sollten reguliert werden und dabei der BIZ unterworfen werden. Die Qualität von Bankbilanzen muss radikal verbes-sert werden, wobei alle „außerbilanziellen" Aktivitäten in einem künftigen total balance sheet enthalten sein müssen. Die Verbriefung ist eine sinnvolle Innovation, allerdings sollten ABS stärker standardisiert werden und jede Bank, die ABS-Papiere verkauft, musste ihre Bereit-schaft erklären, Papiere jederzeit zu 50% des anfänglichen Verkaufpreises zurückzukaufen. Alle CDS Transaktionen müssen in einer globalen Datenbank erfasst werden. Die Finanzie-rung von Ratings sollte nur indirekt erfolgen, nämlich in einem zwei stufigen Verfahren. Am wichtigsten ist die Einführung eines neuen Steuerregimes: demnach sollen Banken und andere Finanzunternehmen nicht nur auf Basis der Gewinne besteuert werden, sondern auch mit Be-zug auf die Varianz der Eigenkapitalrendite – diese Innovation wird Ordnungspolitisch Anrei-ze für einen längeren Zeithorizont und ein nachhaltigeres Wirtschaften bei Banken setzen. Die Basel I/II – Regeln enthalten bedenkliche Konstruktionsfehler.

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1.   Introduction

Financial market globalization was reinforced in the decade following 1995, and one might expect major benefits from sustainable globalization. There is no doubt that securitization of loans and foreign direct investment of banks as well as internationalization of the banking business has intensified over time (DEUTSCHE BUNDESBANK, 2008; ECB, 2008); the home bias in the use of savings – emphasized in earlier empirical analysis of FELDSTEIN/HORIOKA (1980) – has reduced over time, particularly in the EU (JUNGMITTAG/UNTIEDT, 2002). While one should expect considerable benefits from financial globalization organized in a consistent framework, such globalization can have negative national and international collateral effects if the institutional framework is incomplete and inconsistent: a low degree of transparency resulting from this could raise systemic risks and generate negative international external effects. The international banking crisis which started in 2007 in the US subprime mortgage market shows that the institutional framework is incomplete and that there is a broad challenge for the EU countries and other OECD countries as well as China, India and other NICs in implementing a new global financial architecture. At the same time the US, the euro zone and other countries will have to adopt reforms in the domestic sphere. For the euro zone, the transatlantic banking crisis is a welcome test for its institutional set up, and it seems that the euro zone countries are doing rather well in the difficult transatlantic crisis; the ECB and several central banks deserve credit for flexible and rather consistent crisis management in 2008, although the crisis has not yet been fully resolved.

Based on the Basel I rules, there should not be much reason to worry about stability of the banking system, since regulations require internationally active banks to fulfill a minimum equity capital-loan ratio of 8%. Under Basel II there is a more differentiated approach which measures bank capital and portfolios on the basis of risks so that 8% applies to a risk-weighted portfolio of the bank. Moreover, there is a distinction between tier 1 capital (in the EU usually 4%, in the UK 6%), tier 2 capital (8% requirement) and tier 3 capital. Based on the method chosen for risk assessment – external rating or two alternative internal rating approaches –, the capital requirements will slightly differ. The basic logic of the Basel I/II approach is that an individual bank will face favorable survival prospects if its equity capital-loan ratio is sufficiently high. This logic, however, is flawed at the aggregate level as can be shown easily (see appendix 5). Changing the Basel equity requirements is at least as important as the issue of pro-cyclicality of Basel II rules. The basic point is that raising the equity-loan ratio does not simply improve the air bag of the individual bank, rather at the aggregate level it is prone to bring about an increase in the ratio of the credit multiplier to the money multiplier, which implies a greater likelihood of increasing and excessive volatility of asset prices and hence of risk. By implication, minimum equity capital requirement should be carefully redefined under Basel III, and there is indeed an optimum capital requirement in a macroeconomic perspective. However, the main focus of the subsequent analysis is on overcoming the existing banking crisis, and several institutional innovations will be suggested as new remedies.

The USA has faced a banking crisis in 2007/08 which spilled over to Europe and later to the whole world. This major crisis brought about enormous depreciations on portfolios of banks and funds and could entail a new Great Depression as the real economies in OECD countries, Russia, China and elsewhere face a simultaneous decline in 2009. In September/October 2008, the US government and European governments organized multi-billion dollar rescue packages to recapitalize banks, but national governments have not addressed the true structural problems. Iceland, Hungary, the Ukraine, Estonia and Latvia were among the countries facing balance-of-payments financing problems in October 2008. The euro zone's financial market stability was relatively satisfactory, while the epicenter of the banking crisis was in the US and to some extent in the UK, where banking supervisors had followed a similar benign neglect-attitude as their counterparts in the US. In the euro zone, Spain (CALVO-HORNERO/SANCHEZ, 2008) and to some extent Italy pursued rather strict regulatory approaches, which have helped them avoid facing major subprime problems. The US subprime mortgage markets were the trigger of the financial market crisis in August 2007, but there is no doubt that the whole US banking system was off-course with respect to sustainable banking in 2007. It is quite important to understand what went wrong, since successfully fighting the crisis requires measures based on adequate theoretical analysis. While the G20 meeting in November 2008 came up with a long list of 47 measures to be considered, it is doubtful that the key reform elements necessary were on the radar screen of policymakers. Overcoming the strange confidence crisis among banks is one of the key challenges as is a more realistic and more long-term profit maximization strategy of banks and other actors in financial markets. Better regulation and more regulation for big banks in the US and other OECD countries are also high on the agenda. Beyond the financial sector – shaped by high innovation dynamics, high volatility in 2008 and declining confidence among banks –, the focus of policymakers is on the real economy with consensus forecasts for 2009 being rather bleak. This holds despite the big interest rate cuts of OECD central banks in the second half of 2008, which were designed to contain the turbulence to financial markets and to avoid a big recession.

Financial markets are crucial for financing investment and innovation, thus they are indispensible for economic growth (SAINT-PAUL, 1992). Asymmetric information and moral hazard problems are specific aspects of financial markets and thus financial markets are not working perfectly. There could be credit rationing under specific circumstances (STIGLITZ/WEISS, 1981). The risk of bank runs is specific to the banking sector and hence the confidence of depositors and depositor protection are crucial elements of the institutional setup in the banking industry (DIAMOND/DYBVIG, 1981). From a theoretical perspective, there are sound arguments for why there should be ex-ante rules – regulations – for banks (DEWATRIPONT/TIROLE, 1995) and not simply an application of the general competition law whose rules apply ex post, except for the field of merger control. Central banks are interested in systemic stability, as turbulences could undermine the effectiveness of monetary policy, and certainly investors and the general public have a strong interest in systemic stability (DE BANDT/HARTMANN, 2000). For EU countries eager to create capital-based pension systems – as a complementary element to pay-as-you-go systems – the stability of financial markets is also quite crucial. While many banks run stress tests, it is unclear to which extent such tests are tailored adequately. From an economist's perspective, one may wonder whether prudential supervisors run simulations on the bankruptcy of individual banks. Part of the Economics research community was not

really good in understanding the problems of the US subprime financing. For example, PEEK/WILCOX (2006) argued on the basis of empirical analysis that the growth of asset backed securities markets had contributed to stabilizing housing investment in the US.

An important aspect of financial market developments concerns the links between financial innovations, investment and instability which is a Schumpeterian perspective on financial and real instability (MINSKY, 1990). Financial innovation such as securitization and asset-splitting had already been created in the 1980s (BIS, 1986). An increasing role for private equity funds has been observed since the 1990s, and such funds have reinforced the adjustment and innovation pressure on firms. In certain cases, however, they have also weakened the long term ability of firms acquired to survive in the market (VAN DEN BURG/RASMUSSEN, 2006). The innovation dynamics of the real sector in turn affects asset markets, in particular stock markets; patents affect the stock market prices significantly (GRILICHES/HALL/PAKES, 1991). In imperfect capital markets, equity capital is important not least for financing international M&As, and a real depreciation of the currency – implying that foreign investors have a larger amount of equity capital expressed in the currency of the target country – will bring about higher foreign direct investment inflows relative to GDP (for the case of the US see FROOT/STEIN, 1991). Thus, the international banking crisis must be explained in a broader context. An interesting feature of the US crisis is the fact that the US could still attract high capital inflows in 2007/08, although its current account-deficit GDP ratio had reached 5-6% in that period. While conventional modeling suggests that high cumulated current account deficits imply a depreciation of the exchange rate (HANSEN/RÖGER, 2000), the US has experienced a rather strong appreciation of its currency in the second half of 2008, where a nominal appreciation reinforced the effect from the rise in the price level.

These puzzling effect as well as other issues must be analyzed, and one may ask to which extent the US is able to stabilize its economic system. While the US as a large economy should indeed be able to stabilize its banking system (paradoxically, part of the US automotive industry, including GM, is an element of the banking sector) through adequate policy measures, it is nevertheless obvious that a further acceleration of the banking crisis in 2009/2010 – fuelled by a strong US recession weakening banks further – could bring serious problems, as neither private US investors nor private investors from OECD countries are likely to be willing to recapitalize US banks if necessary. The US government and US banks would have to approach sovereign investment funds abroad, which politically would be a conflict-prone alternative. Another option would be further capital injections through the government, but such state-ownership of banks stands in sharp contrast to the principles of the US system. The options for international bank refinancing in the OECD are also weak, and this is largely due to the disaster with the bankruptcy of Lehman Brothers.

The transatlantic banking crisis intensified after the US decided to let Lehman Brothers go bankrupt on September 15: a decision which was totally inconsistent given the previous bailout of the smaller investment bank Bear Stearns in March 2008; and taking into account that a few days later AIG, the giant insurance company, had been saved by the US government. The bankruptcy of Lehman in the midst of the banking crisis has fully destroyed confidence in OECD interbank markets and thus represents an irresponsible step on the part of the Bush administration. Freddie Mac and Fannie Mae had been rescued by

government, not least under the pressure of China whose central bank held large amounts of bonds issues by those two semi-public mortgage banks. It seems that neither the EU nor Japan had warned the US not to let Lehman Brothers go bankrupt – the large majority of unsecured claims against Lehman Brothers was in Japan and the EU, while the US share was only about 10%. While the US government might have speculated that Lehman Brothers would be a cheap case of bankruptcy for the US, it was in effect the ultimate impulse for wiping out confidence in interbank markets of OECD countries. Thus the Bush administration committed a serious policy failure with large global negative external effects – with costs greatly exceeding simply the wiping out of international claims vis-à-vis Lehman Brothers. Lehman Brothers going under chapter 11 signaled that no bank in the US was safe; and a fortiori, no bank in Europe.

In 2004, Wall Street Investment Bankers achieved a softening of SEC regulations, namely that the permissible leverage ratio was raised to 40 – but in the end this softening only raised the speed of high-risk investment banking, and all major investment banks went under or were merged with traditional banks in 2008. There are serious doubts that value-added of investment banks on Wall Street were positive in the period 2002-08; the losses incurred and losses imposed on other banks, firms and countries most likely have exceed profits and wages paid in that period. Moreover, big banks in the US – all too big to fail – obtained government capital and thus it seemed that those banks faced a soft budget constraint, a phenomenon which had been emphasized by KORNAI (1980) in his book about socialist command economies. While his argument referred to banks and firms, the US case is mainly limited to the banking system, but if ailing automotive firms and other sectors would also come under the umbrella of the US government, the soft budget phenomenon would gain in relevance. The $700 billion rescue package offered by the US Congress for saving the banks and insurance companies – to this sum one must also add some $250 billion for rescuing Bear Stearns and Fannie Mae and Freddie Mac – will have been spent by mid-2009, and there is some risk that the US government will have to come up with even higher amounts of capital injections, guarantees and subsidies in the coming years. The recession of 2008/09 will aggravate the problems of banks and insurance companies, and depreciations of portfolios will become a serious problem again.

The IMF (2008) warned early that depreciations of banks and hedge funds and investment funds could reach about $1000 bill. worldwide, while updates of the IMF in the summer of 2008 suggested even higher figures. Moreover, the Stability Report of the BANK OF ENGLAND (2008) in autumn 2008 warned that depreciations could reach even $ 2.8 trillion. Such depreciations would partly reflect the impact of the recessions in the US, the UK and other countries affected by the international banking crisis. This crisis which apparently started in the US subprime mortgage market in 2007 and caused major problems in the interbank market accelerated in the summer of 2008 – with the collapse of the US investment bank Lehman Brothers on September 15 causing market panic.

In a historical perspective, the US banking crisis is the most severe crisis since the Great Depression, and the enormous international collateral damages and high costs to the US economy – facing recession in 2008/09 – raises the question about the causes of this disaster, the impact of the international banking crisis and the options for dealing with the crisis. As regards the latter, one should clearly make a distinction between crisis

management necessary to overcome the banking crisis in the short run and the structural reforms required in the context of more long-term systemic changes.

In the short run it will be necessary to save the banking systems in the US, the UK and the euro zone. Without a stable banking system there is a serious risk of another Great Depression. Governments have offered multi-billion dollar packages for partial nationalization of banks – read recapitalization of banks – and guarantees for banks which want to sell bonds in a shaky securities market and an almost non-existent interbank market. Given the small number of big US banks, competition among banks is rather weak as there is a rather general "too big to fail problem" in the US (provided that the bank considered faces a large share of unsecured claims of US private and corporate citizens; hence the Lehman Brothers case is not really a counter-example).

Banks have lost confidence in each other, and the starting point was the growing tendency of bankers in the US (and Europe) to avoid regulatory equity requirements by transforming loans into asset-backed securities which could be sold in the capital market and often ended up in the special investment vehicles created by the banks themselves. The banks thus have created a market for lemons problem; that is, there was increasing quality uncertainty among bankers who could no longer draw reliable information from balance sheets about the financial status of potential partner banks. The classical lemons problem (AKERLOF, 1970) which had been identified as a potential source for market failure in goods markets is now visible in financial markets; with confidence among banks declining liquidity for many products has dried up.

Since banks no longer trust each other, the refinancing of banks through state-guaranteed bonds is one of the few alternatives for restarting both the interbank market and the capital market. This will go along with mergers & acquisitions and government participation in major banks as well as other bail-out measures of governments. The governments of the US and of many EU countries have strongly intervened in the banking markets, creating thereby bigger banks as part of the rescue operations in the US. Such developments are, however, in contrast to what structural reforms require, namely more competition among private banks and dismemberment of large banks in order to bring about effective competition. The following analysis takes a look at the dynamics of the banking crisis (section 2), considers some key theoretical aspects (section 3) and suggests necessary reforms in the EU and at the global policy level (section 4). In the appendix serious doubts about Basel regulatory equity rules are raised: the Basel I-rule as well as the Basel II-rule raise the likelihood of a banking crisis.

2. The Dynamics of the Banking Crisis

At first glance, the US banking crisis started in subprime mortgage financing, as house prices started to fall in 2007. This implied serious doubts about the value of mortgage-backed securities largely held by special investment vehicles (SIVs) of banks which had organized increasing off-balance sheet activities through SIV. Most SIVs held large positions of asset-backed securities (ABS) which represented loan portfolios which had

been sold in national and international capital markets. The originate-to-distribute model which became popular in the late 1990s assumed that banks could easily sell loan portfolios in the capital market; banks created SIVs to unload ABS and to widen off-balance sheet activities. Hence the incentive for banks to broaden risk management was weakened and this held all the more as banks alternatively could not sell a loan portfolio but rather only the risk associated with that portfolio (we will refer to the relevant credit default swaps – the insurance instruments part of which was traded in the market – subsequently). As SIVs relied on refinancing through short-term commercial papers, the collapse of the US commercial paper market in summer 2007 forced banks to take the portfolios of their respective SIVs back into their own books – the credit lines which banks had given to their respective SIVs when setting up the SIVs were enormous and had not really been meant to be drawn upon. The very purpose of the large credit line was to get a top rating for the SIV and to thereby make sure that the SIV had low refinancing costs.

Falling house prices in the US had undermined confidence of investors into mortgage-based securities (MBS) held by SIVs and problems with refinancing MBS indicated serious problems in the ABS market. The price of portfolios representing MBS related to the mortgage subprime market in the US fell quickly in summer 2007. However, the crisis was not confined to the US. In the UK, a bank run on Northern Rock occurred in 2007, and the government quickly decided to save the bank whose problems could have been anticipated if the regulator had more carefully studied the aggressive expansion strategy of that mortgage bank (MULLINEUX, 2007). In early 2008 the UK government decided to nationalize Northern Rock and this became the starting point to heavy government involvement in the UK banking crisis. British banks had largely adopted similar business models as their US counterparts and several banks were involved in the markets for MBS/ABS. As refinancing of SIVs became more and more difficult in summer and autumn 2007 the prices of the respective assets fell strongly: lack of liquidity in the markets became a major problem.

The US banking crisis is serious and has undermined the stability of the US and the transatlantic financial system. While the FED – through cutting interest rates sharply – and the US government have taken emergency measures to stabilize the economy, there is no sign that the US has adopted adequate structural reforms. With the quasi-nationalization of Fannie Mae and Freddie Mac (plus Citibank), the US has indeed paid a high prize for the lingering mismanagement of the banking crisis and for years of insufficient prudential supervision as well as a framework which allows rating firms to effectively operate on very weak professional standards (USSEC, 2008). The latter has contributed to the subprime crisis and the collapse of the interbank markets in the US and Europe. Moreover, there were strange developments which have almost fully eliminated the normal risk premia – e.g., measured through the spread between corporate bonds with A-rating and government bond yields – in the US from 2003 to 2006 (GOODHART, 2007). Too many A-rated subprime bonds were unloaded in financial markets and for unclear reasons, the senior tranches of almost all mortgage-based securities, exploding in volume between 2002 and 2006, could easily obtain an A rating in the US.

It is widely accepted that the US banking crisis started in the summer of 2007 when the housing prices started to fall and doubts about the substance of mortgage-based securities (MBS) spread, thus making the refinancing of special investment vehicles – with a strong

focus on asset-backed securities (ABS)/MBO –increasingly difficult. However, the sources of the fragility of US banks and financial markets dates back to the late 1990s when hedge funds with high rates of return on equity created enormous pressure for Wall Street Banks.

- The unregulated hedge funds with their high rates of return – about 20% in the late 1990s – put enormous pressure on banks to come up with similar rates of return on equity. Twenty-five percent became a kind of magic number announced by top managers of US banks and with some delay also by bankers in the EU. Raising the return on equity became a top priority of bankers and stock markets, and the owners of banks quoted on the stock market cheered when top managers announced ever higher target rates of return – although basic Economics suggests that even a rate of return on equity of 15% would be quite remarkable if achieved over an extended period of time. The UBS in the US has indeed created its own hedge funds. Many banks in the US and the EU created off-balance sheet activities and special purpose vehicles to raise the rate of return; SIVs invested in ABS/MBS and collateralized debt obligation (CDOs) – CDO are repacked bundles of ABS with specific tranches in terms of risk profiles – and relied on short term commercial paper for refinancing. This model collapsed once the participants in commercial paper market faced doubts about the inherent value of mortgage-based securities (MBS). With US real estate prices falling in 2007, doubts emerged quickly, and banks had to take the papers of their respective SIVs back into the balance sheet. The basic point is not that house prices can fall over time; the key problem is that hedge funds were unregulated and their indirect role for systemic instability was not recognized. Most critics looked only at the problem of leverage in hedge funds, but the associated high pressure on banks to come up with higher returns was largely ignored.

- A very serious problem is the market for lemons problems created by banks themselves. With increasing off-balance sheet activities, effective banking operations could no longer be monitored through balance sheets. As rumors about problems in off-balance activities became wide-spread, the confidence in banks generally declined. A second problem is the lack of transparency and the incompleteness of balance sheets. To achieve this goal, banks created off-balance sheet activities, largely in the form of special investment vehicles, which bought long-term asset-backed securities and hoped to easily refinance those portfolios through short-term commercial papers; many banks had created ABS, since an expansion of the loan business could thus be reconciled with regulatory capital requirements. In order to get a top rating for the SIV and hence low financing costs, the respective SIV typically obtained a large credit line from the parent bank. Banks did not have to put up any equity capital for such credit lines under Basel I rules.

- Banks packed dozens of loans in asset-backed securities and sold ABS and related papers in the capital market. In many cases, the banks wanted to maintain the loans on their books but wanted to get rid of the risk associated with the loans; the financial innovation used for this purposed were the Credit Default Swaps, which banks bought from special service providers and insurance companies – but CDS in term were traded in the capital market, mostly in the over the counter market. This

market lacks transparency for both the prudential authorities and for the market as such. Regulators indeed allowed the CDSs to be sold around the world, and no one kept track of these transactions, although it would be wise to know those market participants representing the counterparty risk and whether they would be able to fully pay once the insurance case became reality. As lack of prudential supervision created a global veil of ignorance with respect to the allocation of CDS – there was no clearing house or global registry –, currency markets and bonds markets are not only facing an impossible challenge, namely to correctly assess risk premia for various countries (it makes a big difference if most CDS were held within the US, the euro zone, the UK or China). Moreover, the market value of the underlying loan portfolios also became difficult to assess as it makes a big difference whether there is credible insurance for the loan. Allocation of CDS across countries remained opaque, and hence the efficiency of financial market pricing remained low. While the US recorded high growth rates of credit in the period from 2000 to 2006, the risk premia in credit markets declined to nearly zero in the period from 2003 to 2006, which was quite an abnormal situation. Part of this phenomenon could be explained by overgenerous rating agencies which accorded top ratings to too many financial products and business models, including SIVs.

- Rating agencies often came up with fantasy ratings which were much too good to be true – e.g., even two days before Lehman went bankrupt, the leading US rating agencies had almost top ratings for the bank. Many ABS/MBS had top ratings, although it seems that the rating agencies' methods were highly doubtful. In the context of Basel II, external ratings have a quasi-official status, and it is of paramount importance to make sure that ratings are carefully awarded and also swiftly corrected if needed over time. As long as ratings are flawed, there will be misjudgement of risks in capital markets and an underpricing of risks. US prudential supervision remained quite weak under the Bush administration. The USSEC – responsible for investment banks – was mainly interested in investor risk. However, it did not consider systemic risk issues, and the number of employees dealing with risk management fell dramatically under the presidency of George W. Bush. The Fed which was in charge of traditional banks (bank holdings) had adopted a laisser-faire-attitude under Chairman Greenspan; banks in the US and in the EU could incur increasing risks without regulators requiring enhanced risk management. Stability Reports of various central banks (Bank of England; ECB) warned about the rising risk banks were taking within OECD countries, but the regulators and the banks ignored such warnings. Moreover, the IMF's Financial Sector Assessment Program analyzed many crucial OECD countries, except for the US. It was only in 2006 that the US government agreed to a report being published on the US system in 2009.

- Time horizons of managers and traders were rather short, and there were inadequate incentives for long term investment horizons in banks. Many top bankers pursued high risk strategies and generated high bonus payments for managers and traders as long as the economic boom – along with rising asset prices – continued in the US and Europe. In the medium term – as asset prices fell – many banks, however, suffered high depreciations and losses from such "front-loaded" investment

strategies. The typical assumption of most textbook Economics – namely that investors maximize a profit function over a very long (infinite) time horizon – was not realistic, rather a hit and retire approach was often observed. As long as the boom continued, one could hit high goals, and once a crisis befell the market, early retirement was the ideal option for managers naturally willing to incur big risks for their respective banks.

The following figure summarizes the key dynamics of the US banking crisis which resulted not only in the collapse of the commercial paper market and the interbank market in late 2007, but also in the US central bank and the ECB providing emergency liquidity to banks which no longer could obtain loans in the money market and the interbank market. Mistrust among banks in the euro zone is so great that more than €100 billion in excess reserves were kept at the ECB during several weeks in 2008, although market rates in the interbank markets were higher than what could be earned at the ECB account. It is not surprising that the problems in US real estate market and US banks brought about a fall of the stock market price index in 2008; stock market prices in the euro zone also fell strongly in autumn 2008.

Figure 1: Dynamics of the Interbank Market
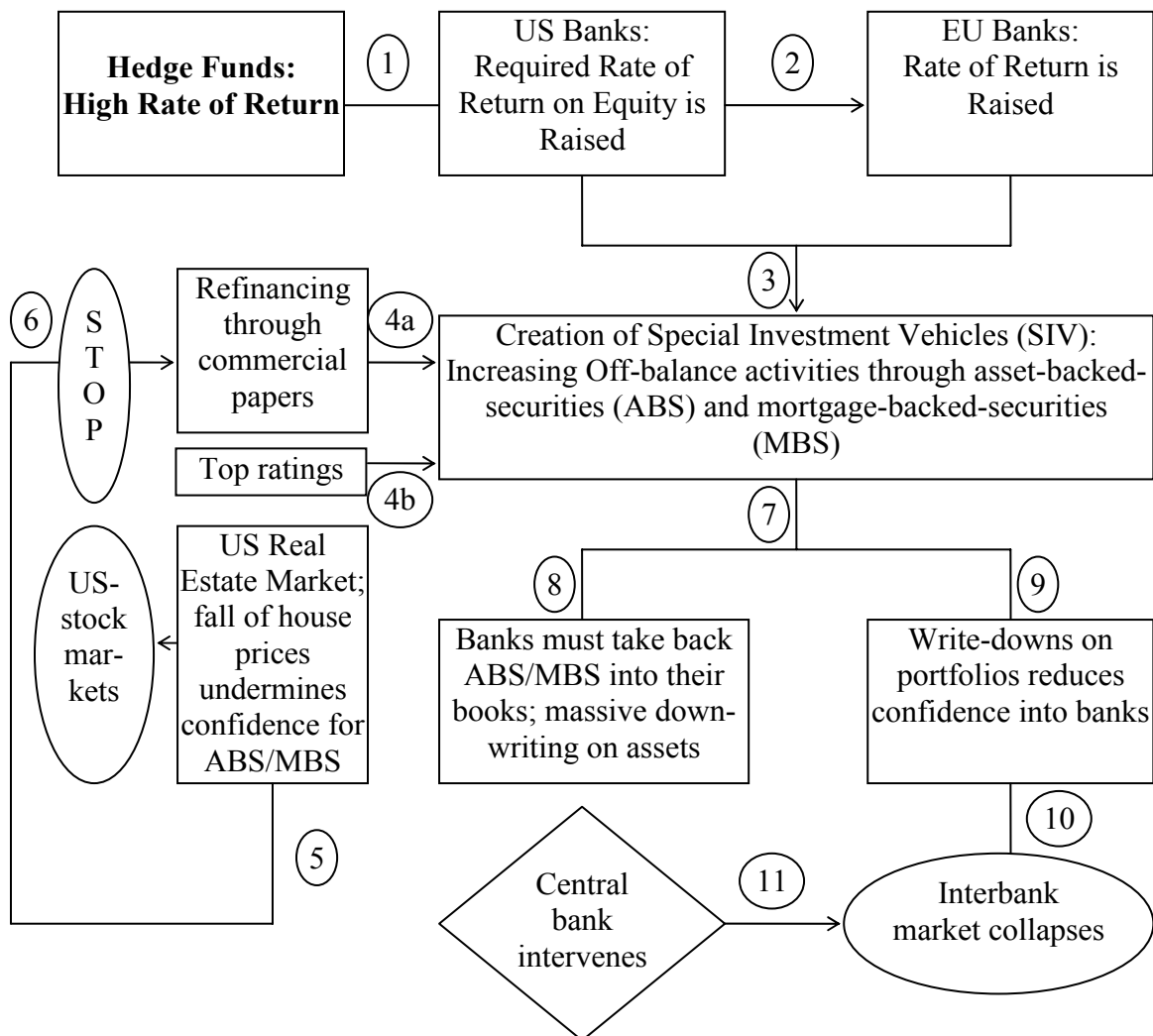
Coping successfully with the banking crisis and avoiding repeating this crisis within a few years can only be achieved if the causes of the banking crisis are recognized and adequate policy reforms be adopted. The problems in the US and European banking sectors are not really surprising if one considers the early warnings emphasizing the risk of falling house prices in the US – and ARTUS/VIRARD (2005), who warned that high rates of return on equity implied a high risk premium and hence incurring high risks.

- The laws of Economics imply that the in the long run the nominal interest rate i must be equal to the sum of the inflation rate and the real interest rate (r), and r must be equal to the growth rate of real output (g_Y). The rate of return on capital in turn should be equal to the risk free government bond interest rate i plus a risk premium Ω – in the stock market being equal to the price of risk times the variance of the stock market price. If the risk free nominal interest rate is 4% and the required rate of return on equity is 25% the implication is that the bank management aims at investment projects which stand for an average risk premium of 21%. Part of the typical strategy to chase for a high required rate of return of 25% was to use a high leverage (see appendix 3) through raising off-balance sheet activities which allowed one to by-pass the Basel I/II minimum requirements on regulatory capital. Many banks achieved 25% rates of return for a few years, but in 2007/08 they suffered high depreciations and massive losses so that there was no sustainable profit rate. As regards big banks' volatility of rates of return on equity were rather high; e.g. considering the variance as a measure of volatility the case of Germany shows that volatility of rates of return of big banks were much higher than the volatility of savings banks, cooperative banks or Landesbanken/regional state-owned banks).

- The banks gave loans to the private sector, but loans were quickly sold as ABS or MBS in the capital market, thus making the incentive for the originator bank to screen those who took the loans weak; by implication risk management weakened. The originate-to-distribute model worked all the more poorly, the more stages of repackaging loans existed. When housing prices in the US fell, special investment vehicles holding MBS faced problems, since refinancing through short term commercial papers no longer worked, as the commercial paper market had collapsed. The market price of mortgage backed securities, particularly subprime securities, fell quickly and as banks were hardly able to give large credit lines to their respective SIVs, they took the SIV's portfolios back into its books. Since the market price of MBS/subprime papers had fallen strongly in 2007/08, banks suffered high depreciations. The interbank market and the money market collapsed in 2008 as banks lost confidence in each other – not knowing how large off-balance stakes were on the one hand and how big risks associated with various portfolio positions, often involving previous CDS transactions, really were on the other hand. Banks stopped lending to each other or did so only against collateral which was unusual hitherto. In the euro zone, moreover, banks with high liquidity would rather channel excess liquidity into the accounts of the ECB than offer such liquidity overnight to banks at interest rates well above the central bank's deposit rate.

In fact the banking crisis is not a real surprise, and one has to blame both banks themselves and prudential supervisors in the US and the EU to have allowed such chaos in financial markets to emerge. The US dynamics largely show that the big banks no longer understood the system they had created and that US policymakers had failed to implement a clear system of supervision – instead the US had refused to adopt the Basel II rules which would have imposed at least a small amount of equity capital for extending large credit lines to special investment vehicles (in this perspective the UK banking sector looks better positioned than the US). By refusing to adopt Basel II, the US not only created an uneven transatlantic playing field for banks, but it also prevented greater transparency – in a world economy with high growth - from being achieved.

The priority reforms are therefore obvious; they must correspond to the problems identified and should be adopted by the relevant policy layers:

- Regulation of hedge funds: Hedge funds – largely active from tax havens – with more than €1 billion should be required to register with the Bank of International Settlements; BIS must reserve the right to raise equity requirements if deemed necessary, and trading in CDS could be restricted. Hedge funds which do not comply with BIS rules must not be permitted to trade government bonds in any member country of the IMF; this clause might require that government bonds be traded only through international clearinghouses, thus excluding over-the counter trade – in this manner, tax havens would be subject to rules and guidelines set at the European and global policy level.

- Banks must establish fully consolidated balance sheets, in the sense that a total balance sheet includes all off-balance sheet activities; banks which do not comply must face sharply restricted access to central bank liquidity. The ECB (the central bank) should encourage interbank activities by according different discount rates, namely a low discount rate to banks strongly active in the interbank market; banks with low activities in the interbank market would face higher discount rates. Thus one would have an incentive for banks to engage in the interbank market. The enormous expansion of ECB liquidity provision in euro zone interbank markets is a doubtful exercise if it were to continue in the long run; this would undermine both the efficiency of monetary policy and the incentive of banks to engage in the interbank market, which is normally a market important for the efficiency of the banking system – monitoring and signaling are crucial elements of the normal competition process in the interbank market.

- ABS products must be standardized in order to avoid complex pricing problems, and all CDS should be registered in a global data bank; a bank issuing ABS should keep 20% of the equity tranche in its books (this gives a strong incentive to really consider the risks contained in the loans which back the ABS) and declare its willingness to buy back the ABS product at 50% of the original price at any point in time, thereby avoiding pricing uncertainty even in the critical case that markets for specific financial products should collapse; the underestimation of liquidity risks, which was a serious element of the US/transatlantic banking crisis, must be avoided in the future. New transactions with CDS should be possible only through a clearinghouse, and previous CDS transactions should be required to register worldwide – otherwise, confidence in financial markets cannot be restored.

- Rating agencies must face new rules and should be required to obtain a license as proposed by the European Commission; in addition, there should be random checks and fines for poor rating accuracy. Conflicts of interests (in the traditional regime, banks placing a bond issue have paid the respective rating agency) must be avoided. Specifically, a two-stage financing procedure would be useful; banks, firms or governments wanting to place bonds in the market should pay into a pool, and this pool then would finance the rating process on the basis of competitive tenders. At the bottom line, fees to be paid should reflect market shares of issuers – with a top-up for weak ratings of the respective placement of bonds. Thus, the information derived from ratings should be considered as a public rather than a private good. It would be useful if the EU or the ECB would encourage the creation of at least one major European rating agency.

- A new tax regime is necessary for banks, funds and insurance companies. Taxing the profits (Π) of banks should be only one basis for taxation; in addition, the variability of the rate of return on equity should be considered. The higher the variance (V") on the rate of return, the higher the overall tax rate to be applied should be. (The tax to be paid by an individual bank would thus be: $T=\tau'\Pi + \tau''V''$; e.g., for the case of Germany, the figures show that private big banks would have faced a high variance tax burden, $\tau''V''$, as the variance of their return on equity was relatively high). Banks anticipating such a tax burden would have an incentive to take a more long-term view – in the long term, the variability should be smaller than in the short term, and bank managers can influence the variance of the respective bank's rate of return.

Figure 2: Structural Reforms To Be Adopted

Priority Reforms for Overcoming the International Banking Crisis				
Hedge Funds: must register with BIS; equity requirement; hedge funds which do not comply with rules cannot trade in government bonds markets	*Balance Sheets:* Full disclosure of bank's activities: including all off-shore balance activities	*ABS and CDS:* Standardization of ABS products; 20% of the equity tranche remains at the bank and bank must declare that it is willing to buy back the ABS at 50% of the original price	*Rating Agencies:* Agencies should face new rules such as obtaining a licence; agencies should be subject to random checks, fines for poor work; two-stage financing	*New Tax Regime:* Taxing profits and taxing the variability (variance) of the rate of return on equity

AIM:	AIM:	AIM:	AIM:	AIM:
Controlling Risk from HFs	Restoring Confidence	Transparency, reduced transaction costs	Improving the quality of the ratings process; raising the quality of information	Encouraging long term time horizon of banks, funds and insurance companies (avoid short-term hit and retire strategy & inadequate bonus systems)

A variance tax would be a true innovation in the OECD tax systems, but such a tax is indeed quite useful since it would help to avoid excessive short-term decision-making which results in excessive risk-taking and high negative national or international external effects (i.e., international instability spillovers and problems related to systemic instability causes by non-sustainable bankers' strategies). Indeed, a variance tax could be considered a special PIGOU tax which helps to internalize negative external effects. There could be a minor problem in recessions when the rate of return on equity falls, hence making the variance tax pro-cyclical; however, government could introduce a partial or full waiver for variance taxation in recessions.

Taking stock of the key elements of the banking crisis identifies seven areas of weaknesses: (1) deficiencies of US banking regulation; the Paulson reform program, which suggests that the FED should have a larger role in regulation, is a doubtful program given the fact that the FED has not used existing regulatory power – its board has made clear for years that the best regulation effectively is no regulation. (2) There is a sustained problem of market failure in the US interbank markets and in EU interbank markets in 2007/08, which represents a self-imposed market-for-lemon problem caused by insufficient financial reporting and opaque balance sheets. (3) Special problems of interbank market failure in the US have emerged, namely to the extent that EU banks were squeezed out of the market – somewhat remedied by the transatlantic swap operations organized by the FED and its counterparts in Europe; the swap operations allow EU banks with US subsidiaries – they were effectively locked out of the US interbank market after the summer of 2007 – to obtain dollar loans from the ECB, which in turn has obtained a dollar loan from the FED. The European bank will then send the dollar liquidity to its US subsidiary, which is a very strange indicator of discrimination of foreign banks in the US interbank market. This could be understood as being counter to the GATS rules of the WTO. (4) From 2002 to 2006, leading US rating agencies have partly done sloppy work as the report by the USSEC (2008) has shown, and it is absolutely unclear why Basel II gives those rating agencies even more power – external ratings have an official status for risk management of banks – while not imposing decent standards and responsibilities. (5) The trigger for the banking crisis was not the subprime crisis but the strange increase in the required rate of return on capital on Wall Street at the beginning of the 21st century. EU banks were afraid of being taken over by US banks if they could not match the new Wall Street benchmarks. (6) To a

limited extent, the financial innovations adopted in the OECD banking world in the context of the originate-and-distribute approach is a useful way to deal with risk, but the excessive creation of A-rated ABS is doubtful, and systematic failure to consider liquidity risk raises doubts about the overall framework within which banks operate; (7) in Germany, there are major weaknesses in the field of banking supervision, and costs for the taxpayer of dealing with the IKB problems and part of the Landesbanken are already high – here, national reforms and EU reforms are necessary.

The reforms suggested in the context of this analysis are urgent and will help to sort out the mess in the US financial markets and elsewhere. While overregulation should be avoided, there is a need for more and better regulation. Basically, there are seven key proposals for solving the banking crisis: (i) The interbank market is fully restored by forcing banks to disclose their positions in structured products and off-balance sheet activities. In particular, banks must fully disclose all off-balance sheet investments in the notes to the balance sheet; moreover, from a specific target rate on, banks must hold 20% of the equity part of asset-backed securities; litigation among banks, which has increased in 2007/08 and increasingly destroys confidence in the markets, should be minimized and conflicts be sorted out quickly outside courtrooms to the greatest extent possible; (ii) only those banks which have met the new disclosure procedures and take full commitment to the equity part investment in ABS will get full access to central bank refinancing. These measures will restore confidence in the interbank market. In the EU, a new European Banking Standard Council should be established which monitors banks' behaviour in world capital markets; strange behaviour and obvious problems in meeting legal requirements – e.g., UBS in the US from 1999 to 2008 – will have consequences, namely that banks considered in breach of critical rules and standards are excluded for at least five years from all transactions in the context of the emission of government bonds in the EU/euro zone. (iii) As regards the EU, greater efforts in terms of harmonizing national prudential supervision should be adopted; so far, the EU indeed offers a bewildering range of institutional arrangements – e.g., the central bank is involved in some countries, in some countries it is not involved at all and in still other countries it has exclusive competence for the supervision of banks and financial markets. (iv) The European Commission should publish regular reports on the banking systems in EU countries, and member countries should quantify the welfare costs of major banking crisis; in such a way, a new field of benchmarking would be established. Medium-sized and large hedge funds should become more involved in reporting as soon as they have the needed leverage, and an option should also be introduced for central banks to impose a maximum leverage ratio. In 2006/2007, the IMF did a poor job in economic policy assessment; its lukewarm reports on the US economy were not in line with what sober analysis of the US economy and US economic policy – required as part of regular surveillance of IMF member countries – would have shown, namely critical faults in US prudential supervision and massive growth of credit along with strongly declining risk premia in US bonds markets from 2003 to 2006. The reporting procedures in the IMF should therefore be adjusted in a way which enables external experts to contribute to surveillance activities. Finally, within the WTO, it remains to be analyzed to which extent the asymmetric collapse of the US interbank market represents a discrimination of a foreign sense. The transatlantic banking crisis should be taken seriously, and adopting key reforms is urgent for both OECD countries and the global economy. If such reforms are not adopted in a timely fashion, there could be a backlash in globalization, and indeed some

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backlash in financial globalization has already become visible. As regards shoring up the shaky US housing market, the proposal of FELDSTEIN (2008) should be realized quickly. With respect to the costs of the US banking crisis, a preliminary assessment is that the per-capita-cost for every American is about $1,000 (mainly related to the Freddie Mae, Fannie Mac and Lehman Brothers failures), whereas the international external costs are about $360 billion annually in 2008 and 2009, which in turn is equivalent to $1,200 per US citizen. Such large external international costs are unacceptable in a fair global economic framework. The world economy is paying high costs for the lack of a consistent US regulatory framework. Financial globalization implies that sorting out the problems in the US banking market will be much more complex than the case of the BCCI bankruptcy in 1991.

The banking rescue packages designed by the UK, Germany, France plus other EU countries and the US will hardly work, as they help to stabilize the banking systems only transitorily. As long as confidence in the interbank market is not restored, there is a risk of silent socialization of the banking system through ever-increasing liquidity injections from the central banks (plus explicit socialization through governments buying stocks and warrants of banks). Confidence in the interbank market can only be restored if parliaments in OECD countries adopt laws which force banks, hedge funds and the like to sell all products with CDS elements to a clearing house, which in turn then reallocates the CDS in a transparent way. Bank mergers sometimes could be a hidden avenue to raise the silent risk exposure of banks, as merging bank I and II typically implies that the bank taken over could have large stakes of CDOs part of which are a combination of ABS and CDS – products difficult to evaluate; such intransparency cannot be accepted and bank supervisory agencies and merger commissions should carefully look into the merger dynamics. The short-term options of saving the banking system – including M&As – are absolutely in contrast to what a solid efficient banking system looks like: smaller banks in a more competitive environment; the more mega banks (representing the ominous too-big-to-fail) there are, the more stricter regulations will have to be imposed. If the US does not accept Basel II+, there can be no free capital movement as the distorted US system would continue to create big international negative external effects.

3.   Theoretical Aspects of Sustainable Financial Market Globalization

As regards sustainable financial market integration, one can expect long term globalization only under certain conditions. Financial market integration can generate considerable benefits by reducing international transactions costs, stimulating financial product innovations and efficiency gains as well as through a better diversification of risks. However, those benefits will not be generated automatically; in a multi-country world economy, the leading countries must implement a consistent international framework which creates a competitive level playing field on the one hand and establishes clear

responsibilities on the other hand; the requirements for sustainable globalization are as follows:

- Long term benefits on the basis of a consistent institutional framework and clear responsibilities can be expected; this implies that no major player in the world economy imposes large negative external effects on other countries – as it was the case with the US in 2007/08. The US policy in 2008 brought about a rise in the US inflation rate; about 5% was reached in summer 2008, and this imposes an inflation tax on those countries holding foreign reserves in US $; while one might argue that most foreign reserves are in dollar-denominated bonds, it is clear that the interest rate on US bonds is not really rising in parallel with the inflation rate; one may argue that the crisis-induced rise in the inflation rate was 4 percentage points. With about $6000 billion reserves worldwide in 2008, the depreciation effect on reserves is $240 billion in that year; as regards the EU there are additional costs for the Community in the form of a fall of real output which is roughly 1 percentage points in 2009 compared to the business-as-usual scenario – to this effect of a fall in output of about $ 180 bill. one would have to add the drop in real output in other trading partners of the US. This is an international resource transfer in favor of the US amounting to about 2-3% of the rest of the world's GDP), and this is more than the $300 billion the US taxpayer is likely to pay for the rescue of Fannie Mae and Freddie Mac plus Lehman Brothers in 2008/09. It could well be that the rest of the world will face higher costs from the US banking crisis than the US itself. The key players in the world economy will hardly be willing to accept a US-led financial globalization process if it turns out that it imposes major costs on non-US countries.

- The cost of achieving political consensus at the international level will affect the ability to cope with international crises. If there is a consistent mix of regional organizations (responsibilities) and global organizations, international frictions in running the global system will be relatively low. In this perspective, the EU principle of home country supervision for bank affiliates abroad – in other EU countries and the European Economic Space – is doubtful, as the ongoing internationalization of the intra-EU banking business means that national regulators face an increasingly tough challenge for effective regulation of banks. Moreover, banks from non-EU countries can easily set up a subsidiary in an EU country and subsequently engage in bank business in all EU countries through affiliates. If banks create a separate legal entity, a true subsidiary in another EU country, the host country's supervisors will be responsible for supervision. However, this leaves a difficult moral hazard problem on the part of supervisors, since the supervisor in the host country has a relatively weak incentive to effectively supervise the subsidiary. If the subsidiary is in trouble, the parent bank in any case will have to foot the bill, and if not the parent bank then it will be the ministry of finance of the headquartering country. Creating colleges of supervisors – as suggested by the European Commission for big banks with international operations – is rather strange as well. A better system would follow the logic of regulations in telecommunications in the EU, that is, by establishing a supranational framework and making sure that national regulators have to adopt a combined legal and economic analysis while notifying key approaches to the European Commission

which will produce a comparative report on prudential supervision in each EU country. National central banks – politically independent and not directly involved in monetary policy – should be involved in prudential supervision, and ideally, the national supervisory agency would have a similar institutional setup across the Euro zone countries.

- Effective crisis management in an international crisis of financial markets is crucial. It is rather doubtful that the world economy has an institutional platform for effective crisis management. The interplay between the BIS and the IMF is rather unclear; while the Bank of International Settlements has an analytical focus on world capital markets and also is home to the Basel Group of Supervisors; the BIS has an incomplete global coverage of (member) countries, while the IMF has no real competence in prudential supervision. It could have at least some reporting competence if the IMF statutes were changed in such a way as to require member countries to accept regular Financial Sector Assessment Programs, whose results would then be published. The OECD could also play a more important role, namely by conducting more research on financial market stability, prudential supervision and financial innovations. As regards the OECD reports of 2007/08, one may argue that there is neither much theoretical reflection nor can one identify a critical assessment of the USA (see the OECD's 2007 opaque country report on the USA).

- An international system can be sustainable only if there is acceptance of burden sharing. In other words, the costs of a major crisis must be shared in a way which is politically acceptable and gives no perverse incentives (e.g., for countries to ignore international external costs of domestic policy pitfalls). To some extent, one might argue that the IMF will be in charge of helping countries with high current account deficits and problems occurring in the context of massive exchange rate swings. However, the case of an international banking crisis has not really been defined within the mission of the IMF, although it seems to be logical that the organization which is in charge of maintaining the international payments system should have certain competences here as well. The IMF should create a special facility for helping countries which are subject to an external shock from a major banking crisis; the World Bank, which is engaged in financial institution building in developing countries, should offer particular support for very poor countries and help to convey best practice in prudential supervision, namely in the context of international benchmarking.

- Leadership in the global economy's governance is crucial in the standard model of the international system dominated by a large economy – in the second half of the 20th century, the USA was the dominant country and its share of world GDP was still close to 30% at the beginning of the 21st century; this is much above the 20% of the EU. Figures based on PPP look smaller for the USA, namely 20% (in 1929 the nominal share of the US in world GDP was 38%, but considering the fact that US multinational companies subsidiaries abroad are more important for GDP outside the US in 2008 than in 1929 one may assume that the economic impact of the effective US economy has not reduced). However, with the rapid rise of China, there is no doubt that the exclusive leadership role of the US becomes less credible and legitimate over time. The alternative to a global system shaped by dominance

would be one of joint leadership through an institutionalized policy club such as the G8 or the G20. Indeed, the meeting of the G20 in Washington in November 2008 suggests that the broader international G20 policy club is a feasible platform. The G20 policy club is relatively complex to organize since it has a relatively large number of member countries which have relatively heterogeneous characteristics. Given the fact that Chinese bankers – in Hong Kong and Shanghai (and in Singapore) – are quite experienced and influential, one will probably have to deal with certain global governance issues at the level of the G20 or a future G25 which should additionally include Spain. The G8/G20 is the group of policymakers which most likely will discuss the need for global reforms in prudential supervision. The IMF (STRAUSS-KAHN, 2008) also plays an important role.

While the IMF effectively is in charge of designing a new architecture of the global financial system, it is not fully clear why more regulation in banking sectors is really needed. One may argue that the basic alternative is to engage in broad national or international dismemberment of big banks and thus to reinforce competition in the banking sector of each country (dismemberment could be realized after nationalization of banks: privatization gives an ideal starting point for splitting up banks which have exceeded a critical size); with smaller banks we have less problems of the too-big-to-fail type, and competition would therefore be relatively strong – and hence light regulation is appropriate. If, however, there is no dismemberment of big banks (and possibly insurance companies) in most countries, competition will be relatively weak and in this case stricter regulation is necessary. Strict regulation is the natural policy response to a system characterized by a few big banks, which are all too big to fail. In this perspective, the US government under President Bush pursued an inconsistent policy: Bank mergers had brought about a system of Wall Street banks which were too big to fail, and at the same time, the government was not eager to implement strict regulation.

4.   Global and EU Policy Options

The international banking crisis started in the US, whose banking market has dominated the international developments for decades – sometimes joined by British banks which benefitted from deregulation in the 1980s. While the internationalization of banking intensified in the 1990s – in Europe through the creation of the EU single market in 1992 – the world's leading economy, the US, has allowed effective regulation to weaken over time; the personnel for risk management in the USSEC declined dramatically under the Bush administration, surprisingly in a period in which the investment banks for which the USSEC is the relevant supervisor expanded heavily. The FED has held the view – under Greenspan and also under Bernanke – that reducing regulation should be the appropriate policy approach for traditional banks (bank holdings). The result has been insufficient equity capital for the growing risks taken by big banks in New York. Some of the Wall Street Investment banks were major players in the subprime mortgage market. There were also some banks from the UK, Germany, the Netherlands and France as well as Switzerland active in that market. As regards Germany, IKB Deutsche Industriebank and

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SachsenLB were among the large players in the US markets; the absolute volume of subprime deals represented by these two medium-size German banks was larger than that of the German leader, Deutsche Bank. The IKB had no clear idea of the type of business it was undertaking; indeed, on its website it explained the role of special investment vehicles and it claimed that investment in ABS are "in the short run an almost risk-free investment" (see appendix 4). In its 2006 annual report, IKB claimed that it had adopted a conservative strategy in the field of risk – one may argue that this is a straightforward lie. Interestingly, faulty statements in company reports are not liable. From this perspective, a key element of EU reforms should be to require company statements in the annual reports to incur a specific liability if key statements are wrong – statements about the risk strategy should be earmarked as being of particular sensitivity, and it would be useful to develop a new indicator system by which one could measure the degree of risk incurred. A new EU directive is urgent here and it is obvious that intra-EU capital flows are distorted by misleading statements of bankers with respect to risk and risk management, respectively. One also should note that the EU single banking market will be distorted by asymmetric government-led bank recapitalization in individual member countries; here the European Commission has an important task in pushing for common principles for recapitalization of banks.

As regards cooperation between the EU and the US, it would be useful to establish a transatlantic and global parliamentary debate on financial globalization. The Bank of International Settlements should become the core of enhanced financial regulation in a global context: This will require broadening membership on the one hand. On the other hand, the BIS should be subject to special international parliamentary control. Selected members of the European Parliament, the US House, and other parliaments should be delegates of a newly established Parliamentary Assembly at BIS. The OECD Development Centre also could be used as a forum for a policy debate involving industrialized countries, Brazil, China and other newly industrialized countries). Thus the pressure on the BIS to come up with better and more consistent work could be reinforced, and this would reinforce global governance. The IMF will have a crucial role for stabilizing countries facing sudden strong capital outflows and hence high devaluations; a particular problem will occur in countries with high foreign debt. Eastern European EU accession countries could face serious problems in 2009/2010 as a decline of the real economy could overlap with a second wave of the banking crisis and high capital outflows or reduced capital inflows. Individual EU countries as well as the Community should help eastern European accession countries. As regards Island – a country in the European Economic Space – the EU should also help the country since there is a global fragility which implies that bankruptcy of any country in Europe would be a signal for investors worldwide that countries in Europe could indeed go bankrupt: Country risk premia would increase while the US would benefit in such a situation from higher capital inflows driven by save-heaven considerations (appendix 1 presents theoretical reflections which highlight the impact of financial market integration and changes in risk premia, respectively). As regards the euro zone one may emphasize that membership of the euro zone is quite useful for some Mediterranean countries; without the euro zone and ECB all EU countries would be part of the European Monetary System (EMS I) and there is no doubt that the international banking crisis would have created enormous tensions on the continent – with Greece, Italy and Portugal being among the prime targets for speculative attacks.

As regards the EU one may conclude that the best way to reform the system of prudential supervision is to combine stricter national regulations with a new EU-based complementary framework on prudential supervision. There are good arguments why an integrated financial EU market requires European supervision to some extent (PRIESEMANN, 1997; WELFENS, 2008; WOLF, 2007). If the UK should be reluctant to support an EU-wide framework regulation of financial markets, the euro zone countries should undertake their own policy initiative. It should be possible to create a euro zone-wide regulatory framework quickly, namely through a treaty among central banks of member countries of the euro zone; this would be in line with the creation of the European Monetary System in 1979 when heads of states were skeptical that a traditional international treaty – requiring ratification in parliaments of all EU member countries – could work. Thus, the EMS was created on the basis of a treaty among EU central banks.

Better regulation is required to overcome the banking crisis of 2007/08 (which could be reinforced by a global recession in 2009). Several principles should be emphasized here as elements of a solution:

- Typical remedies for coping with the market for lemons problem considered in the relevant goods market (e.g., used automobiles) should also be applied in the interbank market. Guarantees or warranties are one element, carefully building up reputation a second, while conveying quality signals are a third aspect. One should note that a quality control system can be developed by the banking industry itself, it is not really necessary for government to do this; rather government could encourage banks to develop quality signals, guarantee schemes, etc.

- A useful new rule should stipulate that banks creating an ABS or similar financial papers must declare that they will be willing to buy back the assets at any point of time for no less than 50% of the initial market price. Such a clause would avoid uncertainties about valuation in an economic crisis. At the same time banks, would have a strong incentive to carefully consider the creation of markets and the range of partners involved in ABS transactions. Banks launching ABS should maintain a 20% stake in the equity tranche so that the respective banks have a strong motivation to carefully consider the risks involved in loan portfolios and securitization. (The German Minister of Finance has also advocated for such a 20% rule.)

- As regards revitalizing the interbank market, it is obvious that the mega rescue packages and guarantee schemes implemented by many OECD countries are a rather artificial way to jump-start the interbank markets. The rescue packages of September and October 2008 could be useful to some extent and are indeed helpful in creating some extra time to come up with truly adequate reform initiatives. However, it will be necessary to give incentives to banks to become more active again in the interbank market. The ECB should give preferential interest rates for access to central bank liquidity to those banks which are active in the interbank market; banks which are more active in the medium term should have more favorable access than banks which are mainly in the short term interbank market.

- As creating trust among banks is quite difficult, it could be useful to encourage the creation of small homogenous groups of banks which are willing to resume

interbank lending. Such arrangements could indeed be encouraged both by central banks and the ECB. In a second step the regional clubs of banks could be merged in order to create a euro zone-wide banking community which is active in the interbank markets.

There is some risk that the global G20 deliberations will lead to discussions about a very long list of reform steps which are difficult to implement and which effectively create more confusion than progress in solving the critical problems. A very long and complex list of measures invites external pressure for delaying the process through confusing and complex debates. Thus, setting priorities is quite important, and five priorities have been highlighted here. A new regulatory approach in financial markets should follow the successful example of telecommunications markets; benchmarking, EU regulatory reviews and an ongoing dialogue with scientific experts are indispensible elements. The European Parliament should restore the EP's research service (former DG-IV of the EP), which is quite crucial for optimal legislation in an increasingly complex world economy.

If the US should fail to adopt Basel II rules – plus some additional key regulations for banks, hedge funds and insurance companies –, the EU should consider imposing restrictions on transatlantic capital flows. It is not in the interest of the EU (nor of the world economy) that in the context of uneven regulatory conditions for banks, insurance companies and the like, capital from the EU flows to the US with its partly artificially high rates of return on equity. At least in the run-up to the banking crisis, many banks and other financial companies enjoyed a cost-advantage by not having to comply with Basel II rules. A US system which has neither consistent domestic regulation nor Basel II rules is creating negative external effects through the chaos the US banking crisis of 2007/08 has created in international financial markets. This is neither a level playing field nor a system in line with basic requirements for efficiency and stability. One should note that imposing capital export taxes on investments of EU firms with realized plans for portfolio investment in the US simply reflects a type of PIGOU tax which is designed to help internalize negative external (international) effects. It is up to the US to avoid such effective barriers for international capital flows.

The EU should push for the creation of a formal Group of International Supervisors (GIS), which would become a twin organization to the existing BIS. The GIS should include supervisors from all countries of the world and be mainly organized in regional groupings (e.g., EU, NAFTA, MERCOSUR, ASEAN). The BIS/GIS should be subject to direct international parliamentary control in order to avoid bureaucratic inefficiencies and lack of transparency.

The IMF could have a new role, namely in organizing global annual meetings of GIS/BIS along with the World Bank and WTO. In such a manner, one could look more deeply into the interdependencies of setting international rules for the world economy. One could thereby create a more consistent international division of labor across international organizations.

Thus we can summarize the overall analysis as follows. The diagnostic part of the US banking crisis is obvious: (1) The optimum (national) size of banks grows along with the volume of global financial markets; the rapid expansion and internationalization of financial markets after 1991 increased the size of banks and insurance companies in the US

as well as in Europe. (2) Once certain banks and insurance companies obtained critical size, the potential risk of bankruptcy for each represents a systemic risk. The managers of these banks and insurance companies can then pursue strategies of excessive risk-taking in the context of chasing higher expected rates of return on equity – those managers can bet on a bail-out through the government in the case of bankruptcy, and therefore the competition process is seriously weakened. For example, as long as the bank was not on the brink of bankruptcy, the investment bank Goldman Sachs could pay its 26,000 employees \$16 billion in bonus payments during 2006. Raising the required rate of return on equity to 25% at the beginning of the 21st century set in Wall Street – and in other OECD banking centers – an illusionary target, which testifies to the ignorance of top managers about firmly-established laws in Economics. With a 4% rate of return on risk-free government bonds, the target ratio of 25% implied a risk premium of 21% and hence implied furthermore that bankers were chasing very risky deals. (3) In the case of a banking crisis, major banks can obviously blackmail government and prudential authorities to impose a ban on short sales of banking stocks. In the US, Secretary of the Treasury Paulson imposed such a ban in September 2008 (possibly after a call from the boss of Morgan Stanley). (4) While it is true that the US administration did not bail out Lehman Brothers – it filed for protection under chapter 11 –, no big bank or insurance company faces a credible threat of bankruptcy as there is a visible "too-big-to-fail problem." Thus, competition in the banking sector is weakened; and in other sectors linked to the banking system directly (eg the US automotive firms and their respective banks which represent themselves high stocks of asset-backed securities/ABS, collateralized debt oligations/CDOs – a mixture of various ABS - and credit default swaps/CDS which are a kind of insurance for loan packages). The government's bail out of the big insurance company, AIG, provides more evidence of this problem; indeed, it had to be saved once Lehman Brothers was pushed towards chapter 11, because AIG sits on an enormous stock of credit default swaps, including those which cover part of the claims against Lehman Brothers. AIG also had to be saved, because its high stock of CDS would have been worthless once AIG had gone bankrupt. As CDS provides coverage against "failure of bonds/loans packaged in ABS," it is clear that enormous depreciation on portfolios in many banks and insurance companies would have been triggered once CDS of AIGs had become worthless. It is noteworthy that CDS and credit derivatives were sold worldwide at the beginning of the 21st century. For example, even Allianz probably had about €1,000 billion of CDS on its books at the end of 2007. As there is no global inventory list on CDS, it is absolutely unclear which countries – and to what extent – are infected through toxic CDS. This, in turn, reinforces the lack of confidence in financial markets in general and in interbank markets in particular. (5) At the bottom line the big banks, big funds and big insurance companies are in a situation coined in a phrase by Janos Kornai – there is "soft budget constraint", as government bail-out is fully anticipated for the case that anything goes seriously wrong (Kornai's soft budget constraint originally referred to socialist countries where central banks had to ratify whatever overruns in costs in state-owned firms occurred). As the threat of bankruptcy is not faced by managers of these companies, there are poor incentives for good governance. Moreover, the incentive to take excessive risks is strong. It is strange that the phenomenon of the soft budget constraint once used by Kornai to discuss the notorious inefficiency of socialist command economies must now be discussed in the context of the 2007/08 crisis of the US financial system. (6) The work of

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rating agencies has been poor and implies that financial market actors suffer from opaque signalling in bonds markets. (7) From the above list of problems and weaknesses, the necessary remedies for coping with the crisis and for avoiding future crises can be derived. The world economy needs competitive and efficient banks acting within a more long-term framework of open competitive markets.

Government bail-outs of major US banks and US insurance companies – or nationalization – is only one element of solving the crisis where we assume that those firms will be restructured and privatized in the long run. Other necessary reform elements are: a) restrictions on the size of banks and insurance companies – and even dismemberment of oversized firms which exhibit the "too-big-to-fail problem"; in the absence of dismemberment stricter regulation is absolutely necessary. Insurance companies with standard insurance business should not be allowed to be active in the CDS market and related fields, as this pillar of potentially very large risks could easily undermine the stability of the respective insurance companies; b) taxing banks, funds and insurance companies on the basis of both profits and volatility of rates of return (the higher the volatility, the higher the tax rate), so that the apparently short-term bonus/profit maximization strategies no longer look attractive; banks which sell asset-backed securities must keep 20% on their books and guarantee that they will buy back the assets sold for at least ½ of the selling price; c) the large US rating agencies which represented – according to an SEC Report – such visible lack of proficiency should become subject to a licensing procedure while imposing random testing of the quality of rating projects; a group of experts should conduct regular testing, and at the same time, high fines must be imposed for faulty ratings and insufficient documentation of rating decision-making; d) comprehensive regulations for banks and hedge funds as well as related actors in financial markets are needed, and prudential supervisory bodies should be more professionally organized in terms of research and a scientific advisory body (Germany's BaFin is a relevant, weak example in this field, and it should indeed be reorganized); e) all CDS contracts should be registered in a global database, and regulators should adopt broad requirements in terms of transparency, on the one hand, and restrictions, on the other; for example, CDS contracts should not be accumulated by banks or insurance companies on a large scale, which effectively implies that they would no longer face any threat of bankruptcy (since they signify a systemic risk in case of bankruptcy); f) rating agencies will no longer obtain fees directly from the issuing of bonds; instead, there should be a two-stage pool financing, according to which rating firms obtain fees only from a large pool within which all companies issuing bonds should contribute; g) as regards prudential supervision, a Europeanization of the process is advisable to make sure that crisis management in the EU single financial market can be organized effectively; there is also a need to somewhat restrict regulatory arbitrage within the EU.

These minimum reform agendas for the USA – and also for the EU – should not be understood as simply reflecting a new policy fad with a bias in favour of regulation and control. Rather, this agenda is the logical response to the problem of a soft budget constraint on the part of the banking and insurance sector in OECD countries; too-big-to-fail has become a serious challenge. This clear preference in favour of more and better regulation can partly be justified by referring to arguments by COOTER/SCHAEFER (2008), who discuss the role of regulation for the specific case of (developing) countries

with weak rule-of-law. With such a weakness, it is quite useful to have regulations as a kind of general remedy. In the US and the EU, one should realistically consider that the soft budget constraint of big banks and big insurance companies is an important problem and that market discipline and competition forces are often rather weak. Hence tighter regulations – and, in some cases, dismemberment of companies – are preferred policy options for coping with the problem of too-big-to-fail. It is noteworthy that ongoing financial market globalization will reinforce the tendency for a growing role of big banks and big insurance companies. Such growth dynamics are only acceptable by policymakers if there are strict regulation or remedies in favor of more competition (e.g., a fall of sunk costs and hence a greater likelihood of newcomers entering the market). The visible tendency of the US to internationally externalize a considerable share of the costs of its banking crisis makes reforms urgent, which helps to internalize negative external effects. It is not implausible to assume that the rest of the world bears a larger share of the costs of the US banking crisis than the US itself.

Without better regulations or more competition in the banking sector – as well as better prudential supervision, which should follow a more economic approach as compared to the largely legalistic approach traditionally applied –, no internationalization of the EU CO_2 emission certificate markets should take place. Similarly, there could also be no feasible pension reforms in Europe which would encourage individuals to embark more on private retirement savings. The apparent knowledge gap of bankers in some big banks suggest that compulsory retraining of managers would be useful; as much as retraining among medical doctors is standard, there is an equal need to make sure managers understand through teaching units – provided by independent universities and institutes – the challenges they face. Moral hazard remains a big problem.

The ECB should exploit opportunities for reducing the interest rate. Such a step is unlikely to directly stimulate economic expansion, but it would reinforce profitability of banks in the euro zone which face considerable problems with respect to profitability (see appendix 2 for regressions on banks' profitability in the US, Switzerland, Germany, the UK and the EU, respectively). Banks in the euro zone will welcome profits from intermediation in a situation where high depreciations on portfolios of banks are common. With lower short term interest rates it could be possible to avoid an inverse yield structure; such a yield structure already has been observed in the US where save-heaven effects have channeled a high share of savings and capital inflows into long term government bonds. Profitability of banks is a key for revitalizing the banks' loan business in the medium and long run.

The EU would be wise to adopt an expansionary fiscal policy in 2009, namely in a situation in which monetary policy has lost its effectiveness (partly because banks hardly pass on the ECB's reduction of the central bank interest rate to the banks' clients; problems with the Keynesian liquidity trap could also play a role). Many countries simultaneously face a recession, and the recession could be unusually deep judging by forecasts of the IMF, the EU and the Deutsche Bundesbank in November 2008. In such a situation one should consider options for expansionary fiscal policy with a clear focus on stimulating innovation and investments; in some countries, measures to stimulate consumption could also be adequate. The EU countries should spend more money on improving infrastructure. This should include modern telecommunications, and here it would be quite useful for the European Commission to remove unnecessary (regulatory) obstacles for higher investment.

The EU should try to enhance cooperation with the new US administration; on both sides of the Atlantic, an expansionary fiscal policy with a strong focus on green IT could be useful. The new US administration will consider climate policy as a more important field than the Bush administration has, falling more in line with the EU countries' year-long emphasis on fighting global warming. Thus it seems attractive to consider a joint expansionary policy with a triple focus on green IT, infrastructure modernization and selected impulses for higher innovation and investment. At the bottom line, it should be emphasized that restoring confidence in the interbank market is of paramount importance for overcoming the US and global crisis.

Appendix 1: Theoretical Analysis - Modified Branson Model and the Banking Crisis

Financial market globalization is related to regional monetary integration – see particularly the case of the euro zone – and to financial product innovations, which amounts to raising the marginal utility of financial instruments. In integrated markets, the fixed costs of financial innovations could be more easily spread across world markets than in a world economy with fragmented markets. Hence integrated financial markets should generate a higher rate of product innovations. At the same time, one may emphasize that the financial market crisis of 2007/08 amounts to some transatlantic disintegration of both financial markets and banking services, not least since EU banks' subsidiaries in the US could no longer get refinancing in the US in 2007 – to some extent this could be considered discrimination against EU banks in the US. (Since December 2007, transatlantic swap agreements between the FED and the ECB had to make sure that European banks could get sufficient dollar liquidity. The FED gives a US$ loan to the ECB, which thus can give a dollar loan to big EU banks – with a subsidiary in the US. The European bank's respective headquarters then gives a US$ loan to its subsidiary in the US.)

The Branson model is a useful analytical starting point to understand some of the key aspects of financial market integration and disintegration. The model determines the nominal interest rate i and the nominal exchange rate e – denoted here in price notation – in a system of flexible exchange rates. It is a short-term model with three assets, namely (short-term) domestic bonds whose stock is B; money M and foreign bonds F (denominated in foreign currency). The desired share of each asset in total wealth (real wealth is A') is denoted as b, n and f, respectively, and each asset demand is assumed to be proportionate A'. We can thus state the equilibrium conditions for money market, the domestic bonds market and the foreign bonds market as follows (i*' denotes the sum of the exogenous foreign interest rate i* and the exogenous expected depreciation rate a^E):

(1) $M/P = n(i,i*')A'$ MM curve

(2) $B/P = b(i,i*')A'$ BB curve

(3) $eF/P = f(i,i*')A'$ FF curve

(4) $A' = M/P + B/P + eF/P$

The budget constraint (4) implies that only two of the three equations are independent. As n and f are a negative function of i, while b is a positive function of i, the MM curve has a positive slope in e-i-space. The BB curve and the FF curve have a negative slope, but the FF curve is steeper than the BB curve. B, F and M are given in the short run. F will increase if there is a current account surplus; B will increase if there is a budget deficit. For simplicity, one may assume that we initially have neither a budget deficit nor a current account deficit. In the medium term the current account will react to a change in the real exchange rate. (As the price level at home and abroad is assumed to be constant, we can

consider changes in the nominal exchange rate as a change in the real exchange rate.) Here we emphasize that a change of the exogenous variables will shift the BB curve or the FF curve or the MM curve; in some cases all curves will shift. If we consider an expansionary open market policy (dM= -dB: thus real wealth is not changing in the short term), the MM curve does not shifting, but the BB curve shifts to the left. The short-term reaction is a depreciation and a fall in the interest rate (see point E_1), which brings about a medium term improvement of the current account as exports of goods will increase and imports will decline as a consequence of the rise in the exchange rate. This in turn will cause a downward shift of the FF curve (this current account effect is neglected in the traditional Branson model), so that the FF line runs through the intersection of the BB_1 curve and the MM_0 curve. Note also that the diagram b) contains an additional MNI curve which indicates monetary neutrality in the sense that – following the logic of the monetary condition index – a real depreciation and a fall in the real interest rate are expansionary with respect to real GDP. Point E_1 is above the line for the monetary neutrality index (MNI_0 line which has a negative slope) and thus real income inceases. With a given capital stock K the implication is that average capital productivity will increase, and if we consider a Cobb-Douglas production function it is clear that the marginal product of capital has also increased, which in turn stimulates investment and will increase both the real interest rate r and the nominal interest rate i. We leave it open here how the long run adjustment will be, but one may emphasize that even economic growth can be considered in a modified Branson model (WELFENS, 2008c).

Figure 3: Branson Model (a) and Expansionary Open Market Policy (b)
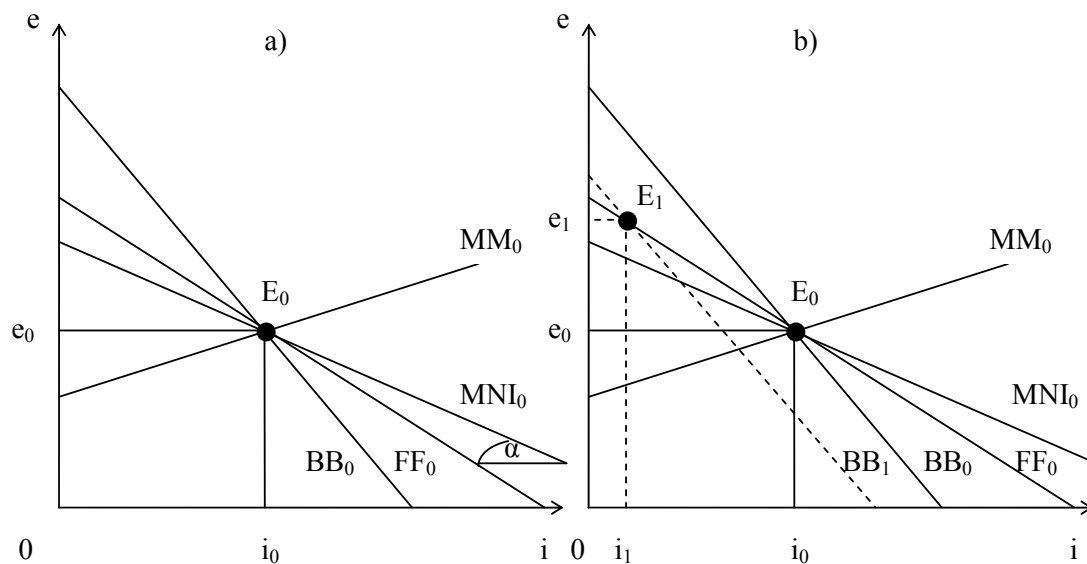
Next we consider a fall in the foreign interest rate. The leftward shift of the BB curve is given by $-b_{i*}/b_i$ (b_{i*} and b_i denote the partial derivative of b with respect to i and i*, respectively) and thus becomes stronger with increased financial market integration, as b_{i*} will rises in absolute terms through integration. The leftward shift of the FF curve is indicated by f_{i*}/f_i, and as financial market integration implies that f_i will rise in absolute terms, the leftward shift of the FF curve is smaller under strong integration than under weak integration. Thus the following graph with case b) is more typical for the case of
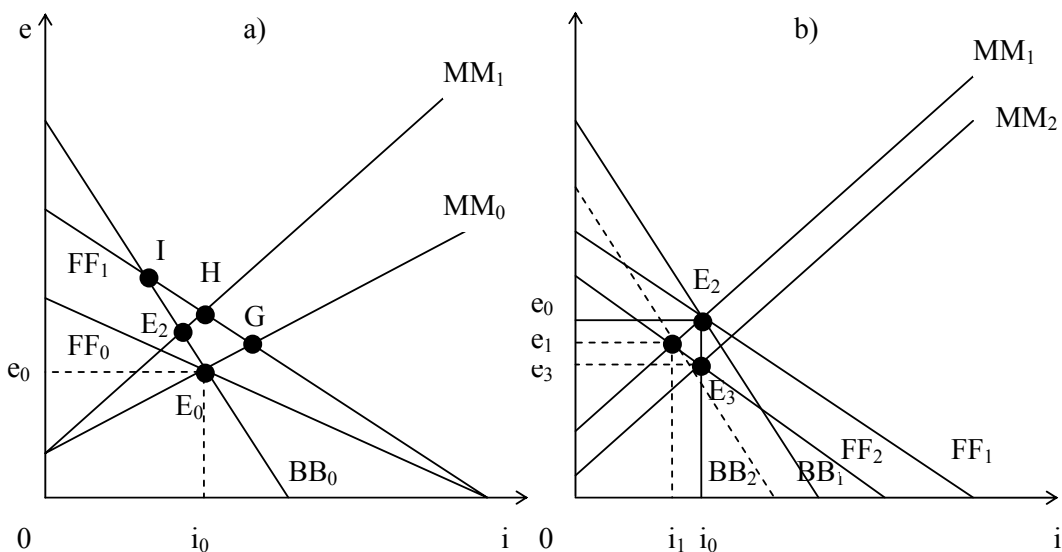
international financial market integration than case a): a fall in the foreign interest rate will thus entail a fall in the interest rate.

Figure 4: Effects of a Fall of the Foreign Interest Rate under Weak (a) and Strong Financial Market Integration (b)
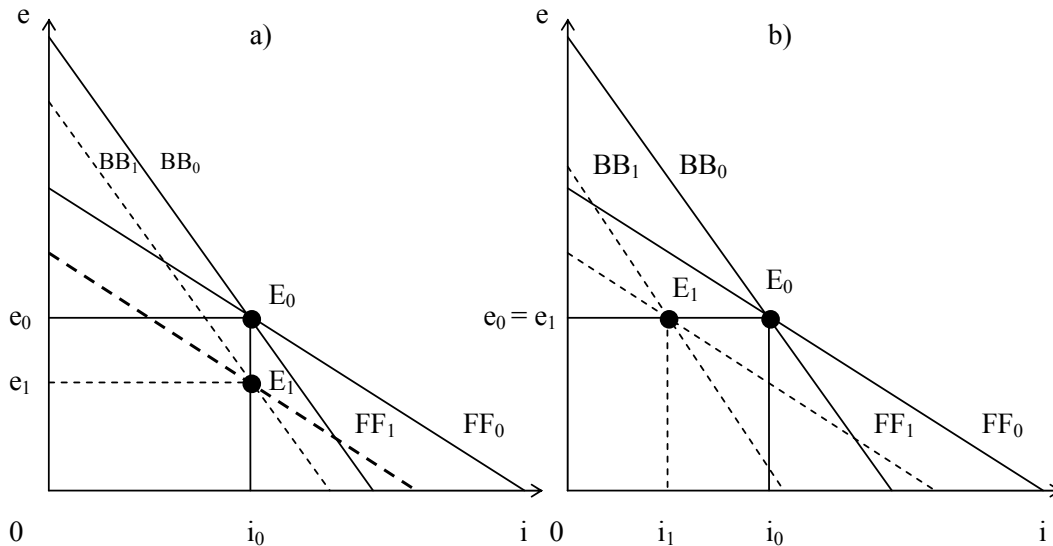
There is an additional aspect of financial market integration that has to be considered, namely changes in the slope of the curves. With more intensive financial market integration – implying that a larger range of liquid (substitutes for money) assets becomes available – the MM curve becomes steeper. The slope of the MM curve can be expressed as $-eE_{n,i}/(fi)$, where E with two subscripts denotes elasticities. The FF curve also becomes steeper with enhanced financial market integration (read: there is a rise of $E_{f,i}$ in absolute terms). As we can see, the main effect here is a depreciation of the currency. The intersection of the BB_0 and the MM_1 curve in point H is a depreciation which improves the current account so that the FF_1 curve shifts downwards and goes through E_2 (the FF_2 curve is not shown in the subsequent graph a)).

Figure 5: Enhanced Financial Market Integration a) and Role of Risk Premium b)

The international banking crisis of 2007/08 implies a disintegration of financial markets and thus should bring about a rise in the nominal interest rate. Moreover, we can consider the role of a risk premium which has visibly emerged in 2008 – after a strange period 2003-06 in which the risk premia in US markets declined. Let us assume that B represents only government bonds and F are foreign bonds (could include bonds placed by foreign multinational companies). In a period of high market turbulence and a rising risk premium, we may consider the following modified model where Ω denotes risk premium:

(1) $M/P = n(i, i^{*'}, \Omega)A'$ MM curve

(2) $B/P = b(i, i^{*'}, \Omega)A'$ BB curve

(3) $eF/P = f(i, i^{*'}, \Omega)A'$ FF curve

The demand for money is a positive function of the risk premium, and the demand for domestic government bonds is also a positive function of Ω; hence the MM curve shifts downwards and the BB curve to the left. The demand for foreign bonds declines if the exogenous Ω increases and hence we get a leftward shift of the FF curve (FF2 instead of FF1): a fall of e implies that there is a negative net supply effect (gross supply eF minus induced demand from the change of e which related to A'). The higher risk premium thus brings about a nominal – and real appreciation. Taking the US as the relevant country to be considered, one may argue that the $ appreciation in the autumn 2008 can thus be explained. There is a caveat in that the US represents a large economy and therefore a two country model would be more appropriate than the simple approach presented here. However, the qualitative results would not really change in a two country model. For all countries with high foreign debt – denominated in US$ – this implies additional problems, as foreign debt expressed in domestic currency will rise.

Appendix 2: Regresssion Results for Banks' Profits

The following analysis looks at the profits of banks in the period 1980-2007 (annual data). To the extent that there are no lags of endogenous variables, we use the Durbin Watson test to check for auto-correlation. If there are lags of endogenous variables to be considered, we use the relevant Ljung-Box Q-statistics. A straightforward hypothesis is to assume that profits are negatively influenced by the central bank interest rate and the interest structure (three month interest rate/long term rate: this ratio indicates the profit potential from intermediation); in like manner, profits should positively depend on stock market volumes and nominal GDP. As regards Switzerland, the central bank rate has a significant negative impact, but the interest rate structure has a positive sign; the adjusted R2 (0.56) is relatively high. For the UK, it is rather difficult to find a good fit, as stock market volumes are neither significant on a current basis nor on the basis of lags. As regards the US, the equation with the two variables discount rate and GDP presents a good fit and R2 is 0.82. In the case of Germany, we have two relevant variables, namely the discount rate and the interest rate structure – both with the theoretically correct sign; also the stock market volume is significant. For the EU15, the equation shows a relatively low R2, the stock market volume positively affects profits, and the discount rate has a negative impact on

profits. The EU15 equation might be blurred by exchange rate changes which could particularly affect figures for the UK. If the banking sector is to be stabilized in Germany, it would be important to avoid an inverse yield structure.

Dependent Variable: DBG			Switzerland
Included observations: 17 after adjustments			
Variable	Coefficient	t-Statistic	Prob.
C	1,898177	1,412786	0,1831
DDISCR(-1)	-2,065266	-2,387576	**0,0343**
DGDP	0,744485	2,360272	**0,036**
DIR_RATIO	7,366168	2,216426	**0,0467**
DSMV	-0,010434	-1,334539	0,2068
R-squared	0,667601		
Adjusted R-squared	0,556801		

Dependent Variable: DBG			UK
Included observations: 16 after adjustments			
Variable	Coefficient	t-Statistic	Prob.
DIR_RATIO	67,21117	1,504203	0,1584
DIR_RATIO(-1)	-68,26024	-1,511647	0,1565
DSMV	0,207897	0,246016	0,8098
DSMV(-1)	0,71439	0,777999	0,4516
R-squared	0,322577		
Adjusted R-squared	0,153221		

Dependent Variable: DBG			US
Included observations: 17 after adjustments			
Variable	Coefficient	t-Statistic	Prob.
DDISCR	-1,102426	-1,939272	**0,0715**
DGDP	1,174455	9,029179	**0**
R-squared	0,834837		
Adjusted R-squared	0,823826		
Durbin-Watson stat	2,250786		

Dependent Variable: DBG			EU15
Included observations: 17 after adjustments			
Variable	Coefficient	t-Statistic	Prob.
C	2,14516	1,353922	0,1972
DDISCR(-1)	-2,048125	-2,452928	**0,0279**
DSMV	0,2099	1,920008	**0,0755**
R-squared	0,341618		
Adjusted R-squared	0,247563		

Dependent Variable: DBG			**GER**
Included observations: 17 after adjustments			
Variable	Coefficient	t-Statistic	Prob.
C	13,95844	2,742814	**0,0168**
DISCR	-2,167209	-1,938802	**0,0745**
DIR_RATIO	-50,72781	-4,416443	**0,0007**
DSMV	0,16535	3,570429	**0,0034**
R-squared	0,707515		
Adjusted R-squared	0,640019		
Durbin-Watson stat	1,781588		

Definition of variables:

D: differentiated variable (first time difference)

DBG: bank profits (first difference)

DISCR: discount rate (central bank rate)

DDISCR: discount rate (first time difference)

DGDP: GDP (first time difference)

IR_Ratio: 3 months interest rate relative to 10 year bond rate

DIRRatio: first difference of IR_Ratio

SMV: stock market volume

DSMV: first difference of stock market volume

Appendix 3: Rate of Return on Equity and Leverage

Raising the required rate of return (E') on equity is a typical challenge for managers. If a banker wants to raise that rate of return he/she will consider the following equation (i is the interest rate, α the ratio of equity capital to total capital, R' is the total rate of return on capital):

(1) $R' = \alpha E' + (1-\alpha)i$

(2) $E' = (1/\alpha)R' - [(1-\alpha)/\alpha]i$

(3) $E' = (1/\alpha)R' + [1 - (1/\alpha)]i$

(4) $E' = i + (1/\alpha)(R'-i)$

Hence the rate of return on equity can be raised by lowering the equity-capital ratio α as long as there is a positive difference between R' and i; alternatively the bank can try to raise the differential R'-i. In a system of perfect capital markets (along the logic of the Modigliani-Miller theorem which argues that the structure of capital is irrelevant for the rate of return on equity) the strategy of raising the leverage, namely reducing α, will bring about a rise of the bank-specific interest rate which simply offsets the initially favorable

effect of lowering the equity-capital ratio: The rise of the bank-specific risk premium will neutralize the impact of a lower α. If, however, the capital markets are imperfect – and this is the more realistic perspective – the bank, starting with $\alpha= 1/10$ and $i=5\%$ and R' as 6%, can raise the initial rate of return on equity of 15% by a higher leverage: the equity-capital ratio will be reduced to 1/20 and thus the required rate of return on equity will rise from 15% to 25%. Alternatively, the bank could maintain $\alpha= 1/10$ and try to widen to differential from the initial 1 percent to 2 percent. This also would raise the rate of return to 25%.

However, 25% is quite an unrealistic target in the long run since a market economy will face standard economic laws:

- The nominal interest rate should be equal to the real interest rate r plus the inflation rate π.

- The real interest rate r should be equal to the growth rate g_Y of output (Y).

Thus the real rate of return on equity E":= E'-π is given by:

(5) $E" = g_Y + (1/\alpha)[R' - (g_Y + \pi)]$

Let us denote the real rate of return R" = R'- π, then we can write – assuming a function R"(…):

(6) $E" = [1-(1/\alpha)]g_Y + [1/\alpha]R"(Z, g_Y, a,…)$

For the sake of simplicity we assume that the overall rate of return on capital R" depends on the risk premium Z – incurred by the representative bank -, the real growth rate of the market (assume that this growth rate is equal to gY) and the rate of technological progress in banking we can use a linearized function $R" = q'Z+q"g_Y+q'''a$ (the parameters q'>0, q">0, q'''>0) so that we get for the case q">1 that output growth always has a positive impact on E":

(7) $E" = [1-(1/\alpha)(1-q")]g_Y + [1/\alpha]q'Z + q'''a$

A period with a strong expansion of modern information and communication technology (ICT) could go along with a rise oft he progress rate a and this in turn will raise the real rate of return for the representative bank. A critical issue is the risk premium Z.

In the context of the capital asset pricing model we have for the rate of return on stocks v= r + $\Omega\sigma$ where r is the real rate of return on government bonds, Ω is the price of risk and σ the volatility of the respective stock index. If the price of risk should fall artificially – through financial innovations – one would get a rise of the investment output ratio provided that σ is not rising.

Appendix 4: Information for IKB clients (from the website of IKB Deutsche Industriebank); IKB-Kundeninformation (IKB, 2005)

This document explains to the reader the advantages of ABS and of special purpose vehicles where the authors argue that Rhineland Funding Capital Corporation. It had been created by the IKB Deutsche Industriebank as a special purpose vehicle; Rhineland Funding had received $ 8.1 bill. as a credit line from IKB in order to make sure that Rhineland Funding would get a top rating and hence low refinancing costs; IKB invested heavily in subprime products – most of which were rate triple A, but this, of course, did not mean absence of liquidity risk. Rhineland Funding went bankrupt in 2008 and investors received 55% of the money invested; the main prudential supervisory agency in Germany, the BaFin, was fully aware of all the transactions of IKB and obviously did not disapprove them although IKB's subprime exposure in absolute terms exceeded that of Deutsche Bank in 2006 – IKB had equity of less than € 2 bill. BaFin in its annual report 2008 declared in the preface that it was totally surprised by all the financial market developments in the US and did not have a real idea of what was going on the US. This is a strange statement for the prudential supervisor of the ECB's largest financial market and has remained without any consequences). The IKB information shows that the bank had not fully understood its own product – liquidity aspects were not considered and hence it was argued that the product was "without any risk in the short term"; the website info states (page 3; translated by the author – the website info was deleted from the bank's website in September 2008):

„Das SPV refinanziert den Kauf des Forderungsportfolios z.B. durch die Emission von Commercial Papers. Hierbei handelt es sich um Wertpapiere mit kurzen Laufzeiten von in der Regel 30 bis 60 Tagen, die durch das Forderungsportfolio (deshalb ‚Asset Backed´ Commercial Papers) besichert sind. Um das notwendige Rating für eine Emission zu erreichen, bedarf es häufig einer zusätzlichen Sicherheitenverstärkung (Credit Enhancement). Hierbei wird z.B. ein Abschlag auf den Kaufpreis als Besicherungs- ‚Überhang´ (Over-Collateralisation) vereinbart und zusätzlich eine Liquiditätslinie durch eine Bank mit einem entsprechend guten Rating gestellt. Überdies lassen sich ABS auch

mittels einer Warenkreditversicherung zusätzlich absichern. Aus Sicht der institutionellen Investoren handelt es sich hierbei also um eine sehr sichere Kurzfristanlage."

("SPV refinanced acquisition of portfolios of claims, for example through issuing commercial papers. Those papers have short maturities, typically in the range of 30 to 60 days; commercial papers are backed through the loan portfolio – [thus they are dubbed asset backed commercial papers]; often one tries to achieve an adequate rating for a placement, namely through credit enhancement. This amounts to considering a price line below the market price so that there is over-collateralisation, and in addition one obtains a credit line from a bank with a top rating. Moreover, one could additionally reduce the risk of ABS through an insurance on the loan portfolio. From the perspective of an institutional investor such a model stands for an almost riskless short term investment.)The document was available for about 3 years under the following address:

http://www.ikb.de/content/de/produkte/inland/abs_publikationen/11_03_Mittelstandsfin.pdf.

Appendix 5: Serious Doubts about Basel Rules for Required Equity Capital

The Basel I rules as well as the Basel II rules impose a required ratio of equity capital to total capital for every bank. Regulatory actors argue that a high equity ratio improves the survival prospects of a bank in periods of negative shocks (read: high depreciations and losses, respectively). This view, however, is seriously mistaken as will be shown here in the context of banks' consolidated balance sheets. The following presentation is based on KATH (1992), who derives – based on the standard BRUNNER-MELTZER approach – the multipliers for the money supply (M_1) and for credit supply (KR^s). However, the analysis of KATH ignores equity capital. In the following analysis equity capital is included on the liability side of the banks' consolidated balance sheet, which is shown here along with the balance sheet of the central bank:

Balance Sheet of Central Bank

Foreign Reserves	B_1	Cash	B^c
Goverment Bonds	B_2	Deposits of Banks (Reserves)	TR
Refinancing Component	RF		
Monetary Base (Source Side)	B	Monetary Base (Uses Side)	B

Consolidated Balance of Banks

Credits to Nonbanks	KR	Sight Deposits of Nonbanks	D_1
Deposits with Central Bank	TR	Term Deposits of Nonbanks	D_2
		Loans from Central Banks	RF
		Equity	E'

The Basel rules require – among other things – that the equity ratio of a bank should exceed 8%. Denoting deposits at a bank by D, loans from the central bank by RF and equity capital by E' the above requirement says for an individual bank j that the ratio E'_j to credits KR_j must exceed a critical ratio; the basic argument is that a high ratio of equity to credits serves as a cushion for adverse shocks (high allowances or even losses in periods of adverse shocks).

Let us now consider the aggregate perspective for the banking sector. For simplicity we can consider the Basel requirement as

(I) $E' = \alpha'KR$ (parameter α' is in the range between zero and unity)

The consolidated balance sheet of all banks has on the asset side the credits to nonbanks KR and the banks' deposits with the central bank (reserves of banks: TR). On the liability side we have deposits of nonbanks, namely sight deposits D_1 and term deposits D_2 plus the credits obtained from the central bank (RF) plus equity capital E'. Hence we have the following identity from the balance sheet:

(II) $KR + TR = D_1 + D_2 + RF + E'$

Taking into account the regulatory requirement that $E' = \alpha'KR$ we can write:

(III) $KR + TR = D_1 + D_2 + RF + \alpha'KR$

Hence we obtain:

(IV) $KR(1- \alpha') + TR = D_1 + D_2 + RF$

Standard banking theory assumes that banks will want to have a certain ratio (tr) of reserves at the central bank to total deposits ($D = D_1 + D_2$). Hence the reserve coefficient is defined as:

(V) $tr = TR/(D_1+D_2)$

Similarly one may define a desired reserve coefficient rf:

(VI) $rf = RF/(D_1+D_2)$

Let d denote the discount rate, i the interest rate on loans and rr the reserve ratio required by the central bank one may assume the following function (we indicate negative partial derivatives only, eg $tr_i := \partial tr/\partial i$; those not indicated explicitly have a positive sign):

(VII) $tr = tr (rr, i, d)$, where $tr_i < 0$

(VIII) $rf = rf (rr, i, d)$, where $rf_d < 0$

Furthermore, one may define (with C^P denoting cash held by nonbanks) the cash balance ratio $bk := C^P/D_1$ and $t' = D_2/D_1$ - we assume $t'(i', Y_K)$, where $t'_{YK} < 0$ (i' is the interest rate on deposits at the bank, Y_K is the marginal product of capital) – then the definition of the monetary base $B = C^P + TR$ gives a money supply multiplier m_1 for $M_1 := C^P + D_1$: The multiplier is defined as

(IX) $m_1 = M_1/B = (C^P + D_1)/(C^P + TR)$

Dividing the expressions in the numerator and the denominator by D_1 (and writing TR/D_1 as $[(TR/D)(D_1 + D_2)/D_1]$ while taking into account $D_2 = t' D_1$ and $D_2/D_1 = t'$, respectively) we can write:

(X) $m_1 = (bk + 1)/\{bk +[(TR/D)(D_1+ D_2)/ D_1]\}$

Thus the money supply multiplier can conveniently be expressed as

(XI) $m_1= (1+bk) / (bk + tr(1+t'))$

Next we define the exogenous monetary base B^{ex} in a suitable way

(XII) $B^{ex} = C^P + TR -RF$

Taking into account that $RF = b'(D_1+D_2)$ we obtain (in analogy to the procedure above) the following multiplier for the exogenous monetary base:

(XIII) $m^{ex} = (1+bk)/[bk + (tr- b')(1-t')]$

Thus the money supply function can be expressed as:

(XIV) $M_1 = m_1^{ex} (i,d,rr,i',Y_K) B^{ex}$

If the multiplier were homogeneous of degree one in Y_K and production would be characterized by a Cobb-Douglas production function $Y=K^ß(AL)^{1-ß}$ – where K is capital, A knowledge and L labor ($0<ß<1$) - we could simplify the equation by scaling both sides by Y and K, respectively; this holds because $Y_K= ßY/K$. Note also that we can divide both sides of the equation by the price level P so that the left hand side would ride (M/P)/Y which is the inverse of the average productivity of real money balances while $(B^{ex}/P)/K$ is the real exogenous monetary base per unit of real capital.

The partial derivatives with respect to d and rr are negative, those with respect to the marginal product of capital (Y_K) and the deposit interest rate i' also if (tr – b') <0. Up to this point the analysis is fairly standard. However, the following considerations for the credit multiplier contain crucial – and paradox - new aspects about the role of equity capital in the banking system. The analysis sheds new light on the importance of making a distinction between the perspective of the individual bank and the overall banking system. We will basically argue that the Basel rules in the field of equity requirement strengthen the ability of individual banks to cope with bad weather, but that the same rules also raise the probability of bad weather so that one may raise doubts about the Basel I/II rules; revisions of non-optimal rules – while ignoring the weakness of the Basel I/II approach – therefore could undermine the stability of banks rather than reinforce the resilience and stability of the system.

Credit Supply Multiplier

Based on equation (IV) one can derive a credit multiplier which implicitly is defined through the ratio of credit supply (KR^s) and the exogenous monetary base; the multiplier is denoted as a^{ex}:

(XV) $KR^s/B^{ex} = a^{ex}$

(XVI) $a^{ex} = KR/ B^{ex} =[D_1+ D_2-TR+RF]/\{(1- \alpha')[C^P + TR –RF]\}$

In the following expression we have taken into account the regulatory requirement that equity capital $E'= \alpha'KR$. Thus we obtain an expression whose denominator is identical to that of the money supply multiplier. More importantly, the regulatory parameter α'

(XVII) $a^{ex} = \{(1+t')(1-(tr-b'))/(1-\alpha')\}/[bk + (tr-b')(1+t')]$

We thus can write

(XVIII) $KR^s = a^{ex} (\alpha', i, d, rr, i', Y_K) B^{ex}$

The partial derivatives of the credit multiplier are negative with respect to d, rr and Y_K, and α, positive for i and i'. The higher the required α' the lower is 1-α'. The higher α' the higher is the credit multiplier. If a high leverage of investment – broadly defined – entails a high volatility of asset prices and hence high risk for investors and banks, respectively, one should not be surprised that a high required α could raise macroeconomic instability since the macroeconomic effect of a higher credit multiplier could offset the (microeconomic) cushioning effect of a high equity ratio of individual banks. The hypothesis that a higher equity ratio E'/KR could entail a higher macroeconomic volatility implies that there is an optimum E'/KR which maximizes long term bank survival $S'_j = [1-f(\sigma)]/F(\sigma)$ where F(.) is a function describing macroeconomic volatility σ and f(.) a function – defined in the range (0,1) - which represents the individual bank's absorption of macroeconomic shocks. The individual bank will go bankrupt if S'_j reaches a critical threshold as depositors will want to withdraw their deposits immediately.

We may particularly state the hypothesis that a rise of KR^s/M_1 above a natural (long term) level will raise macroeconomic volatility. Note that the multipliers for the credit supply and the money supply have identical denominators so that we can conveniently express the ratio $KR^s/M_1 := \Omega'$ as:

(XIX) $\Omega' = \{(1+t')(1-(tr-b'))/(1-\alpha')\}/(1+bk)$

Here we have used $\ln(1+x) \approx x$ which is a good approximation for x close to zero. Assuming that all parameters on the right-hand side of the equation are close to zero we can use the convient approximation:

(XX) $\ln \Omega' \approx t' -(tr-b') + \alpha' - bk$

Let us denote the degree of confidence loss in the interbanking market by σ' – which indeed is the risk not to find liquidity in the market – and assume that t' is a negative function of the lack of confidence in the interbank market (the private sector will substitute short-term deposits D1 for term deposits D2) and that b' is a positive function of the lack of confidence (as banks will want to rely more one central bank loans in a period of liquidity crisis and as the central bank is expected to be a lender of last resort), then we can write

(XXI) $\ln \Omega' \approx t'(\sigma') - tr (rr, i, d) + b'(\sigma') + \alpha' - bk (i')$;

Note that we also have assumed that $bk := C^P/D1$ is a negative function of the deposit interest rate i'. Recall that $\partial tr/\partial i < 0$, $\partial tr/\partial rr > 0$, $\partial tr/\partial d > 0$ so that a fall of the discount rate will reduce the ratio of credit supply to money supply. In a situation of a non-elastic relative credit demand – in a period of a strong economic boom – the above equation implicitly determines i/i' and hence the profitability of banks (one also may argue that the equation determines the slope of the yield curve, assuming that banks lends long term and have medium term and short term deposits). The impact of the confidence parameter σ' on the relative loan supply is ambiguous so that empirical analysis of t'(.) and b'(.) is necessary to determine the impact of a confidence shock.

Next we consider the fact that a rise of the required equity ratio raises the ratio of loans to the money supply. This rise of Ω' will bring about increased investment in assets – in particular if the relative demand for loans is highly elastic (hence in the early economic upswing). If we assume for simplicity that the demand for money is proportionate to nominal output and that there is equilibrium in the money market at any time we will have a real rise of asset prices, namely to the extent that one may assume that loans are used only to a small extent to buy new goods and services, but rather loans are used to buy existing stocks of capital and real estate. The consequence will be asset price inflation (indeed pure asset price inflation if the output price level is constant). Real asset prices will be driven above long term equilibrium levels and this implies an asset price bubble – a period of rapidly rising asset prices later fallowed by a sharp decline in asset prices. This implies that a rise of the ratio KR^s/M brings about higher volatility of asset prices and hence higher risk which in turn makes the banking sector more vulnerable. While the rise of required regulatory equity capital ratio reinforces the ability of banks to weather stormy weather in the market the same rise of that ratio also raises the probability that stormy weather will occur. This raises the issue about an optimum equity capital ratio. An alternative to the existing regulations could be to require within a new approach Basel III that $E= \alpha"D + \alpha'FK$ where the first new element would reinforce the individual bank's ability to absorb adverse shocks while not raising the credit multiplier in the case of a rise of $\alpha"$ (defined in the range 0,1). This can be seen be only looking at the case $E'= \alpha"D$ which gives a new multiplier for the credit supply:

(XXII) $a^{ex'} = (1+t')[1 - tr(1+ \alpha") - b']/(bk + (tr-b')(1+t'))$

Thus one may raise serious doubts about the existing Basel rules in the field of required equity capital. Carefully adjusting the framework for banks will be crucial for achieving stability.

Real Credit Demand and the Relative Price of Stocks and Real Estate

Let us consider a setup without inflation and assume that nominal credit demand is given by the following simple function

(XXIII) $H^d = \eta \, (YP + P'K + P"K")/(\psi \, r)$

where P' is the stock market price index and η and K, respectively, stand for a positive parameter and the physical capital stock; K" is the stock of real estate capital and ψ is a parameter which indicates the responsiveness of credit demand with respect to the real interest rate r. The credit demand function specified assumes that for producing (nominal) output and for holding stocks and real estate loans are taken.

By implication the real credit demand can be written as $H/P = \eta \, (Y+q'K+q"K")/(\psi \, r)$ where $q':= P'/P$ and q" denotes the relative price P"/P (P" is the price index of real estate). Next we divide both sides of the real credit demand equation by AL (A denotes knowledge, L labor). If real credit supply $KR/P = a^{ex}B^{ex}/P$ and $M_1^s/P = m^{ex}B^{ex}/P$ we can obviously write $KR/P = (a^{ex}/m^{ex})(M/P)$. Taking into account the production function $Y= K^\beta(AL)^{1-\beta}$ credit market equilibrium – namely $(H^d/P)/K = (H^s/P)/K$ - thus can be written as

(XXIV) $(a^{ex}/m^{ex})(M/P)/K = (\eta/(\psi r))] (K^{\beta}(AL)^{1-\beta} + q'K + q''K'')/K$ or with $k':=K/(AL)$

(XXV) $(a^{ex}/m^{ex})(M/P)/K = \eta (k'^{\beta-1} + q' + q''K''/K)/(\psi r)$

If one solves for r and assume for the sake of simplicity that the ratio (a^{ex}/m^{ex}) is exogenous and also that q' is exogenous (an alternative assumption would be q'=1 if new investment goods and existing capital K are perfect substitutes in the medium term) we get the medium term equilibrium real interest rate:

(XXVI) $r = (m^{ex}/a^{ex})\eta (k'^{\beta-1} + q' + q''K''/K)/\{[(M/P)/K]\psi\}$

The higher the credit multiplier and the monetary policy target ratio (M/P)/K are the lower is the real interest rate; the true policy variable is M/K. The price level P will result from the excess demand in the goods market. Let us denote the expected inflation rate as π'. If one assumes that $Y^d = [M^d\psi''(r +\pi')]/P$ – this implicitly reflects a money demand function $M^d = YP/[\psi''(r+\pi')]$ - and consider the price adjustment function $dP/dt = h''[Y^d/(AL) - Y\#/(AL)]$ we will get (with the steady state income Y# relative to labor in efficiency units AL) the following solution for a non-inflationary price level: $P = [M/(AL)]\psi''r/(s/(n+a))^{\beta/1-\beta}$. Note that we have replaced $k'\#:= K'/(AL)$ by $[s/(n+a)]^{\beta/1-\beta}$ which is the standard result from neoclassical growth theory under the assumption that the savings rate s and the progress rate a (a:= dlnA/dt) as well as the growth rate of labor (n:= dlnL/dt) are exogenous. The production function used here is, of course, the Cobb-Douglas function.

The above equation can be interpreted alternatively in a different way. Assume that (M/P)/K is determined by monetary policy preferences and that K''/K is given; if $r=\beta Y/K=\beta k'^{\beta-1}$ – reflecting profit maximization of firms (assuming that the capital depreciation is zero) - the implication is that Tobin's q will rise if k' is raised. Despite a rise of k' the variables q' and q'' could rise if there is a sufficiently strong increase of a^{ex}/m^{ex}. Thus a relatively strong increase of the (relative) credit multiplier could raise the real price of stocks and the relative price of real estate. Financial innovations and a relative rise of the credit multiplier thus could raise q' and q''. This points to some of the problems in the US banking crisis 2007/08. Note that k' in the long run can be replaced – within a neoclassical growth model – by the steady state solution $[s/(a+n)]^{1/1-\beta}$. If one assumes that $q''= \Omega''q'$– so that Ω'' is the relative price P''/P' – we can rewrite the equation as

(XXVII) $(a^{ex}/m^{ex})(M/P)/K = \eta (k'^{\beta-1} + q' + q'\Omega''K''/K)/(\psi\beta k'^{\beta-1})$

(XXVIII) $(a^{ex}/m^{ex})(M/P)/K = [\eta/(\psi\beta)] \{\psi\beta + [q'(1 + \Omega''K''/K)/k'^{\beta-1}\}$

Here the implication clearly is that a rise of the (relative) credit multiplier will raise the real price of stocks P'/P. Parallel to the rise of P'/P there will be a rise of P''/P.

Appendix 6: Raise of Return to Real Capital (including depreciation rate)

Figure 6: Rates of Return on Capital in the Business Sector[1]

	1960-69	1970-79	1980-89	1992	1993	1994	1990-94
United States	17.1	15.7	14.9	17.1	18.1	18.8	17.4
Japan	24.8[2]	17.9	14.3	14.0	13.8	13.4	14.2
Germany	16.3	13.5	11.9	13.7	13.2	13.8	13.7
France	11.9[3]	12.8	11.9	14.6	14.3	14.7	14.5
Italy	12.7	11.8	13.6	14.5	14.6	15.2	14.7
United Kingdom	11.8[3]	10.2	9.6	9.9	10.9	11.5	10.2
Canada	12.4[n]	14.2	17.1	16.1	16.4	17.1	16.5
Netherlands	n.a.	13.9	16.3	17.4	16.7	17.9	17.9
Belgium	n.a.	12.7	11.7	12.5	12.1	12.4	12.7
Sweden	13.2[2]	10.7	10.0	11.1	12.0	12.6	11.0
Switzerland	15.6	11.1	8.9	8.5	9.3	10.4	9.4
G-10 Weighted Average	17.0	14.8	13.8	15.1	15.5	16.0	15.3

[1] Gross output of the business sector minus net indirect taxes and labor income, all divided by non-residential capital stock excluding land

[2] 1965-69

[3] 1963-69

[n] 1966-69

Source: OECD (1995), Saving, Investment, and Real Interest Rates, A Study for the Ministers and Governors by the Group of Deputies, Paris, October 1995.

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